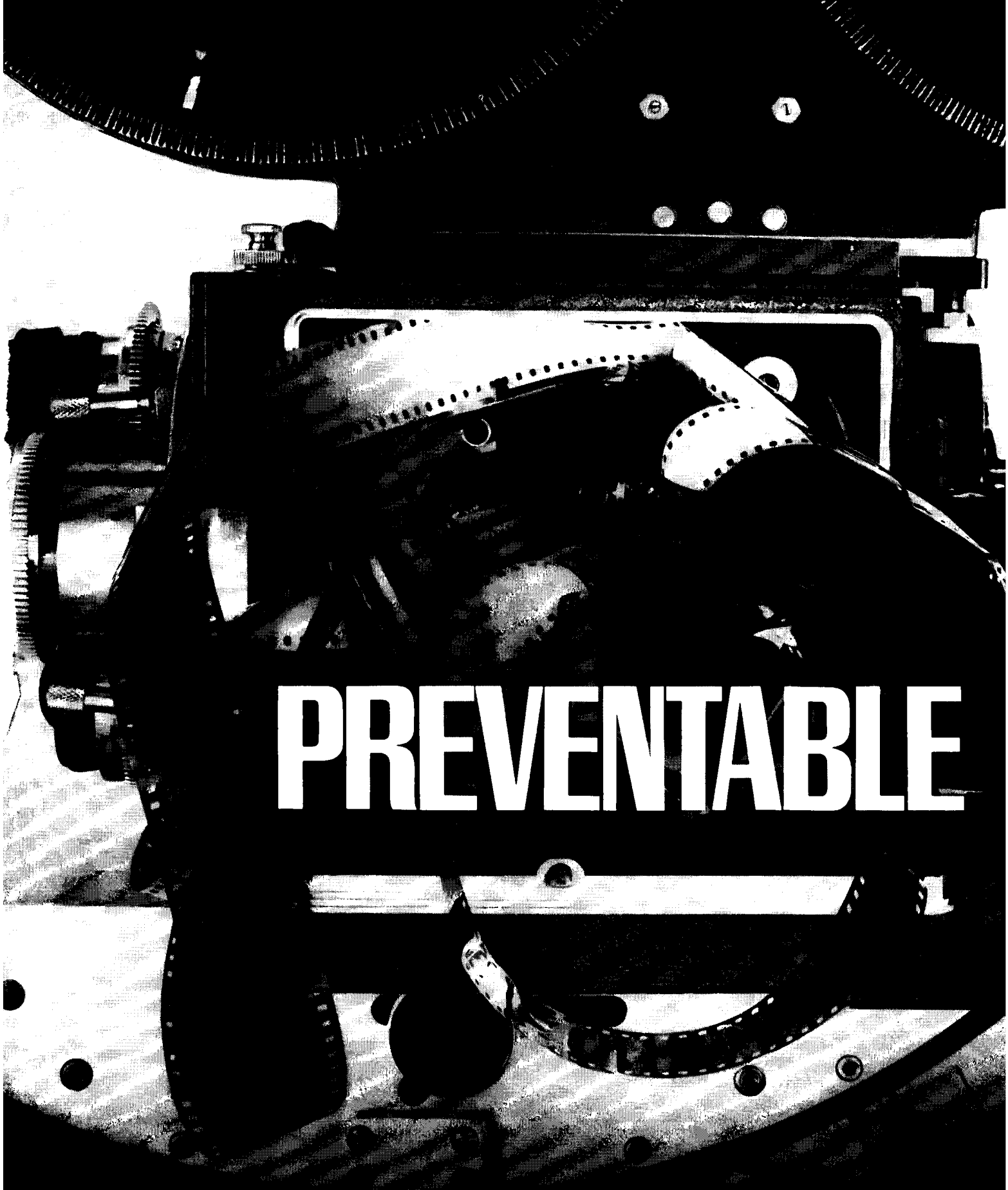
Mathematical Handbook for Scientists and Engineers: Definitions, Theorems and Formulas for Reference and Review (2d. ed.), by Granino A. Korn, presents a concise, comprehensive and connected survey of reference material. The most important formulas and definitions have been collected in easily read tables and boxed groups permitting rapid reference and review. The new edition has been substantially enlarged and the original material has been revised and expanded. Completely new sections deal with z transforms, the matrix notation for systems of differential equations (state equations), representation of rotations, mathematical programing, optimal-control theory, random processes and decision theory. The book contains 1095 pages, plus index, and is illustrated. It is available from the publisher, McGraw-Hill Book Co., 330 W. 42 St., New York, N.Y. 10036, at a price of $25.00.

System/360 Assembler Language, by Donald H. Stabley, is described as a teaching aid for programing instructors, a text for student programers and a reference manual for skilled programers. Mr. Stabley, an Eastman Kodak systems analyst, states in the introduction that in "grasping the concepts of this language, the programer . . . becomes increasingly aware of the concepts of the hardware itself and the enormous scope of the techniques in unique programing available to him." The publisher is John Wiley & Sons, Inc., 605 Third Ave., New York.

The Soviet Journal of Optical Technology, the principal publication of the Vavilov Optical Research Institute, Leningrad, is translated for the Optical Society of America (OSA) by the American Institute of Physics, 335 E. 45 St., New York, N.Y. 10017. Subscriptions are available at $25 annually in the United States, Canada and Mexico ($12.50 for OSA members). Elsewhere, annual subscriptions are $26 and $13.50 for OSA members. The journal publishes articles and brief communications describing original work, as well as reviews of technical progress and occasional translations dealing with optical science and technology. It reports on new instruments for astronomy, spectroscopy and spectrophotometry, electrooptics and optoelectronics, geodesy, photometry and colorimetry, microscopy, refractometry and nephelometry, sensitometry, optical measurement and control, as well as photography (still and motion-picture cameras and projectors). The journal also presents articles on optical design, technology of optical manufacturing and properties of optical glasses and crystals. Editor-in-Chief of *Soviet Journal of Optical Technology* is A. L. Nikitin. The Assistant Chief Editor is A. A. Lebedev and the Scientific Editor is E. P. Semenov.



The Record, a hardcover book containing papers presented at the IEEE 9th Annual Symposium on Electron, Ion and Laser Beam Technology, is available from the publisher, San Francisco Press, Inc., 255 12th St., San Francisco, Calif. 94103, at a price of $20 ($21 for California purchasers). All of the papers (about 50) presented at the symposium appear in the *Record* except for a special lecture given by Dr. L. Maron, of the National Bureau of Standards, on the early history of the electron microscope, which will be published separately, by San Francisco Press, as a monograph.

The RCA Select-a-Lesson (you simply dial a number) is described in a 16-page illustrated brochure available from Radio Corp. of America, Instructional Electronics Dept., Camden, N.J. 08102. The Select-a-Lesson is operated by the student who dials a request for a particular lesson. The dial pulses are received by the control equipment which activates the correct lesson source and relays the lesson back to the student. When the student has finished with the lesson he "hangs up." This signals the control equipment to shut off the lesson source which then automatically returns to the start position where it is ready to play again for the next student requesting its program.

Professional cosmetics and make-up supplies are listed and described (including price) in leaflets available from The Research Council of Make-Up Artists, Inc., 52 New Spaulding St., Lowell, Mass. Also, news items about new products are available in *The Professional Make-Up Artist*, a leaflet published bimonthly by The Research Council of Make-Up Artists. One of the newest cosmetic aids is Tatu, a decal-type of tattoo which won't wash off with water. The tattoos—flowers, animals, abstract designs, etc.—are made in France and distributed by the Huckleberry Tomorrow Co., of New York.

Clearinghouse Publications

The publications listed below are available from Clearinghouse, U.S. Department of Commerce, Springfield, Va. 22151. Unless otherwise noted each report is $3.00 (microfiche 65 cents).

For the convenience of the reader, titles and brief descriptions of the publications have been grouped under eight categories.

Acoustics

AD-657 185, *Subharmonic Generation in an Acoustic Fabry-Perot Interferometer*, J. A. Bamberg, 50 pp. Study of subharmonic generation in an acoustic Fabry-Perot cavity to determine: (1) if the subharmonics are at a cavity resonance, (2) the nature of the acoustic pressures of the fundamental and subharmonics at threshold, (3) what factors influence the thresholds for various subharmonics, and (4) how the type and thickness of the reflector affect subharmonic generation.

AD-661 448, *Quarterly Progress Report No. 87*, H. J. Zimmermann, et al., MIT Research Laboratory of Electronics, 257 pp. Research on General Physics, Plasma Dynamics, and Communication Sciences and Engineering for the three-month period ending August 31, 1967.

Automation

AD-657 190, *Quantitative Methods in Computer-Directed Teaching Systems*, R. D. Smallwood, et al., 171 pp. Formulates in quantitative terms the decision problem associated with the design of a computer-directed teaching system. The formulation is then used to direct a theoretical inquiry into some of the aspects of this problem that are relevant to the design of a quantitative decision process within a practical teaching system. The report also includes a discussion of possible future research.

Communications

AD-658 530, *Syllable Coder Communication System*, E. S. Rogers, et al., 199 pp. Research to increase resolving power of a 200 Speech Element Communication System. Report covers following subjects: (1) improve recognition of initial voiced consonants; (2) improve voice-unvoiced sound detection; (3) improve intrasyllabic pause detection; (4) investigate fine structure speech features; and (5) use fine structure analysis to improve recognition of final /th/ and /f/ and initial /t/ and /k/. Includes a description of several special analyzers built to effect the desired improvement.

Look at the Difference

Unretouched photographs of 21" studio monitor. Photographic data: Rolleiflex C-3, CPS color negative film — ASA 100, 1/15 second at f/5.6

...after 3M Color Dropout Compensation

Here's what 3M's Color Dropout Compensator does for your VTR reproduction:

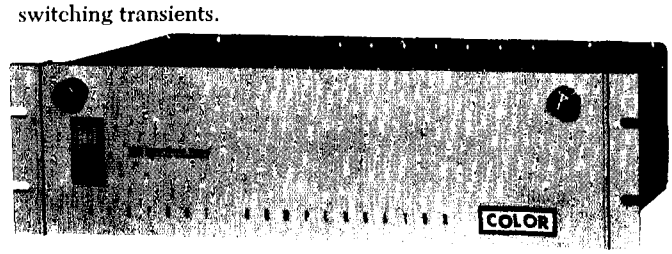
Look at this unretouched composite photograph of a studio monitor. It shows, at the left, a videotape playback with 13 electronically recorded-in dropouts. These dropouts were created by a special test generator which attenuates the RF level to the record driver. On the right, these dropouts have been completely restored by the DOC.

The black dropouts shown on the left are followed by a complete loss of color-lock in the direct color recovery equipment. Since these dropouts include horizontal sync and color burst, they cause transient color flashing not ordinarily attributed to the dropouts themselves. Even shallow dropouts can create a similar problem due to loss of side-band information.

Only the 3M Color DOC corrects all these effects.

After compensation, note the precise color match and complete freedom from switching transients. Also, the dropout disturbance to the time correction unit has been eliminated. Proc amp and servo stability are improved to such a degree that it is possible to play this tape in full intersync or pixloc mode.

In the compensated half of the photo, compare the replacement material with the original signal two scan lines above the dropout due to a *complete* frame being photographed. Try to find the 13 switching transients.



The 3M Color Dropout Compensator is the only system available that can provide proper color and luminance replacement. For details write for the booklet, "Compensating for Dropouts in Color Television Recording."

Mincom Division 3M COMPANY
300 SOUTH LEWIS ROAD • CAMARILLO, CALIFORNIA 93010

See it at NAB

AD-659 449, *Development of a General Prediction Method for Transcription Error Rate*, R. L. Hawley, et al., 108 pp. Develops a General Prediction Method (GPM) for estimating human error rate in a data transcription system. Report indicates nature and relative importance of relationships between error rate and significant determinants.

AD-659 293, *Evaluation of a High-Gain VHF/UHF Communication Facility*, L. Pearson, 26 pp. Results of tests to determine performance capability of a high-gain VHF/UHF communications facility located in the Hawaiian Islands. Report also includes tests to determine characteristics of the antenna system and describes the high-gain communications system, instrumentation, and procedures used in the tests.

AD-659 454, *The Public Interest in Public Television*, S. S. Alexander, 51 pp. Discusses various arguments supporting public TV.

AD-661 189, *A New Technology for Electrically Coating Copolymers Onto a Metallic Substrate*, E. J. Fisher and W. L. Wheelwright, 31 pp. The technology is expected to have application in the improved construction of multipair telephone cables, CATV cables, and supported messenger cables, and it is adaptable to existing in-line manufacturing-procedures.

AD-661 577, *The Lincoln Experimental Terminal*, J. W. Craig, et al. Gives a general description of LET-1, a satellite communications ground terminal, as well as an overall description of the signal processing system. The report discusses equimental realization of the signal processing system and utilization of a general-purpose computer as an element of the signal processing system. Two specific subsystems, the sequential decoder and the vocoder, are also described.

Data Processing

AD-658 429, *Digital Computer Simulation: Modeling Concepts*, P. J. Kiviat, 62 pp. Part of a continuing series of reports on the techniques of digital computer simulation. This report discusses the design and construction of simulation models, and relates simulation as a technique to current problems in simulation technology.

AD-659 358, *Computer Simulation Programing Languages: Perspective and Prognosis*, P. J. Kiviat, 23 pp. Discusses theory of simulation modeling and programing. Describes design aims and facilities of several "second generation" simulation programing languages, and comments on a probable future for simulation languages and simulation programing.

AD-660 395, *Fundamentals of Computer Engineering*, P. M. Belash, 464 pp. (Translated from Russian.) Contains fundamental principles of analog and grid models and digital devices. The section on digital devices includes computers with programed control, digital analyzers, and control computers. Problems of analog-code transformation and the combining of computing devices are considered.

AD-661 539, JOSS: *Central Processing Routines*, J. W. Smith, 188 pp. Concentrates on the design of the language and central-processing routines of JOSS. Material is presented in a narrative style augmented by flowchart representations of some of the principle routines.

AD-660 014, *The ALCOR ILLINOIS 7090/94 Post Mortem Dump*, R. Bayer, et al., 22 pp. A post mortem dump technique for programs written in Algol-60 is described in a study conducted at the University of Illinois.

PB-176 531, *PLANIT: A Flexible Language Designed for Computer-Human Interaction*, S. L. Fengold, 20 pp.

PB-176 771, *Machine Utilization of the Natural Language Word "Good,"* K. M. Colby and H. Enea, 11 pp. Describes the effect of natural language input on an interviewing computer program using the term "good" as an example. The program utilizes syntactic and semantic information to general relevant plausible inferences from which statements for a goal-directed man-machine dialogue can be constructed.

AD-662 878, *Logic, Logical Design and Digital Circuits*, H. K. Scherer, 103 pp. Describes methods for designing digital circuits that have a minimum number of active elements. The design methods employ the mathematics of logic.

PB-176 765, *The Use of Transition Matrices in Compiling*, D. Gries, 63 pp. Defines the transition matrix technique, illustrates its efficiency, and describes an algorithm which generates a transition matrix from a suitable grammar. The report also describes other uses of transition matrices besides the usual ones of syntax checking and compiling.

Information Technology

PB-175 926, *Computer-Aided Indexing of a Scientific Abstracts Journal by the UDC With UNIDEK: A Case Study*, M. Ru sell and R. R. Freeman, 31 pp. Case study of the adoption by Geoscience Abstracts of UNIDEK, a computer-compiled systemic subject index based on the Universal Decimal C'assification (UDC) of the International Federation for Documentation (FID).

AD-659 762, *OAR Index of Research Results 1965–1966*, 568 pp. Includes a bibliography of research results organized into sections by monitoring organizations and supported by a corporate-author index, author index, contract/grant-number index, project-number index, AD-number index, and a KWIC (Keyword-in-Context) index.

AD-660 551, *Experiments With a Powerful Parser*, M. Kay, 33 pp. Describes a sophisticated computer program for the syntactic analysis of natural languages. The new program can analyze sentences that utilize context-sensitive grammars and grammars of a class very similar to transformational grammar.

PB-175 959, *Technology, Information and Organization: Information Transfer in Industrial Research and Development*, R. S. Rosenbloom, 252 pp. Studies means by which organizations and highly-trained individuals acquire knowledge and make use of it to create new knowledge and new technology.

AD-661 660, *Library Fiche: An Introduction and Explanation*, A. Teplitz, 14 pp. Describes the need for a new microfiche reduction ratio to provide more satisfactory microforms of books and periodicals for libraries of the future.

AD-661 657, *Interactive Displays for Document Retrieval*, H. Borko and H. P. Burnaugh, 28 pp.

PB-176 469, *Development of an Integrated, Computer-Based Bibliographical Data System for a Large University Library*, H. H. Fussler and C. T. Payne, 48 pp.

PB-176 152, *File Organization and Search Strategy Using the Universal Decimal Classification in Mechanized Reference Retrieval Systems*, R. R. Freeman and P. Athertom, 37 pp. Discusses practical design considerations for use of the Universal Decimal Classification (UDC) in a mechanized retrieval system. Describes possible use of UDC as query language in a typical retrieval system where the user interacts directly with the computer-stored document reference file.

AD-661 001, *The Making of TEST, Thesaurus of Engineering and Scientific Terms*, J. H. Heald, 162 pp. Final report of Project LEX describes the background and building of TEST.

AD-660 081, *Easy English, A Language for Information Retrieval Through a Remote Typewriter Console*, M. Ribinoff, 15 pp.

PB-176 536, *Information Storage and Retrieval*, G. Salton, et al., 346 pp. Deals with search and retrieval experiments undertaken during the period June 1966–June 1967 and with evaluation results obtained by applying the SMART System to document collections in computer science, documentation and aerodynamics.

Optics

N67-38262, *A Description of Four Fast Slitless Spectrographs*, G. A. Harvey, 39 pp. Gives description, comparison and short dis-

cussion of four fast slitless spectrographs for use in low-light-level research.

AD-661 074, *Effects of Laser Radiation on Lead Sulfide Photoconductors*, M. D. Stoller, 28 pp.

N67-37699, *Lasers and Masers: A Continuing Bibliography With Indexes*, NASA Scientific and Technical Information Div., 450 pp. A selection of annotated references to unclassified reports and journal articles introduced into the NASA Information System during the period February 1966–April 1967.

AD-662 637, *Carbon Dioxide and Molecular Beam Lasers*, 160 pp. Articles by various USSR authors translated from the Russian. Covers material published in Soviet literature on CO_2 lasers and concepts peculiar to this type of quantum electronic device.

NBS TN-418, *Radiometric Methods for Measuring Laser Output*, D. A. McSparron, et al. 18 pp., paper copy 15 cents, microfiche, 65 cents.

AD-657 589, *Research and Development of Cathodoluminescent Phosphor With High-Intensity Emission*, J. W. Gilliland and F. G. Ullman, 143 pp. Describes synthesis of a cathodoluminescent phosphor with greatly increased ultraviolet emission efficiency in the spectral region between 350 and 400 nm for use in writing on photochromic of Kalvar media.

AD-663 143, *Variation of Refractive Index During Laser Operation*, J. R. Izatt, et al., 30 pp. Determines effect of optical pumping on the index of refraction of pink ruby in the region of anomalous dispersion associated with the R_1 absorption doublet. A high-resolution interferometric technique is used to make refractive index measurements at a sequence of discrete positions across the spectral region of interest.

AD-663 271, *Vibration Analysis by Holographic and Conventional Interferometry*, M. A. Monahan and K. Bromley, 44 pp. Describes and compares two optical techniques of vibration analysis using (1) holographic interferometry and (2) modified Twyman-Green interferometer.

Printing, Graphic Arts, Photography

AD-659 807, *Graphic Data Handling Techniques*, United Aircraft Corp., 233 pp. A study to improve the planning, acquisition, photogrammetric, cartographic and production printing functions of a total system concept.

PB-176 464, *A Sequentially Modulated Ruby Laser System for Transmitted and Scattered Light Dynamic Photoelasticity*, R. E. Rowlands, 101 pp.

AD-662 889, *Deformable Film Recording Study*, J. E. Bigelow, 92 pp.

Space Technology

N67-37303, *Isothermal and Isophotic Atlas of the Moon: Contours Through a Lunation*, J. M. Saari and R. W. Shorthill, 192 pp. Gives isothermal and isophotic contour charts for 23 phase angles; location information is provided by overlaid standard orthographic grids.

AD-662 227, *Observed Absence of Energetic Electrons and Protons Near Venus*, J. A. Van Allen, 22 pp.

N67-38262, *A Description of Four Fast Slitless Spectrographs*, G. A. Harvey, 39 pp. Gives description, comparison and discussion of four fast slitless spectrographs for use in low-light-level research.

N67-38369, *Lunar Orbiter II: Photographic Mission Summary*, Boeing Co., Seattle, Wash., for NASA, 94 pp.

N67-40564, *1967 Summer Study of Lunar Science and Exploration*, Univ. of Calif., Santa Cruz, for NASA, 405 pp.

N67-35740, *Lunar Orbiter I: Extended-Mission Spacecraft Subsystem Performance*, Boeing Co. for NASA, 62 pp.

Marconi Instrumentation, a technical information magazine dealing with electronic instruments for telecommunications and industry, is available upon request from Marconi Instruments Ltd., St. Albans, Hertfordshire, England. Editors are P. M. Ratcliffe and J. R. Hayward. A number of illustrations are included in each issue. Contents of Vol. 11, No. 1 (April 1967) include papers by E. C. Crawford ("Inductance measurement at audio frequencies"), A. J. French ("Increased sensitivity for oscilloscope TF 2201") and others.

A number of electronic, mechanical and optical accessories are illustrated and described in Bulletin ACC-1167 available from Red Lake Laboratories, Inc., 2971 Corvin Dr., Kifer Industrial Park, Santa Clara, Calif. 95051. The accessories are primarily intended for use with Hycam equipment but several products having general application are included.