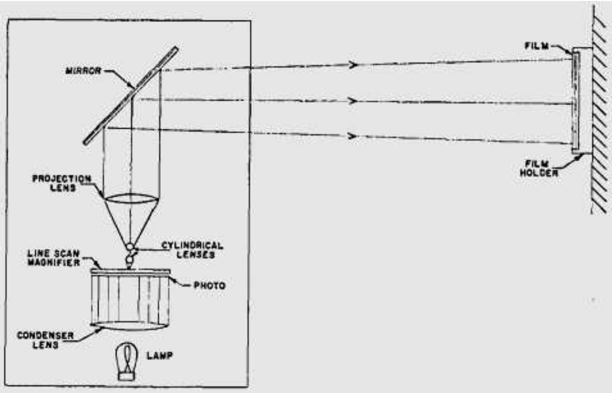
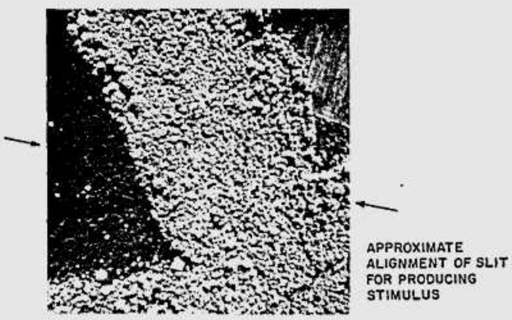


Fig. 3. Optical system for one-dimensional strip production.



(a)

(b)

Fig. 4. Photograph and typical one-dimensional stimulus. (a) Original photograph reduced about 3×. (b) Stimulus—lateral magnification 50×.

illustrated in Fig. 3 to produce stimuli of reasonably acceptable quality despite the fact that the cylindrical lenses in the magnifier were pieces of laboratory grade $^3/_8$-in.(0.95-cm) glass rod. An example of a one-dimensional stimulus produced using this magnifier is shown in Fig. 4.

The methods described above were developed as a part of pictorial data processing investigations under Air Force contracts with the Directorate of Information Sciences, United States Air Force Office of Scientific Research.

Reference

1. P. W. Cobb and F. K. Moss, "Four Fundamental Factors in Vision", M. Lukiesh and F. K. Moss, eds., in *Interpreting the Science of Seeing into Lighting Practise* (General Electric Company, Cleveland, 1927–1932), Vol. I.

A Modification of the Scanning Wedge-Shaped Fabry–Perot Interferometer

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A previous paper[1] described a scanning Fabry–Perot interferometer with slightly angled plates. For this application the light beam has a diameter much smaller than that of the interferometer aperture and the effective spacing of the plates is changed by parallel displacement of the beam across the plates. The paper described a system which employed a rotating Lucite cube to displace the light beam linearly across the interferometer.

An alternate method which achieves parallel displacement of the beam along a circular path within the aperture of the interferometer is illustrated in Fig. 1. By means of a lens and a fixed mirror, the light from the source is brought to a focus on a polished inclined flat at the end of a small rotating shaft. This rotating mirror is also at the focus of the collimating lens for the interferometer and the axis of rotation of the shaft is on the optic axis of the interferometer. The fixed mirror can be mounted on the central unused portion of the collimating lens.

The advantages of this arrangement are:

1. The inherently rapid scanning rate that is made possible by the small size of the rotating mirror.
2. The accurately sinusoidal variation of the effective plate spacing for a constant angular velocity of the rotating mirror. This in turn permits a properly synchronized sinusoidal sweep at the same frequency to yield a displacement on the display oscilloscope that is linearly related to the wavelength for a given order.
3. The scanning is continuous, i.e., there are no interruptions such as occur when the beam is split on a corner of the rotating cube.

Since the actual requirement on the moving mirror is not that it rotate but only that the direction of the reflected light beam rotate about the optic axis, it may be feasible to employ a vibrating mirror (or two vibrating mirrors) which can achieve this result at still higher scanning rates.

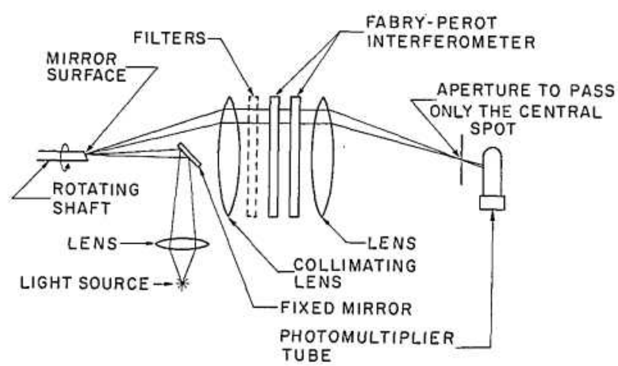

Fig. 1. Schematic diagram of scanning interferometer using circular displacement of the beam.

Reference

1. W. L. Barr and A. L. Gardner, J. Opt. Soc. Am. **51**, 1400 (1961).