PHOTOINSTRUMENTATION

A year of progress in photoinstrumentation was highlighted by the 12th International Congress on High Speed Photography held in Toronto, Canada, from 1-6 August 1976, at the Inn-on-the-Park. The Congress was sponsored by the Canadian Science Films Association and supported by the National Research Council of Canada, the Ontario Science Center, Society of Motion Picture and Television Engineers, Society of Photo-Optical Instrumentation Engineers, the Canadian Secretary of State, the government of Ontario and numerous individual firms. Attendance consisted of 18 national delegates with a total registration of approximately 160 people and 20 exhibitors from the United States, Canada, United Kingdom, France, and Switzerland. National Delegates were present from Australia, Argentina, Canada, France, Hungary, Israel, Japan, Korea, Netherlands, Spain, Sweden, Switzerland, Taiwan, United Kingdom, USA, USSR, and Venezuela. The Congress was the first to use the term "Photonics" in its title and, in general, papers described electrooptical cameras operating in the ultra-high-speed range with image-converter streak cameras dominating the field. Subnanosecond, picosecond, subpicosecond, and even femtosecond intervals were referred to by many authors.

New x-ray techniques were presented by several authors describing characteristics of flash x-ray sources, subpicosecond x-ray streak camera development for laser fusion, x-ray spectral picosecond studies and laser plasma diagnostic techniques.

Approximately 100 papers were presented throughout the week and a banquet was held Friday night with entertainment provided by several different dance groups including Spanish, Croatian, Ukranian, and Slavic.

The Shardin Gold Medal was presented by Dr. R. Shall to Dr. Martin Richardson of the National Research Council of Canada for his contributions to the field of high-speed photography. The first Coleman Memorial Award in High-Speed Photography was presented by K. Cooper to John Hadland of John Hadland, Ltd. for his many contributions to the development of equipment and techniques in high-speed photography.

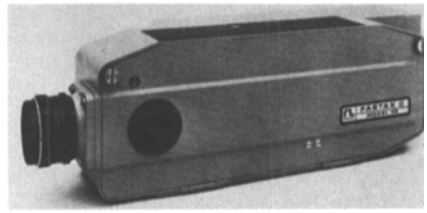

Fig. PI-1. Fastax II high-speed camera.

The winner of the SMPTE Photosonics Achievement Award was announced as Prof. A. S. Dubovik of Moscow, USSR, and the Congress was advised that since Dr. Dubovik was not present, the award would be presented to him in person by SMPTE President, Ken Mason when he visited Moscow early in October 1976.

Professor Tsuneyoski Uyomura, the Japanese national delegate, invited the 13th International Congress to be held in Tokyo, Japan in 1978.

High-Speed Cameras

Redlake Corp. announced a new compact 16mm 30-m Model 46 Fastax II high-speed camera with frame rates of 100 to 6000 pictures/s (Fig. PI-1). The Fastax II is the newest addition to the Redlake line and is particularly suited to outdoor instrumentation and high G environments. Convenience and economy are enhanced by the availability of several lens adapters affording the use of Pentax, Fastax, or Ilex lenses.

Robert D. Shoberg, manager of camera products for Infrared Industries, Santa Barbara, Calif., announced a new 120-m, 16mm high-speed motion picture camera, identified as Photec IV capable of 100-10,000 frames/s. The Photec IV system is said to produce rock-steady pictures over a flat field and features a fully color corrected optical system capable of producing outstanding color pictures. A 50-mm Bronica Zenzanon $f/2.8$ lens with long back focus enables the use of a 1/1.5 disc shutter which, according to the designer, affords an exposure gain of three to four times that of previous rotating prism systems. The new Photec IV system includes LED timing lights and electronic flash synchronization. Auxiliary lenses have focal lengths of 40mm, 100mm, and 150mm.

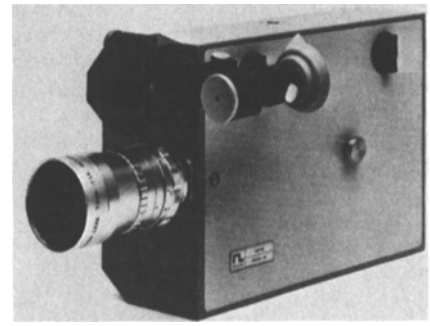

Fig. PI-2. Pal/Locam reflex viewfinder (Photographic Analysis, Ltd.)

Other Equipment

Photographic Analysis, Ltd., Don Mills, Ontario, announced a new Model 50-0158 Pal/Locam reflex viewfinder for continuous through-the-lens viewing and focusing (Fig. PI-2). This system can be retrofitted to the Redlake Locam cameras having an internal reflex optical system. The system has proven invaluable for sports, photomicroscopy, tracking applications, and can be used with most C-mount lenses.

The Pallite VIII lighting unit, manufactured by Photographic Analysis, Ltd. for use with high-speed photography has been gaining popularity therefore a new fan cooled model was developed to permit continuous burning.—*A. Earl Quinn*, Vice-President for Photoinstrumentation Affairs

EDUCATION

The events of 1776 were recorded in the printed word and paintings. Reenactment is needed if one is to see what happened. By 1876 the photograph was available to make an additional factual record. In our Bicentennial year, 1976, both motion pictures and television were recording the events in sound and color. Those recordings will provide tomorrow's history and, increasingly, the scholar of tomorrow will turn to these tapes and films.

This is but one more bit of evidence that the motion picture and television are fast becoming, not only an adjunct, but an integral part of education.

However, this development has been underway for a number of years while this Progress Report addresses itself to the specific year of 1976. It was a banner year in terms of sales or volume of production, but education will share in the improved technologies discussed in other sections of this report.

There is one event worthy of special mention in an overview of the year — on 19 October 1976 a new copyright bill was signed and became law. It is the first major revision of copyright law since 1909. Its full impact will not be known until usage and court decisions clarify many points, but it seems probable that education will be better served under the new law.

Copyright Law

The new copyright law of 1976 will become effective on 1 January 1978.

It was long overdue. One has only to remember the state of the art of motion pictures in 1909, the date of the last major

revision. Pilferage via magnetic film was nonexistent until the 50s. However, even in recent years the advocates were poles apart. At one extreme was the position that any copying of a copyrighted work was acceptable provided it was to be used for an educational purpose — a viewpoint that would spell doom for merchandising potentials and, indirectly, for production funding. At the other extreme was a strict and unyielding adherence to exclusive rights under the copyright — in practice this position would preclude any spontaneous use of current material.

The new law is in step with the rest of the world with the copyright duration running for the author's lifetime plus fifty years. If a corporation or institution holds the copyright, the term is for seventy five years. The old arrangement of common law protection for unpublished material and copyright protection for published material gives way to the new law's provision by which an unpublished work may be copyrighted. The old common law arrangement will no longer be valid. An American Archive for Television and Radio will be set up in the Library of Congress.

One of the key provisions of the new law gives statutory recognition to the fair use doctrine. This doctrine has emerged via numerous court decisions, primarily those dealing with the printed word.

The doctrine of fair use is now extended to audiovisual, motion-picture, and television areas. Some details are supplied, but only court decisions, revisions, and interpretations can round out and clarify the law. This will take a long time.

U.S. Postal Service

The United States Postal Service's move toward automation and mechanization led to the development of a set of proposed packaging standards. The standards seek to make packages compatible with the capabilities of automated machinery in the 21 bulk mailing centers scattered over the country.

The current film packages, plastic cases, or fiber cases would be nonconforming under these proposed standards and a postal surcharge would be imposed. This is a major concern since our entire 16mm educational film system is largely based on rentals and a large volume of shipments is an integral part of the system.

The National AudioVisual Association (NAVA) took the initiative with James Thompson, Director of Services, of hosting a meeting with representatives from the industry and from the Postal Service.

The following excerpt is from a NAVA news release following that meeting:
"Key provisions of the draft standard would require that: (1) straps on film containers be secured so not more than ½-in of the strap ends hang loose; (2) plastic, metal, and similar hard cases be packaged, treated, or otherwise prepared so they are able to slide more slowly on a smooth, hard surface similar to a domestic-class fiberboard box of approximately the same size and weight; and (3) strapped or plastic film cases which do not meet these requirements be accepted only with the payment of a surcharge for handling. No timetable has been set for the imposition of the changes."

The same release estimates the number of cases in use at somewhere between 25 and 40 million and a replacement cost that could go over $100 million.

The U.S. Postal Service has agreed to delay publication of the proposed standards pending further study.

Standards for Educational Equipment

The year 1976 saw continued activity in the development of standards for equipment and materials, hardware and related software for use in education. Specific activity has continued in the United States within the framework of American National Standard Institute (ANSI) PH7 and on the international scene under the International Electrotechnical Commission (IEC) TC60. Related activity has been included in the work of other ANSI committees as well as in certain of the International Standards Organization (ISO) committees.

In the United States, PH7 and its working groups held two full meetings during 1976, 30 March through 1 April in Anaheim, Calif. and 28-29 September at Oak Brook, Ill. While much of the activity was aimed at specific needs in the United States relative to projectors, audio recording or reproduction equipment, and related items specific to the needs of education, it is significant that increasing concern and energy was focused on efforts to bring U.S. National Standards and International standards more nearly into agreement. This work has been particularly fruitful so far in terms of standards for audiocassette tape recorders for specific use in education.

The Technical Advisory Group of the IEC/SC60C was quite active during the year. This committee is responsible for helping to represent the needs and positions of the educational users and suppliers in the United States through the Technical Advisor and the U.S. National Committee of the IEC.

The Advisory Committee met on 5 April in Los Angeles following the PH7 meetings in Anaheim. It was particularly valuable that William Koeter of Philips, Eindhoven, Netherlands, the Secretary of SC60C was able to attend this meeting.

IEC Technical Committee 60 and its various subcommittees held an international meeting 9-14 August in Ottawa, Ontario, Canada. As might be expected, the United States had a large, very good delegation at this meeting and the results were very fruitful in terms of both greater understanding and good progress on documents clarifying this understanding.

Progress can be reported in several specific areas where it is anticipated that there will be good agreement on both national and international standards, among them symbols designating functions and controls on equipment; safety considerations for equipment; and standard methods for measuring performance. It should be noted, however that because the needs of education are so broad and cut across many disciplines, much of the work involved is not the writing of new standards but the finding, evaluating as to suitability, selecting, and promoting the use of existing documents wherever possible.

Audiovisual Media in Education

Money or lack of it was the key to use of audiovisual media in education during 1976. That year marked the most drastic change in educational media programs in recent memory. It was the first year in which the entire school audiovisual field suffered a fiscal setback.

Spiraling costs have forced school boards to reduce discretionary expenditures in favor of those obligated by law or contract. Teachers' salaries are the largest segment of such fixed costs. Personnel cuts also affected instructional media programs. In some school districts even the audiovisual director's position was eliminated.

The *Hope Reports* preliminary study of the purchase of AV products in schools in 1976 estimated that expenditures dropped 15% to approximately $450 million. Spending by colleges and universities remained about level with that for 1975 at $110 million.

The only software product lines that did not decrease were those of multimedia kits and 2 × 2 slides. Purchases in 1976 were up slightly compared to those of 1975. Sales of 16mm films were off approximately 5%. The most surprising sales record was that of filmstrips. Sales fell more than 10%. Even increased use of sound filmstrips was not reflected in slipping sales of this product. The silent filmstrip is fading from use.

It is feared by those in the software supply business of the media industry that hard times will last for several years. All the large distributors of AV media have made major cuts in personnel to reduce costs. Some have trimmed their catalogs of older titles which are no longer selling well. Some distributor/publishers are cutting back the introduction of new titles. In turn this move will reduce production.

Most AV hardware sales to schools have been down. Only sales of low-cost items such as 2 × 2 slide projectors, especially in rear-screen format, are doing well. Television and video equipment sales are practically nil.

Funds for educational research are the most disappointing aspect of the current cutback in expenditures for AV media. Many potentially important new systems designed to improve instruction will probably not receive the continued attention they require in the development stage. An

example is computer-assisted instruction.

Leaders in the audiovisual field have expressed disappointment that studies on the cost effectiveness of AV media in education have not been adequately pursued. It can be expected that more effort will be put into studies which, we hope, will show the dollars-and-cents benefits of media in education.

In other areas of use, sales of audiovisual systems and products to markets other than education were all up in 1976. Business and industry led by spending at least 10% more than in 1975. Health, science, religion, community agencies and even government spending were up. The latter, however, was up marginally as federal government spending reached a plateau while that of state and local government agencies rose sharply.

As 1976 began, a new mood was permeating much of our country. The economy was not growing as it should. Inflation and unemployment continued to plague society and government functioning within it. At year end, local governments especially were tightening economic belts, thereby touching the life and pocketbook of every citizen.

How well AV will fare in 1977 is difficult to judge, but no industry can expect to go unchallenged in its ability to be cost effective materially as well as in its contribution to the knowledge and benefit of mankind.

ITV Use Shows Decline

According to a new educational media study, analysis indicates that hours devoted to ITV (instructional television) in 1974 have declined over the previous four years.

In 1970, 34% of the television hours of public broadcasting stations were aimed at the classroom. In 1974, the percentage of ITV hours had dropped to 29.5%. The percentage was reported to have dropped more sharply in 1975 although the actual statistics are not yet available.

Likewise, budgets for ITV have not been rising as much as those for public broadcasting. In 1973, $21.6 million was spent on ITV by 153 licensees operating 255 PB stations. In 1974, $23.9 million was spent for ITV, an increase of 10.6%. Total spending by all public broadcasting stations rose 14.3% over 1973.

The Public Libraries—An Expanding New Area of Film Distribution

More than any other new media resource, the 16mm film seems to have proved that public libraries can contribute significantly to the spread of new ideas through the use of nonprint materials (according to James W. Brown, author of *New Media in Public Libraries*). Based on a study of more than 250 public libraries nominated by 50 state librarians as being innovatively involved in new media activities, Brown's study concludes: "The reports of experience suggest that large numbers of public libraries in this country (are) dipping into film circulation and film showings in both 16mm and 8mm formats. Increased numbers of library users also appear to be interested in serious study of film as art and as a social document. And the study communication via individually produced experimental films also continues to attract library patrons — young and old alike — who seek to improve their own visual literacy and their capacity to interpret, understand, and experience the world around them."

GPN, Great Plains National Instructional Television Library, as a major distributor of videotaped educational material in the United States, reports a continuing rise in the use of the ¾-in videocassette. This is true in both their broadcast and nonbroadcast markets. In the broadcast area, elementary and some secondary programs predominate. In the nonbroadcast area use the college level is increasing the most rapidly. — *O. Steve Knudsen,* Vice-President for Educational Affairs