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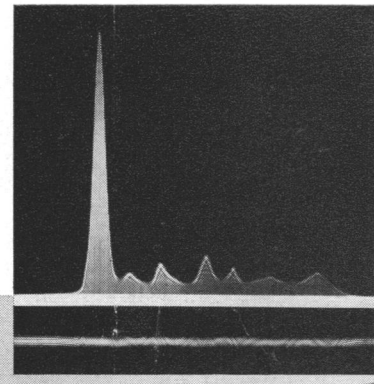
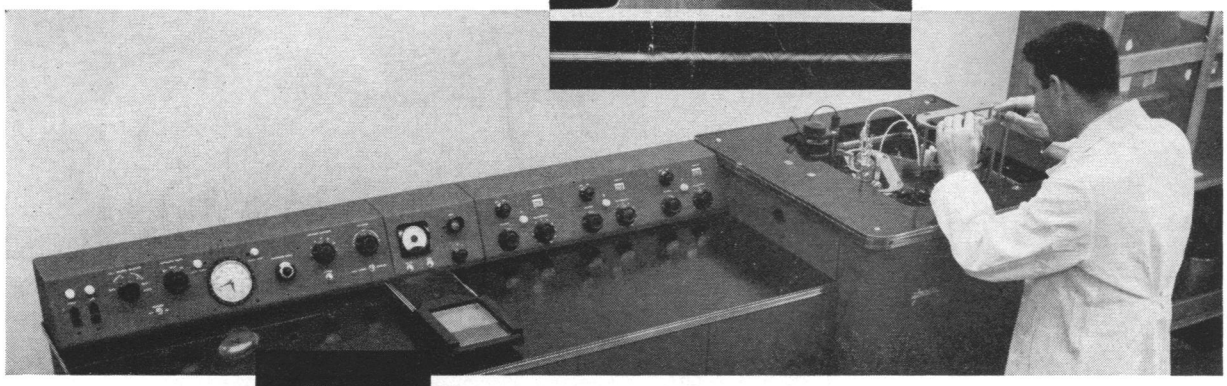
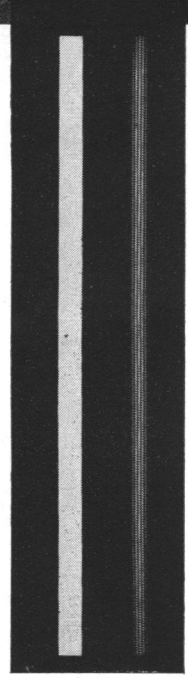


Electrophoresis of human serum diluted 1:6; ascending boundaries. Inclined knife-edge schlieren and Rayleigh fringes.





Typical reference fringe pattern obtained from standard production model.

ELECTROPHORESIS AND DIFFUSION

in one precision instrument

As protein research progresses, biochemists rely more and more upon instruments of high precision for diffusion and electrophoresis studies. Especially critical are the optical measurements needed to obtain accurate diffusion coefficients, absolute electrophoretic mobilities, and information on purity.

An exceptional optical system is one of the outstanding features which have made the Spinco Model H invaluable for exacting work in both electrophoresis and diffusion. Light passes through each operating cell twice, giving double sensitivity. Patterns are sharply defined and peak positions can be precisely determined. Reproducible measurements may be made to better than 1/25 of a fringe, which corresponds to approximately .00025 percent protein.

The optical system is flexible, too. It permits measurements by five different methods – ordinary and cylindrical lens schlieren, Rayleigh and Gouy fringes, and mechanical scanning.

Further versatility is achieved by a rotary cell turret which supports three operating cells. Any combination of diffusion and electrophoresis studies may be performed simultaneously with the three cells.

We'd like to tell you more about the Model H and how it can fit the requirements of your research program. For complete details, please write Spinco Division, Beckman Instruments, Inc., Stanford Industrial Park, Palo Alto, California, for information File H-5.

Sales and service facilities on the Model H are available on the same basis as for Spinco Ultracentrifuges, assuring prompt, efficient service for users here and abroad.

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Meetings

International Astronomical Union

The tenth general assembly of the International Astronomical Union was held at Moscow, in the building of Moscow University, from 12 to 20 August 1958. According to the printed list there were 832 delegates and 258 guests.

The handling of this large meeting by our Russian hosts was marked by great generosity. The delegates' meals and lodgings, at the newest hotel in Moscow, were paid for by the Soviet Government. Transportation to the meetings was provided, as well as transportation for numerous trips to museums and art institutes. For the general meetings and the formal symposia, a translation service was provided like that at the United Nations, complete with interpreters in booths and small individual radios, with switches for French, English, and Russian, to be hung around the neck.

More important than any of these was the cordial hospitality which was shown by all of the Russians with whom the astronomers came in contact—the little clerk at the Lenin Library, who went dashing away to run down a book and came back apologizing for her poor English; the cheerful assistant who handed out books and earphones at the desk as if her life depended on it, and who turned out to be a world authority on the making of artificial diamonds; the kind professor, still showing visitors around his institute two hours after closing time. At no time were the political frictions outside evident in the Assembly proceedings or in the bearing or speech of our hosts.

The fundamental framework of the union is a system of 40-odd commissions and subcommissions, whose primary function is to coordinate the work of the observatories. The best example of such coordination is in the field of the national ephemerides. The work of preparing these has been parcelled out all over the world with such effectiveness that there is now relatively little duplication of computing effort, and most of the world accepts identical texts, with minor or major national embellishments.

In less well-regulated fields, the commissions serve to promote the standardization of notations and the launching of international programs of cooperation (especially in the fields of positional astronomy), to make possible international comparison of progress.

At the tenth assembly, the work of the commissions was somewhat hindered by the trilingual character of the meetings. By contrast with the ninth (Dublin) assembly—when most of the commissions adopted English, a few adopted French, and the assembly then proceeded in the adopted language—this assembly proceeded in three languages in almost all of the commissions. Since the apparatus of interpreters and radios was too expensive to be used for anything except the meetings and symposia of the assembly as a whole, the translations were necessarily given after the original speech. It inevitably followed that only one-third as much could be said. In the case of very well-run commissions, where the meeting had to deal only with problems thoroughly prepared in advance, this situation served to curb the more voluble, and a satisfactory number of decisions could be made. In other cases, a minor issue—even an issue of names—could seriously delay the whole commission, as the problem was thrashed out in English, French, and Russian.

There were several very successful symposia at the assembly. One of these was on the origin of the solar system; it was conducted very informally by B. J. Levin, and it actually brought Urey, Kuiper, Jeffreys, Hoyle, Levin himself, and others to their feet in face-to-face arguments. The symposium greatly illuminated the real problem—namely, how to account for the fact that the sun rotates so slowly that almost all of the angular momentum of the solar system is in the planets, which have so little (0.1%) of the mass. The symposium also underlined the significance of condensation to the solid state for the process of planet formation.

A second successful symposium, also unofficial, was held, with Sadler in the chair, on the applications of observations of the moon and artificial satellites to the problems of positional astronomy and geodesy. The most interesting result of the meeting was independent agreement by Czech, British, and two American groups on the fact that the motion of the nodes of the satellites indicates a value for the earth's oblateness, which is very significantly different from the hydrostatic value. This was in the nature of a personal triumph for Sir Harold Jeffreys, who has long maintained that the earth's interior is not in hydrostatic equilibrium and that the layers beneath the crust are not plastic, even under very long-continued stresses—that they possess ordinary, though limited, mechanical strength.

A group of three official symposia treated the problem of the origin of the elements and the related question of the internal constitution and history of the stars as these are revealed by the Hertzsprung-Russell diagram (a plot of absolute magnitude against spectral type or color). The first section treated the observations of the H-R diagram; the second, the theory; and the third, the problems of nuclear formation. These symposia were not as successful as the informal symposia. They were held in

the large conference room, and simultaneous translations were provided. Unfortunately, the first speech was filled with references to a set of diagrams which the delegates were supposed to, but did not, have before them, and several of the later speeches left the interpreters in stuttering incoherence or helpless silence while the speaker raced on.

In the last symposium of this group, the question of the origin of the elements was directly attacked. The advocates of origin in stellar interiors (including those of supernovae) directly confronted the advocates of origin from an initial explosion. Both parties agreed that many of our present stars are not composed of virgin material, but are partly made up of recondensed ejecta from earlier stars.

With regard to the meeting arrangements, it was somewhat unfortunate, from the point of view of informal contacts, that the U.S. delegation was assigned dining rooms separate from the other delegations. This kind of problem is the inevitable result of the size of the meeting. The new president, J. H. Oort, of Holland, addressed himself to the task of reconstructing the union, by subdividing it, to restore its earlier informality and intimacy. In the meantime, it should be recognized that this meeting made a notable contribution in bringing together scientists from the Communist and non-Communist worlds, and that its success was due to the efforts of the individual Russians.

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Extending the Parabola

The Institute of General Semantics, Lakeville, Conn., has announced that the Alfred Korzybski Memorial Symposium will be held on 11 April in New York at the Carnegie International Center, 345 E. 46 St. The theme will be "Extending the Parabola," and addresses on new frontiers in biophysics, space science, neurology, and psychology will be delivered by William J. Fry of the University of Illinois, James A. Van Allen of the State University of Iowa, Charles M. Pomerat of the University of Texas (Galveston), and Wendell Johnson and Russell Meyers of the State University of Iowa.

Millimeter Waves

Scientists and engineers from England, France, Israel, Japan, the Netherlands, and the U.S.S.R. will take part in an international symposium on Millimeter Waves on 31 March–2 April in the auditorium of the Engineering Societies Building, 33 W. 39th St., New York. The program of invited papers has been designed to permit research scientists working in the fields of solid state, microwave theory and techniques, electron tubes, and plasmas to take part in the exchange of information on progress and plans for the future in the generation and application of millimeter waves in physics and communications.

Arranged by the Microwave Research Institute of the Polytechnic Institute of Brooklyn in cooperation with the Institute of Radio Engineers, the symposium is cosponsored by the Air Force Office of Scientific Research, the U.S. Army Signal Corps, and the Office of Naval Research. As at past symposia, there will be no registration or admission fee. Further information is available from Polytechnic's Microwave Research Institute, 55 Johnson St., Brooklyn 1, N.Y.

Operations Research

Specialists in information and decision theory and other closely related topics in operations research will speak at the second annual Symposium on Information and Decision Processes to be held at Purdue University on 15–17 April. The purpose of this symposium, according to Paul R. Randolph of Purdue, chairman of the symposium committee, is to acquaint individuals who are working in applied areas in industry with the research work in information and decision theory. Particular emphasis will be on the significance of this work to problems of research and development in industry and government.

Topics to be covered will include the latest work on inventory control, reliability, consistency of models, stocastic processes, computer logic, and linear and dynamic programming. Further information may be obtained from Dr. Paul H. Randolph, Engineering Administration Building, Purdue University, Lafayette, Ind.

Forthcoming Events

April

27–28. Society of Exploration Geophysicists, 12th anunal midwestern exploration, El Paso, Tex. (D. Dawson, Dawson Geophysical Co., Midland, Tex.)

27–28. Society of Neurological Surgeons, New York, N.Y. (B. S. Ray, 525 E. 68 St., New York 21.)

27–29. Aero Medical Assoc., Los Angeles, Calif. (T. H. Sutherland, P.O. Box 26, Marion, Ohio.)

27–30. Physical Chemistry of Extractive Metallurgy, intern. symp., Pittsburgh, Pa. (AIME, 29 W. 39 St., New York 18, N.Y.)

27–30. Physical Chemistry of Process