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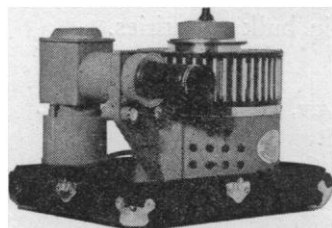
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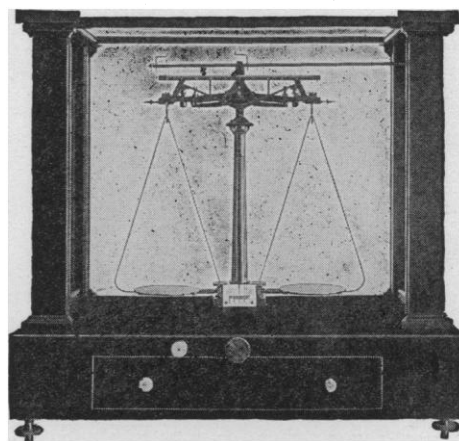


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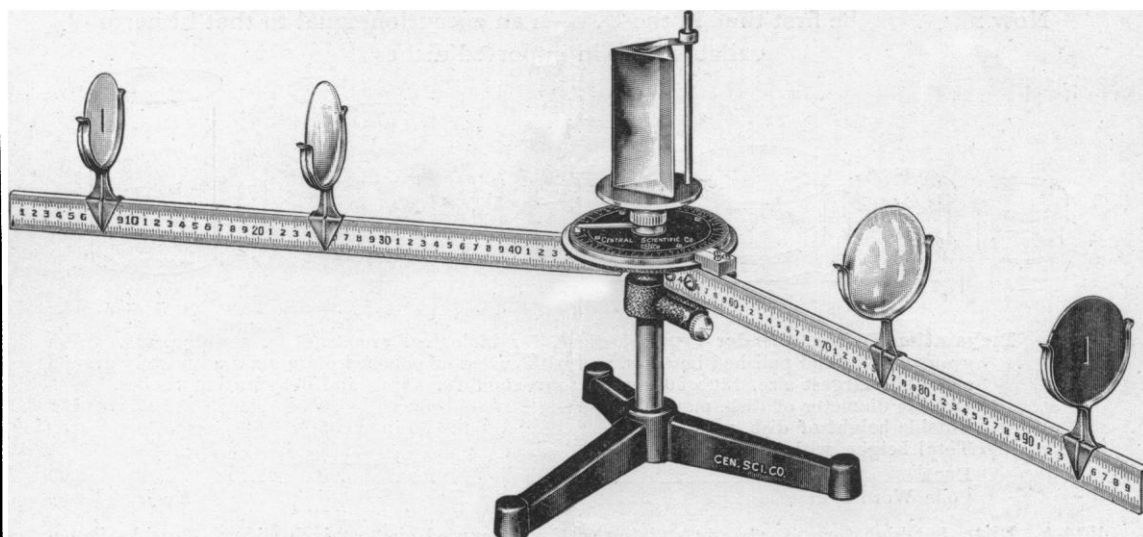
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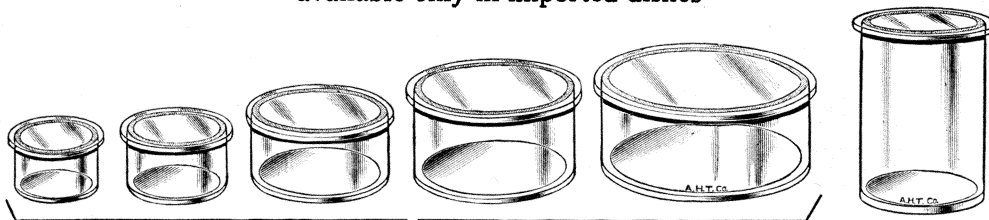
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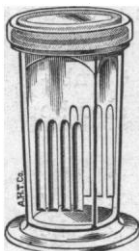
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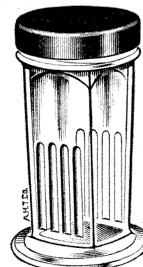


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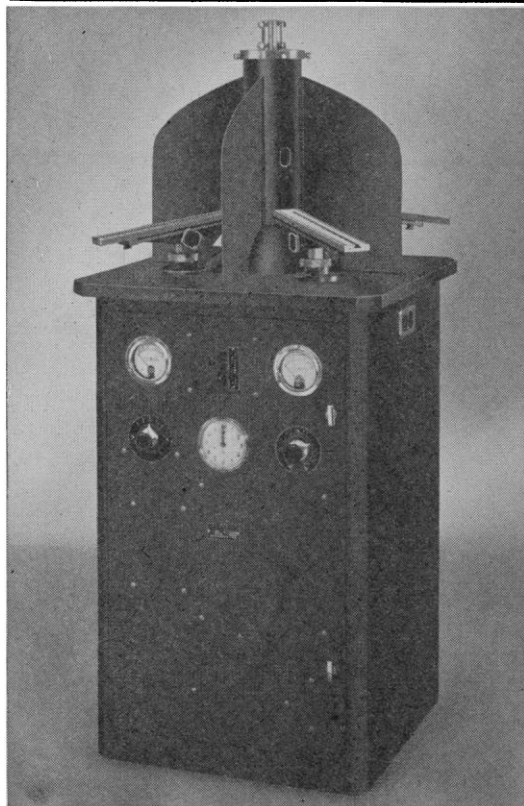
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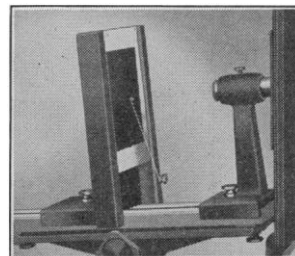


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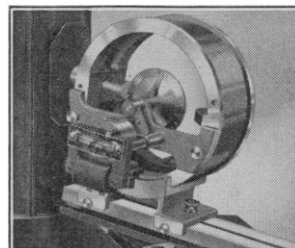
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The cameras and cassettes provided for use with the G-E XRD Unit are constructed to facilitate the use of the most common and dependable x-ray diffraction technics. Each instrument is built to do a particular type of work in the best and simplest manner. For complete information about the G-E XRD Unit, address Department R-48.

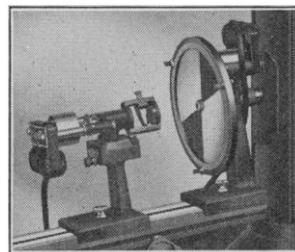
*The XRD Pinhole Assembly and collimator tube support in use with flat cassette and cassette holder for 3 1/4" by 4" film.*



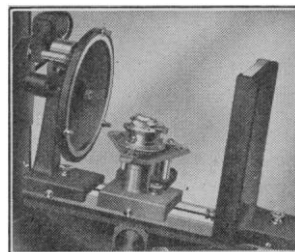
*The XRD Powder Camera with oscillating specimen holder in position. Standard equipment also includes rotating specimen holder to be used with capillary tubes, and a septum which divides the camera so that a reference pattern may be placed upon one half of the film.*



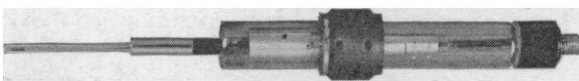
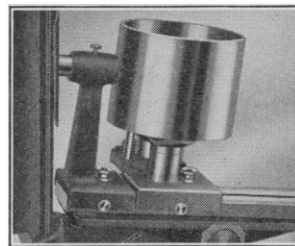
*The XRD Back Reflection Camera and rotating specimen holder—a high-precision instrument for the exact evaluation and comparison of lattice parameters in the study of metals and alloys and other crystalline structures.*



*The XRD Universal Specimen Mount may be used with the Pinhole Assembly and flat cassette for Laue and rotation patterns, with the Back Reflection Camera for Sauter patterns and for back reflection Laue patterns, or with the Cylindrical Cassette and the Pinhole Assembly for oscillation and rotation patterns.*



*The Cylindrical Cassette which is furnished with the XRD Universal Specimen Mount for use with the Pinhole Assembly. The Cylindrical Cassette is mounted on the goniometer head which has fine screw adjustments on the arcs and for centering the specimen in arcs.*



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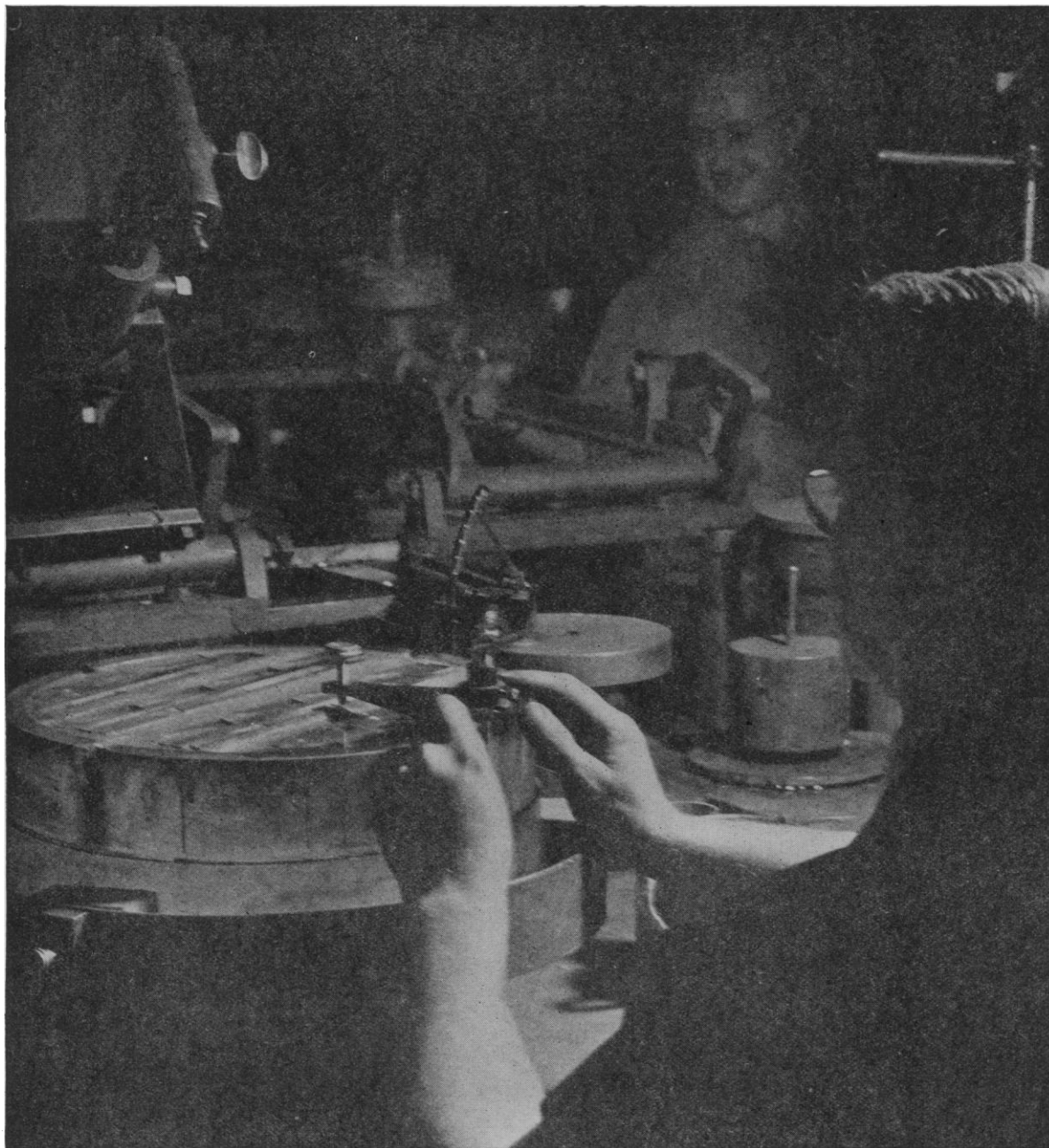


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# SCIENCE

VOL. 94

FRIDAY, AUGUST 1, 1941

No. 2431

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## THE METAMORPHOSIS OF DRUG RESEARCH<sup>1</sup>

By Dr. THEODORE G. KLUMPP

CHIEF, DRUG DIVISION, U. S. FOOD AND DRUG ADMINISTRATION, WASHINGTON, D. C.

THE topic which has been assigned to me for discussion is a broad one, and I am going to consider it from its broadest aspects. It is only a small exaggeration to say that any one who takes as much as an aspirin tablet for himself engages in drug research. I can speak then as one of 130,000,000 drug researchers in this country, but even at that I can only speak with the deepest humility. A short time ago our colored maid developed a cold and with it a cough. I was called upon to do something about it, and I gave her what I considered to be the best medicines available for a cough due to a cold. But the maid had more faith in a medicine of her own selection which I noticed she took to the exclusion of mine. Her faith in her medicine was its own reward and in due course of time her

cough fortunately disappeared. I would have exposed myself to polite but silent scorn if I had tried to tell her that neither my prescription nor hers cured the cough—that it would have disappeared anyway, or, as some one put it, "Nature cures the disease while the remedy amuses the patient." I might have tried to show her that man has been subject to colds and coughs since the dawn of civilization and that they have come and disappeared for countless generations before her medicine or mine had been discovered. But it would have been useless. If colds and their coughs hadn't made a habit of coming and going in precisely the same way regardless of what we did for them, man would long since have coughed himself off the face of the earth.

The element of faith has for centuries been one of the most important active ingredients in every medi-

<sup>1</sup> An address delivered before the American Drug Manufacturers Association, May 7, 1941.

confirmation media. It should be understood that since the success of this method depends upon the formation of certain minimum amounts of gas those samples having very few organisms, or predominatingly slow lactose fermenters, must necessarily take a longer period of time for completion of the test. Speed is enhanced by using larger samples for only slightly contaminated waters.

The governing factors are: (1) concentration of organisms in inoculum; (2) size of fermentation vial which regulates the amount of liquid which will overflow into conductor tube; (3) height of limiting level mark; (4) diameter and shape of conductor tube; (5) length of time inoculum is enriched before passing into conductor tube, 4 hours found to be optimum time. All these factors are controllable.

With this method, mobile laboratories are enabled to collect a flock of samples on one day and are ready to move again the next morning when the tests are completed. Positive tests on ships' supplies may be accomplished overnight as compared with 48 to 96 hours. In a large distribution system, water leaving the reservoirs may be tested with ensuing results obtained sufficiently early to regulate the supply before it reaches the end of the distribution system.

HAROLD LEON FRUITMAN

SAN FRANCISCO WATER DEPARTMENT

#### PERMANENT MOUNTS OF VIRUS-INFECTED CHORIOALLANTOIC MEMBRANES

THE chorioallantoic membrane of chick embryos has become an important tissue for the cultivation of viruses. The lesions produced are in many cases characteristic of the infecting virus. There is a need for an easy method of permanently mounting such membranes. A method is here described which has proven itself to be satisfactory.

The mounting material is prepared by slowly pouring, with constant stirring, 50 gm of powdered isobutyl methacrylate polymer<sup>1</sup> into 100 cc of xylol. The mixture is placed in the incubator and stirred at intervals until it becomes clear. This takes about an hour. A higher concentration of the plastic is less good, as air bubbles do not rise well to the surface.

The membranes are harvested in the usual manner and rinsed in physiological saline or Tyrode's solution. They are then passed through a series of dilutions of ethyl alcohol, 5, 10, 15, 20, 25, 30, 40, 50, 65, 85, 95 per cent. and, finally, absolute alcohol. They are spread out and left in each dilution for 15 minutes or longer, except for the absolute alcohol in which they are left for at least half an hour. Just before mounting they are transferred from the latter to xylol, where they are left for five minutes. About 5 cc of

<sup>1</sup> Manufactured by E. I. du Pont de Nemours and Company, Wilmington, Del.

the solution of plastic is poured into the bottom of a Petri dish. The membranes are drained slightly and spread out in this. A paper label may be embedded beside them. This may be typewritten or marked with pencil, ink or india ink. The Petri dish is set aside to dry in a dust-free place. A second layer of plastic is added to cover all irregularities. When this has hardened, the cover of the Petri dish is put on to protect the surface from dust and injury.

When the membranes are passed through fewer dilutions of alcohol or more rapidly, the normal parts do not remain as clear and the lesions do not show as well. Other solvents were tried, but none gave better results than xylol.

No difficulty is experienced from curling of the membranes. In membranes with considerable edema there is a shrinkage of 10 to 15 per cent., but in normal ones or in those with little edema there is no shrinkage.

This method produces a solid mount which can be easily handled and examined. The areas of hyperplasia due to virus infection stand out in sharp contrast to the surrounding tissue.<sup>2</sup>

WOLCOTT B. DUNHAM

DEPARTMENT OF BACTERIOLOGY,  
NEW YORK POST-GRADUATE MEDICAL  
SCHOOL AND HOSPITAL,  
COLUMBIA UNIVERSITY

<sup>2</sup> I wish to express my appreciation for the valuable suggestions of Dr. Maurice N. Richter. This work was conducted under a grant for virus research from the Lambert Pharmacal Company, St. Louis, Mo.

#### CORRECTION

In Table 2 of the article "Prevention of Tumor Growth (Carcinoma 2163) by Intravenous Injections of Yeast and Vitamins" (SCIENCE, July 18, 1941) the per cent. figures for non-takes should read: Yeast + Riboflavin 62%, Yeast 21%, Riboflavin 14%, Yeast + Thiamin 18%, Thiamin 3%.

#### BOOKS RECEIVED

- American Philosophical Society. *Proceedings, 1941; Commemoration of the Life and Work of Alexander Dallas Bache, and Symposium on Geomagnetism.* Pp. 125-351. Illustrated. The Society, Philadelphia.
- CLAWSON, H. PHELPS. *By their Works.* Pp. xxi + 236. Illustrated. Buffalo Society of Natural Sciences. \$4.00.
- General Electric Company. *Abstract Bulletin of the Lamp Development Laboratory, March, 1941.* Pp. xii + 165-559. Illustrated. The Laboratory, Nela Park, Cleveland.
- HARKER, ALFRED. *The West Highlands and the Hebrides; A Geologist's Guide for Amateurs.* Pp. xxiii + 127. Illustrated. Cambridge University Press, Macmillan. \$2.00.
- LAWRENCE, A. S. C. *The Scientific Photographer.* Pp. x + 180. 81 figures. Cambridge University Press, Macmillan. \$3.75.
- National Research Council. *Report of Committee on Drug Addiction, 1929-1941, and Collected Reprints.* Pp. xxx + 1581. The Council, Washington, D. C.

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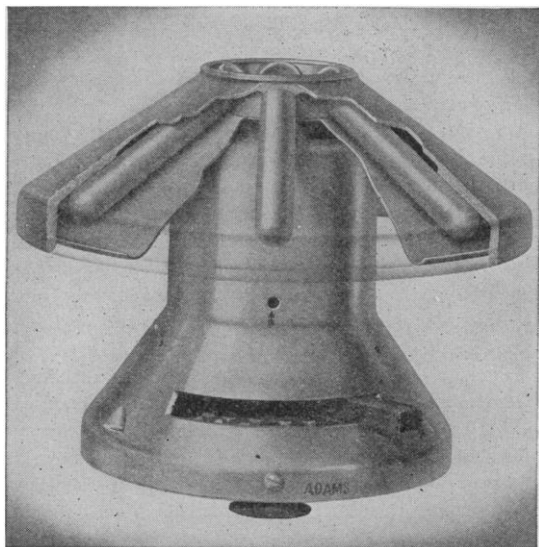
The Karl Fischer reagent, particularly any modified form, should be prepared from pure compounds that contain a minimum of water. Then, it will require less iodine; will contain less colored by-products that might obscure a visual end point; will not deposit objectionable material on glassware. A grade of pyridine that is specially purified for use in preparing the reagent in any of its forms has recently been added to the stock of Eastman organic chemicals, as *Eastman 214-H Pyridine (for Karl Fischer Reagent)*.

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