Axicons

The axicon has been invented. To the lens, the prism, and the mirror—the basic elements of optical design—there has been added the axicon. It could have been invented in 15th-century Florence, or in Restoration England for presentation at an early session of the Royal Society, but it wasn’t. It was invented in no garret, but in this bright and shining factory overlooking the Genesee River in Rochester, N. Y., by John H. McLeod, a Kodak optical engineer. This is incredible. Our times seem far too complex, our science and technology far too advanced for a man to invent anything as simple as the axicon in the sixth decade of the 20th century.

But listen to Doctor McLeod:

“A search for a universal focus lens has led to a new class of optical elements. Probably the most important of them is a glass cone. This class has the common property that a point source on the axis of revolution is imaged to a range of points along the axis. Such elements do not, therefore, have a definite focal length. The word ‘axicon,’ meaning axis image, has been coined to cover this type of element. [Note: He had to coin a word. There just wasn’t any existing word to serve the purpose.] Axicons form images only of small, bright objects.

“One application is in a telescope. The usual spherical objective is replaced by a cone. This axicon telescope has no focusing movement but is in focus for targets from a foot or so to infinity. It can simultaneously view two or more targets placed along a line.

“If a light source is added to the telescope with a suitable beam splitter, it becomes an autocollimator. It can do more than an ordinary autocollimator, however, for, in addition to checking the perpendicularity of a mirror, it can simultaneously view one or more targets along the line of sight. [He means more than “view.” At a distance of 100 feet, the position of a target can be determined to .001”, and even a non-technical executive has done it. In angle, this means an accuracy of 1/5 second.]

“A useful form of axicon is a reflecting cone. It will return an image of a point source back to the source over a range of distances depending on the cone design. This form may be used for the precision checking of lathe beds and the like, or for checking the flatness of surface plates.”

If you would like to use a line of light in space as a tool, get in touch with Eastman Kodak Company, Special Products Sales Division, Rochester 4, N. Y.

Advice on diffraction

We can perform a slight but perhaps useful service for practitioners of x-ray diffraction by showing how to get rid of one of the two images on opposite sides of Kodak Industrial X-ray Film, Type K. This film, though made for industrial radiography, happens to be our fastest for diffraction. Researchers with modest budgets who regard film as the least expensive and most versatile x-ray receptor for diffraction patterns will appreciate the economic advantages over the tricky and costly business of launching a special, extra-silver-rich, single-coated film.

Write Eastman Kodak Company, X-ray Division, Rochester 4, N. Y., for a reprint on removing the second image and a copy of our x-ray diffraction film selection chart.

Windows and compatibility

We announce three additions to the list of liquids specially selected for transparency in certain spectral “windows” in which they are useful as spectrophotometric solvents. Methylcyclohexane (Eastman S946) is principally of interest for the ultraviolet. Nitromethane (Eastman S189) and Bromoform (Eastman S45), and we stabilize it with Diphenylamine) both have too high a cut-off for ultraviolet spectrophotometry, but we think that for infrared work it’s useful to have them available for some happy combination of “window” location, compatibility, and solubility which they may offer a few lucky spectrophotomists. This is how they stack up for transparency:

These three are part of the line of 15 Spectro Solvents, which are part of the line of some 3500 Eastman Organic Chemicals, which are part of the service that makes laboratory time today more productive. For a chart of the other Spectro Solvents and for the solvents themselves, write Distillation Products Industries, Rochester 3, N. Y. (Division of Eastman Kodak Company).
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of the General Program-Directory of the Berkeley Meeting of the AAAS

By first class mail – early in December

The General Program-Directory of the 121st Meeting of the AAAS on the campus of the University of California, Berkeley, Dec. 26–31, 1954, will be available to anyone, at cost, within the first week in December—whether he can attend the Meeting or not. You will want the General Program-Directory for your reference shelf.

**Program content**

1. The three-part General Symposium: “Science and Society.”
2. Programs of the 18 AAAS sections (symposia and contributed papers).
3. Programs of the more than 70 participating societies.
5. Details of the Gymnasium for Men—center of the Meeting—and campus.
6. Titles of the latest foreign and domestic scientific films to be shown in the AAAS Science Theatre.
7. Exhibitors in the 1954 Annual Exposition of Science and Industry and descriptions of their exhibits.

**Directory content**

1. AAAS officers, staff, committees for 1954.
2. Complete roll of AAAS presidents and their fields.
3. The 260 affiliated organizations.
4. Historical sketch and organization of the Association; the Constitution and Bylaws.
6. AAAS Awards and Grants—including all past winners.
7. Membership figures by sections.
8. Section committees (Council members) in detail.
9. Local committees.

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POSITIONS WANTED

Administration: Ph.D., biochemistry, biophysics, botany; 8 years research, industrial and government; currently directing $175,000 program. Desires challenging, rewarding position with growing company. Box 219, SCIENCE. 8/30

Bacteriologist, Ph.D., entomology, public health, wildlife, physiology. 4 years Government service environmental sanitation, pest control. Interested college teaching, industry. Max Wilcomb, Zoology, Oklahoma University, Norman, Oklahoma. 8/13

Biologist, Ph.D., 1952. 17 years experience. Desires University Position, Physiology, Zoology, Teaching, Extension, Proven ability, Sigma Xi, Publications. Box 217, SCIENCE. X

(a) Endocrinologist, Ph.D., seeks administrative position in endocrinology or pharmacology; eight years, head of pharmacology, large pharmaceutical company; seven years, chief department of endocrinology, research institution. Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago. X

Internist (Hematology)—37; Board Certified; FACP; available for interesting and challenging opportunity (research, academic, clinical or other). Experience qualifies for research (basic and clinical) and/or teaching; organization and management; medical editing and public relations; direction of graduate students and resident training program; clinical activities. In 10th year large midwestern medical college; currently associate professor. Box 211, SCIENCE. 8/13, 26, 27

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Ph.D. Majors in Plant Ecology and physiology. Minors in agronomy and zoology. Desire teaching position. John Butler, Botany Department, University of Wisconsin, Madison, Wis. 8/13, 20

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Zoologist: M.A. Canadian University, genetics, biometrics, teaching experience, desires teaching and/or research position. Box 218, SCIENCE. X

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(a) Organic chemist, experienced in field of analytical organic chemistry and biochemist with background of protein and enzyme purification; extensive program to determine feasibility of irradiation sterilization of foods. $6000-$7000; (b) Pharmacologist, preferably physician, Ph.D. eligible, experienced cardiovascular diseases, immunologist-bacteriologist, biochemist, pharmacologist, physical chemist; Ph.D.'s with minimum two years' post-doctoral experience; advantageous if trained isolopes; research institution; East. (c) Physician trained in pharmacology, preferably with Ph.D.; key post; research department, large organization, S8-2 Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago. X

Pharmacologist (Toxicologist)—Ph.D. or D.V.M. with training and experience in evaluating toxicity of potential new drugs. Background in pharmacodynamics desirable. Capacity to direct group activities essential. Send resumes to the Personnel Department, The Norwich Pharmacal Company, Norwich, New York. X

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Wanted: Cytologist-cyto geneticist for teaching and research; and, Plant Pathologist for extension at midwestern state college. Box 212, SCIENCE. 8/13, 20, 27

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