

uniformly striated field in the telescope. This is emphatically the case for the parallel rays, b' and a' ; but with the crossed rays a and b

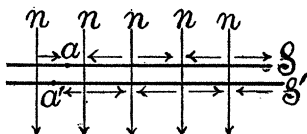


FIG. 4.

the interference is confined to the rays in the equidistant positions, n , in Fig. 4, and midway between them the field is a neutral yellow. In other words between the rays n , the rays are displaced laterally as shown by the arrows (recalling the arrangement of nodes in acoustics), so that corresponding rays a and a' for instance, do not coincide and hence can not interfere, the region aa' (Fig. 4) remaining neutral. In Fig. 5, the rays crossing at a vanishing angle have been shown for three ray filaments and the transverse arrows indicate the directions in which the rays have been urged, laterally. Naturally I am merely stating the case as suggested by the results.

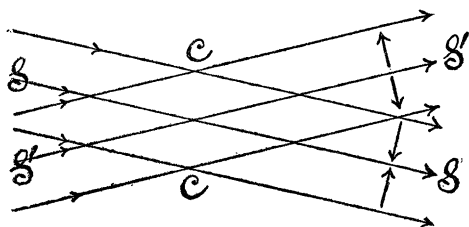


FIG. 5.

One may argue that there may be a secondary periodicity in the grating. But why does it not appear at all in the case of parallel pencils, when it is so obtrusive in the case of crossed pencils of rays? Again the interferences are unquestionably due to D_1 and D_2 light, simultaneously. If the grids in these two cases should be at a slightly different angle to each other, their superposition would give something like the observed phenomenon apart from details. With white light the linear phenomenon would eventually become achromatic. But why should lines so close together as D_1 and D_2 show any appreciable difference of

angle in their interference pattern? Intersecting interference grids, moreover, can be produced by other methods and always betray their origin. The final inference is that suggested by Figs. 4 and 5, that homogeneous rays on crossing (here in a medium of plate glass) may exert a lateral influence on each other, to the effect that identical rays emerging from the crossing are arranged in equidistant nodal planes according to Fig. 4.

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ANNUAL MEETING OF THE CHICAGO ACADEMY OF SCIENCES

ON the evening of Tuesday, January 11, the annual meeting of the Chicago Academy of Sciences was held at the Academy building in Lincoln Park, Chicago.

The guest of honor and chief speaker was Director Frederic A. Lucas, of the American Museum of Natural History, and his address was entitled "The Service of the Museum to the Public."

The usual reports were received from the officers of the academy, and the results of the annual election were read. The officers for the ensuing year are: *President*, John M. Coulter; *First Vice-president*, Henry Crew; *Second Vice-president*, Stuart Weller; *Secretary*, Wallace W. Atwood; *Treasurer*, Henry S. Henschen.

Following the business meeting the members and guests were invited to inspect the new exhibit, which extends through the central portion of the main museum floor. It consists of one large case, 75 feet long and 20 feet wide. In this case, and supported from the ceiling, fifty-six of the larger birds of the Chicago region were installed as in flight. The exhibit is viewed from the main floor, and is 8 to 10 feet above the level of the eye, so that the birds are seen much as they might be under fortunate circumstances out-of-doors. One hundred and four habitat groups have now been installed in the Academy Museum to illustrate the natural history of the Chicago region. The birds, flowers, insects, reptiles and mammals are represented, and with the completion of this plan the museum will be unique in America, and have a special educational effectiveness.

Announcement was also made of the following course of open lectures:

February 11. "The Sun" (with illustrations), by Professor Philip Fox, Northwestern University.

February 25. "Liquid Air" (with demonstrations), by Professor Henry Crew, Northwestern University.

March 10. "Radium" (with demonstrations), by Professor H. N. McCoy, University of Chicago.

March 24. "Modern Views of Electricity" (with demonstrations), by Professor R. A. Millikan.

April 7. "Problem of Food Productions" (with illustrations), by Professor John M. Coulter, University of Chicago.

April 21. "Bacteria of the Alimentary Canal" (with illustrations), by Professor A. I. Kendall, Northwestern University.

WALLACE W. ATWOOD,
Secretary

THE ASTRONOMICAL SOCIETY OF THE PACIFIC

At the annual meeting of the Astronomical Society of the Pacific, held in San Francisco, Saturday, January 29, 1916, the Bruce Gold medal for 1915 was presented to Dr. George Ellery Hale, director of the Solar Observatory (Carnegie Institution), Mt. Wilson, Pasadena, Calif., for distinguished services to astronomy. This medal was founded by Miss Catherine Bruce, of New York, in 1897 with a fund of \$2,500, and in the past eighteen years has been awarded to thirteen astronomers.

The following astronomers who have been the recipients of the medal were:

Simon Newcomb, United States.
Arthur Auwers, Germany.
Sir David Gill, England.
Giovanni V. Schiaparelli, Italy.
William Huggins, England.
Hermann Carl Vogel, Germany.
Edward C. Pickering, United States.
George W. Hill, United States.
Jules Henri Poincaré, France.
J. C. Kapteyn, Holland.
O. Blacklund, Russia.
W. W. Campbell, United States.
George E. Hale, United States.

The nominations and the awarding of this medal are probably the most unique in the history of science. Six of the leading observatories in Europe and America, namely, Berlin, Greenwich, Paris, Harvard, Yerkes and Lick Observatories

make the nominations. These are sent to the directors of the Astronomical Society of the Pacific, who make the final selection from these nominations for the gold medal.

Professor R. G. Aitken, astronomer, Lick Observatory, in his retiring president's address, paid a tribute to Dr. Hale's work, as a student, director of the Yerkes Observatory and the Solar Observatory, and in the problems of solar physics. The address will be published in full in the publications of the society.

The second address of the evening was given by Dr. H. D. Curtis, Lick Observatory, on the "Recent Theories of Stellar Evolution." This was followed by the election of officers for the ensuing year. *President*, Dr. S. D. Townley, Stanford University; *Vice-president*, C. S. Cushing, San Francisco; *Second Vice-president*, Dr. H. D. Curtis, Lick Observatory; *Third Vice-president*, A. H. Markwart, San Francisco; *Secretary-Treasurer*, D. S. Richardson, San Francisco.

THE BOTANICAL SOCIETY OF AMERICA

THE tenth annual meeting of the Botanical Society of America was held under the auspices of the Ohio State University at Columbus, Ohio, December 27-31, 1915, in affiliation with Section G of the American Association for the Advancement of Science, the American Phytopathological Society and the American Society of Naturalists.

The council for 1916 is as follows:

President—R. A. Harper, Columbia University.
Vice-president—Geo. T. Moore, Missouri Botanical Garden.

Treasurer—Arthur Hollick, Staten Island Association of Arts and Sciences.

Secretary—H. H. Bartlett, University of Michigan.

Councilors—David Fairchild, Bureau of Plant Industry; Wm. F. Ganong, Smith College; B. E. Livingston, The Johns Hopkins University.

One hundred and forty-six new members were elected, and an amendment to the constitution was passed which does away with the grade of "fellow" in the society. The membership of the society is now approximately 500.

The address of Retiring President A. S. Hitchcock, "The Scope and Relations of Taxonomic Botany," followed the *annual dinner for all botanists*, which was attended by 153 members of the affiliating societies. It will be printed in SCIENCE.