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books reviewed

Physiology of the Retina and Visual Pathway

By G. S. Brindley. Published (1960) by Edward Arnold Ltd., 41 Maddox St., London, W1, as a Monograph of the Physiological Society. 9 by 6 in. 298 pp, diagrams. Price 35 shillings (about \$5.25).

Considering that the whole foundation of the work of motion picture and television engineers is based upon properties of the human eye, it is remarkable how few papers have been given to the Society to keep members abreast of recent knowledge about the functions of the eye and brain. Dr. Brindley's recent book is a good step for-

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CONTROL TECHNIQUES IN FILM PROCESSING

Prepared by a Special Subcommittee of the Laboratory Practice Committee of the Society of Motion Picture and Television Engineers

WALTER I. KISNER
Subcommittee Chairman

Foreword by **E. H. REICHARD**
Chairman, Laboratory Practice Committee

CHAPTERS

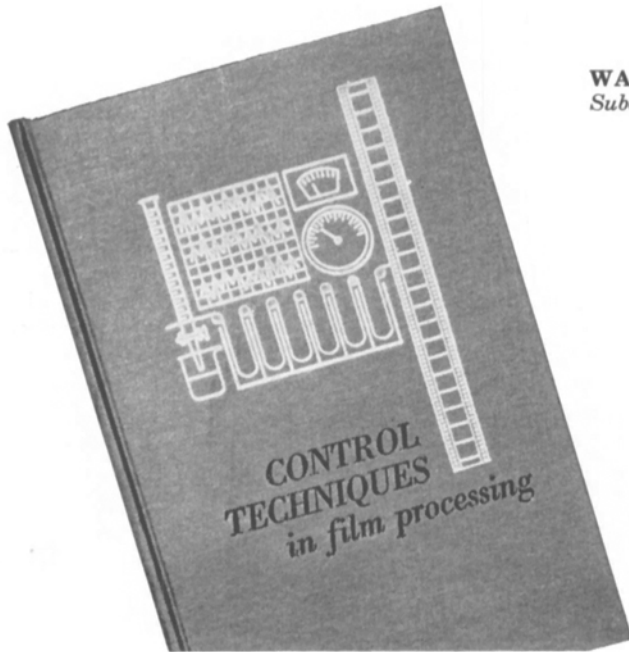
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| 1. Introduction | 6. Control Strips and Sensitometric Curves |
| 2. General Principles | 7. Sensitometric Control of a Standardized Process |
| 3. General Aspects of Motion-Picture Film Processing | 8. Chemistry of Film Processing |
| 4. Mechanical Evaluation and Control | 9. Chemical Analysis and Control |
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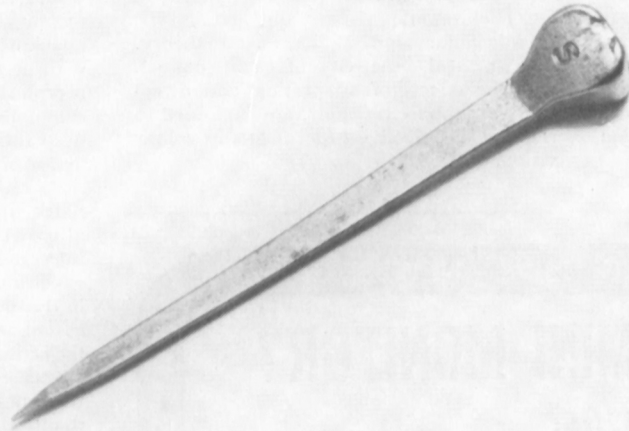
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ward, and will bring the reader up to 1960 in this now fast advancing field.

The first chapter deals with the photochemistry of the retina — the nature of rhodopsin (visual purple) and other eye pigments — and will appeal to the reader with a knowledge of photographic emulsions and processing. Chapter II deals with electrical activity in the retina itself and the following chapter with the transmission system to the brain. These show how the individual receptors in the eye are connected by various filtering and transmitting systems, and the digital nature of the information carried. The reader with an interest in bandwidth compression and computer techniques will find this section engrossing.

Further chapters deal with experimental procedures and deductions involving after-images, simultaneous contrast, and the effect of duration and area upon apparent brightness. This leads to Chapter VI on the problems of the threshold of visibility and visual acuity, and the quantum efficiency of the eye. The signal-to-noise ratio of the eye is discussed in detail.

Chapter VII is entitled "Colour Vision." It discusses the possible hypotheses for trichromatic vision, and details the evidence for and against each theory. The spectral sensitivity of each channel, and the effects of adaptation and directivity on apparent colour, are explained in relation to objective experiments in colour vision.

The author himself states that "this is a tightly written book, very full of information." As it is primarily a textbook on physiology, there are many terms that will be unfamiliar to the engineering reader. However, nearly all terms are explained in sequence, and knowledge of anatomy or physiology is not necessary to make good use of the book; doubtless a physiologist reading a typical paper in this *Journal* would, at first, have some trouble with technical terms. Dr. Brindley has a happy knack of bringing the reader back to earth with a heading such as "Can the blue receptors be rods?" (answer — No). The calculations and charts are in scientific units rather than our familiar foot-lamberts and so on.

As an engineer I was completely fascinated by this book, which contains on almost every page some item which is of interest in photography or television. The experimental techniques are not discussed in detail, but one cannot but marvel at the casual way the problem of folding in half the retina of a toad to test it for polarization effects is mentioned, nor refrain from wonder at how the experimenters managed to introduce colored light through the back of a living human retina in order to check that the colors seen were the same as through the front of the eye. In the text will be found items on the effect of background intensity and color on flicker perception, the effect of color on visual acuity, and the effect of displaying separate images to each eye. The author has taken great care to explain which theories are proved and which are still doubtful. There are no less than 40 pages of references and a good index for those who wish to browse. The only addition I could have wished for would be a diagram of the eye-brain connections so that the technical names could have been positively identified rather than inferred. This is an excellent book.—*Michael Barlow, CFCF-TV, 405 Ogilvy Ave., Montreal, Que., Can.*

Televised Instruction

Ed. Lee S. Dreyfus and Wallace M. Bradley. Published (1962) by Mass Communications Center, Wayne State University, Detroit 2, Mich. 6 by 9 in. viii + 174 pp. Price \$3.00.

This book contains recorded lectures from the Wayne-RCA Invitational Conference on Televised Instruction given at Wayne State University, Detroit, June 19-22, 1961. It presents the views and opinions of many of the leaders in the struggle to get televised instruction the recognition it deserves. While the basic premise involves the use of video tape as the means by which educational processes can be made available to a larger number of students than at present, the lectures do not rigidly adhere to this central theme. This, however, should not be considered a drawback. In fact, it gives the book an extended scope since the authors offer, with few exceptions, sound and logical contributions to a timely and important function.

We feel that this book is a clear and true presentation of a problem which may be considered one of the most important with which this age has to contend. Educa-

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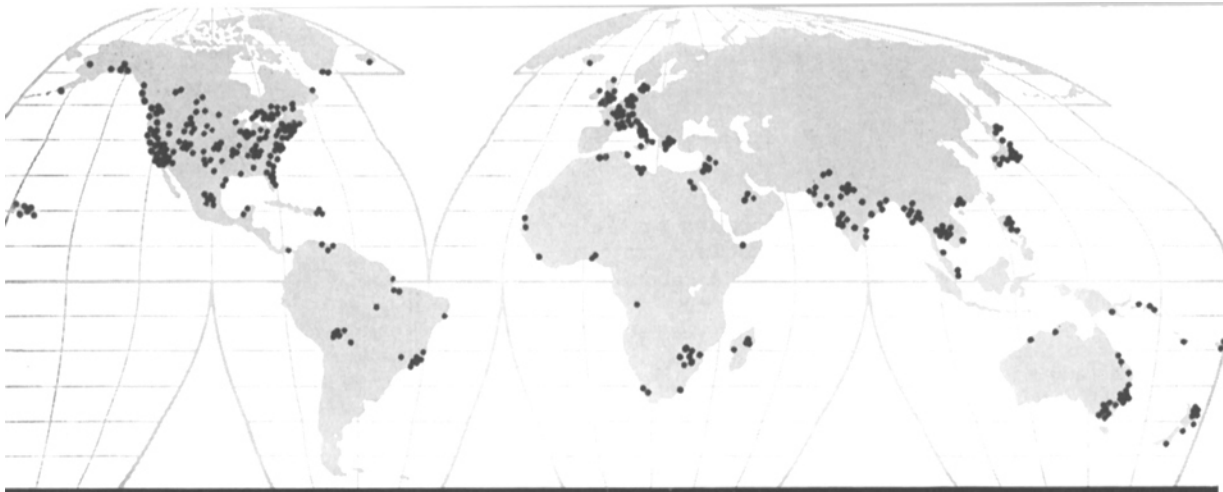
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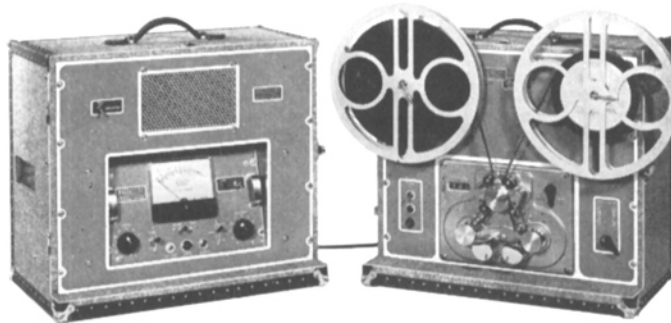
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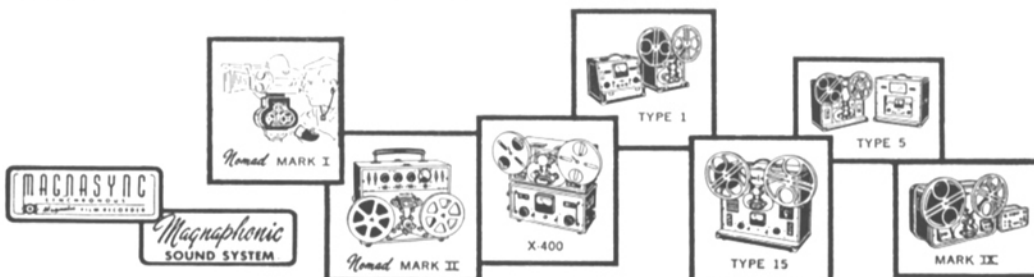
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tion has become one of our foremost obligations in the current world situation. The concept of teaching via the TV channels is as unique as it is present-day; therefore, any discussion which brings to light additional facts and applications is eminently desirable.

Many avenues have been explored in this text. Military applications have been considered as well as a reference to the NAEB Study on TV channel allocations. While perforce, most of the lecturers reflected their individual experience, what emerged seemed neither biased nor personally slanted. As a definitive view of educational television in its broader aspects, this book provides a worthy addition to the other statements which advocate its

expanded application.—*Harry Wolfe*, Barnes Engineering Co., Stamford, Conn.

The Needs of Education for Television Channel Allocations: a Survey by the National Association of Educational Broadcasters

Published (1962) by the U.S. Dept. of Health, Education and Welfare, Office of Education, Washington 25, D.C. (Available from Superintendent of Documents, U.S. Government Printing Office, Washington, 25, D.C.) 9 by 11 in. 182 pp. tables, index of maps plus 14 maps attached in cover envelope. Paperbound. Price \$9.25

The need for additional channels which

can be used for educational television has been apparent for some time. If the highest standards of teaching are to reach the greatest number of students, a method for increasing dissemination to all who can benefit must be made available. Actually, the method has been available, but unfortunately its application is limited. As a result of this acknowledged need and to point up more emphatically the growing necessity for educational TV that will reach an ever expanding audience, the Government allocated funds for the National Association of Educational Broadcasters to conduct a study of all existing educational TV in the United States and to outline plans for its eventual growth until all areas can ultimately participate in televised instructional programming. Practically, the method is simple. According to the study, the need can be filled by additional VHF and UHF channels that will blanket this country with an adequate number of stations reaching every geographic area. The study, with utmost clarity, sets down the present facilities as well as presenting a tabulation of additional channels necessary to accomplish complete coverage.

While tables and maps clearly indicate the channels which are and should be made available for educational purposes, the reviewer feels the study could have gone farther in delineating the actual implementation processes. However, a state by state breakdown of present facilities, planned programs in process, and future possibilities for educational TV provide an impressive picture of the television structure as it applies to American education.

The study supplies a well-supported document on the state of educational TV and the direction in which it must go to provide the greatest possible benefit to the greatest number of students — the allocation of additional channels by the FCC.—*Harry Wolfe*, Barnes Engineering Co., Stamford, Conn.

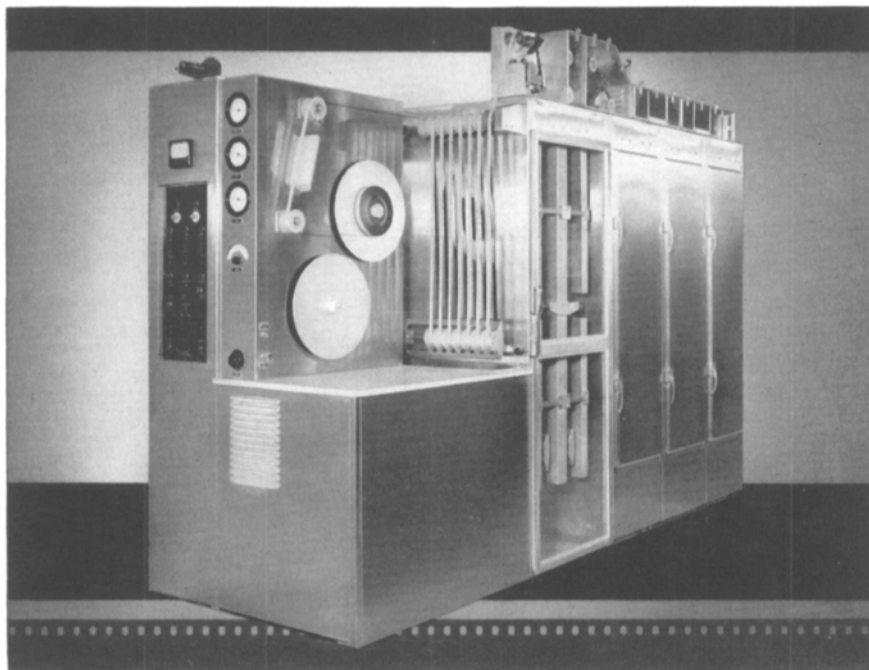
Textbook on Mechanized Information Retrieval

By Allen Kent. Published (1962) by John Wiley & Sons, Inc., Interscience Division, 440 Park Ave. South, New York 16. 6 by 9 in., 268 pp., illus. diagrams, index, Price \$9.50.

Joseph Henry, in the 1851 Report of the Smithsonian Institute, said, "... Unless this mass of additions to the sum of human knowledge be properly arranged, and the means furnished by which its contents may be ascertained, literature and science will be overwhelmed by their own unwieldy bulk. Who is desirous of enlarging the bounds of human knowledge should be acquainted with what has previously been done; by the use of well designed indexes of subjects ..."

Over one hundred years later, we are just beginning the scattered use of mechanized catalogs of literature on punched cards or tape, film and magnetic media to attack the problem. This book is an elementary text, for students of Western Reserve University, on the general principles of machine retrieval. The physical tools and gadgets are described, but not too much emphasized. Some of the devices

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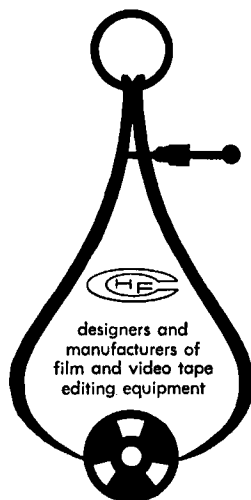
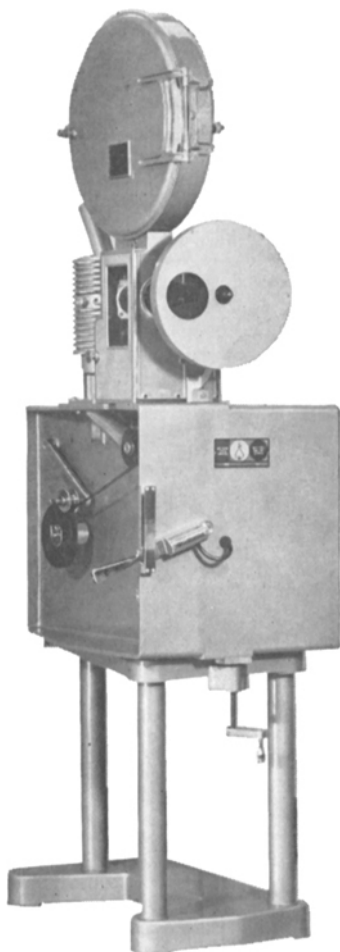
The projector is a converted front shutter Simplex with a two pin intermittent. 16mm or 35/32 film runs at a speed of 144 ft. per minute while 35mm film runs at a speed of 165 ft. per minute.

1. A variac controls the light intensity.
2. A 500 watt lamp is used for 16mm and a 1,000 watt for 35mm (a blower is used to cool the lamphouse).
3. A 2½ inch projection lens is furnished with each unit.
4. A start-stop lever controls the power to the lamp and motor.
5. The magazine and take up core takes up to 3,000 ft. of film.
6. Upper guide rollers are made to handle the film from either direction of the feed reel.
7. A free wheeling take off flange is provided in the magazine.
8. A lamp near the takeup reel permits hand inspection of the film prior to takeup.

NOUVEAU

Le projecteur contient un obturateur Simplex antérieur transformé avec deux clavettes intermittente. Les films de 16mm ou 35/32 tournent avec une vitesse de 144 pieds à la minute, tandis que les films de 35mm tournent avec une vitesse de 165 pieds à la minute.

1. Le regulateur de voltage d'intensité d'eclairage.
2. La lampe de 500 watt est nécessaire pour les films de 16mm, et de 1000 watt, pour les films de 35mm (un ventilateur est mise pour rafraichir la chambre de la lampe).
3. L'objectif de 2½ est installé.
4. La manette de mise en marche et d'arret controle en meme temps la lampe et le moteur.
5. La boite de films avec noyau peut contenir 3000 pieds du films.
6. La roue supérieure est construite de manière de recevoir le film dans les deux directions, nourrie par la bobine centrale.
7. Une roue est installée pour libérer rapidement le film de la boite.
8. La lampe se trouve pres de la bobine recepteuse, et donne toute facilité pour inspecter le film a main dans le projecteur.



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1. Controllo manuale della luminosità della lampada.
2. Lampada di 500 watt per 16mm e di 1000 watt per 35mm.
3. Obiettivo di proiezione di 2½".
4. Maniglia per controllo di motore e lampada di proiezione.
5. La cassetta porta pellicola puo contenere 3000 piedi.
6. I rulli superiori di guida sono costruiti per operare con film proveniente di ambati della bobina svolgitrice.
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1. Un reostato controla la intensidad de la lampara de proyección.
2. Para 16mm se usa una lampara de 500 watt, y una de 1000 watt para 35mm (un chorro de aire ventila las lámparas en ambos casos).
3. Cada unidad está provista de un lente de proyección de 2 pulgadas y media.
4. Una palanca de control opera el motor y la lampara simultáneamente.
5. Capacidad de proyección: rollos de hasta 3000'.
6. Los rodillos de guía superiores operan con la película en ambas direcciones.
7. La tapa de la bobina de carga es desenroscable.
8. Una lámpara ubicada junto a la bobina de toma permite la inspección manual de la película antes que se rebobine en la bobina superior del proyector.