

Biographical Note

John I. Crabtree Retires From Kodak Research Laboratories

The internationally known authority on photographic chemistry, John Ickeringill Crabtree, retired from the Eastman Kodak Company on January 1, 1957. He was an Assistant Head of the Applied Photography Division of the Kodak Research Laboratories. He had joined the Laboratories in 1913, shortly after he completed his work in England for a Master of Science degree.

At a retirement dinner held on December 18, 1956, at the Monroe Golf Club, Pittsford, N.Y., his services to the field of photographic chemistry were extolled by members of the Laboratories' staff and by letters from his many friends throughout the world. Among the letters read at the dinner were a number from former officers of the SMPTE as well as members of the present Board of Governors.

Well-known for more than 35 years as an active member and Fellow of the Society of Motion Picture and Television Engineers, Mr. Crabtree has served on many committees, the Board of Editors, the Board of Governors and finally as President in 1930-32. His work on the Board has always been highly regarded by his associates. He played an important part in the establishment of the Society's *Journal* in 1930 and constructively built up the reputation of the *Journal* as one of the leading engineering publications of the world during his term as Chairman of its Editorial Board. During his two-year term as President of the Society, he actively supported the growth of the membership and improved the Society's financial position by the establishment of sustaining memberships within the motion-picture industry. He also encouraged a closer liaison with the Motion Picture Research Council, the American Standards Association, and other engineering organizations.

John I. Crabtree was born on March 27, 1891, at Clayton-le-Moors, Lancashire, England. He received his basic scientific training at Victoria University, Manchester, England, where he was granted a Bachelor of Science degree with honors in chemistry in 1912, and a Master of Science degree in 1913. He also passed the requirements of the Institute of Chemistry of Great Britain and Ireland, the leading professional chemical body in England, and was made a Fellow of that Institute in 1913.

In August 1913, Mr. Crabtree was employed by the Eastman Kodak Company at Rochester, New York, as a research chemist in the Kodak Research Laboratory, which had been founded in 1912 under the directorship of Dr. C. E. K. Mees. He founded the photographic chemistry department in 1913. From 1916 to 1938 he also was in charge of the motion-picture film developing department. As head of these departments, he was responsible primarily for research on photographic processing in all its aspects, including the evolution of processing formulas and systems, studies of the chemistry of development and fixation, the use of desensitizers, the causes and elimination of stains and markings on photographic materials, the

tinging and toning of lantern slides and motion-picture films, the corrosive effect of photographic solutions on photographic apparatus, tropical processing, silver recovery, compounding of package chemicals, storage of photographic records, effective methods of washing photographic materials, and the technique of motion-picture processing. On this last-named subject, to which he has devoted much of his attention, Mr. Crabtree has published 55 papers. He has also supervised research in the rapid processing of films and papers and in special methods of processing.

All told, he has been author and co-author of some 160 papers and has been granted 35 United States patents, covering a wide variety of subjects. His articles have been published in many countries and several have been reprinted as handbooks. He is coauthor with G. E. Matthews of two



books, *Herstellung Photographischer Lösungen* (W. Knapp, Halle, Germany, 1929), and *Photographic Chemicals and Solutions* (American Photographic Publishing Co., Boston, 1939).

While his interests have covered the range from the exposure of negative materials to the preservation of the finished photographs for archival purposes, his main field of work has centered on the operations of chemical processing and the methods and equipment with which it is carried out. The many papers on this subject have not only elucidated the chemistry of processing reactions but have provided complete specifications of materials, formulas and procedures for the many fields of practice. Other papers have dealt with measurement of the results of processing and the diagnosis of troubles with practical information on the prevention or remedy of faults in photographic records. His papers constitute the principal source of information on many of these subjects.

A number of Mr. Crabtree's papers have proved so useful to photographers in this country and abroad that they have been revised and reprinted many times. For example, his article "Stains on Negatives and Prints," originally published in 1921, has been in constant demand for thirty-five years as a primary reference on the subject.

A large proportion of the proprietary packaged chemicals sold by the Eastman Kodak Company are based on formulas

worked out under Mr. Crabtree's supervision. A particularly significant piece of research which he has carried out with important results concerns the chemistry of the stop bath and especially of the fixing bath. Recently very valuable work has been done in his department on agents for "sequestering" calcium and iron in developers, on single powder developers, on replenishment systems for developers, on stabilization processing, and on high temperature and rapid processing.

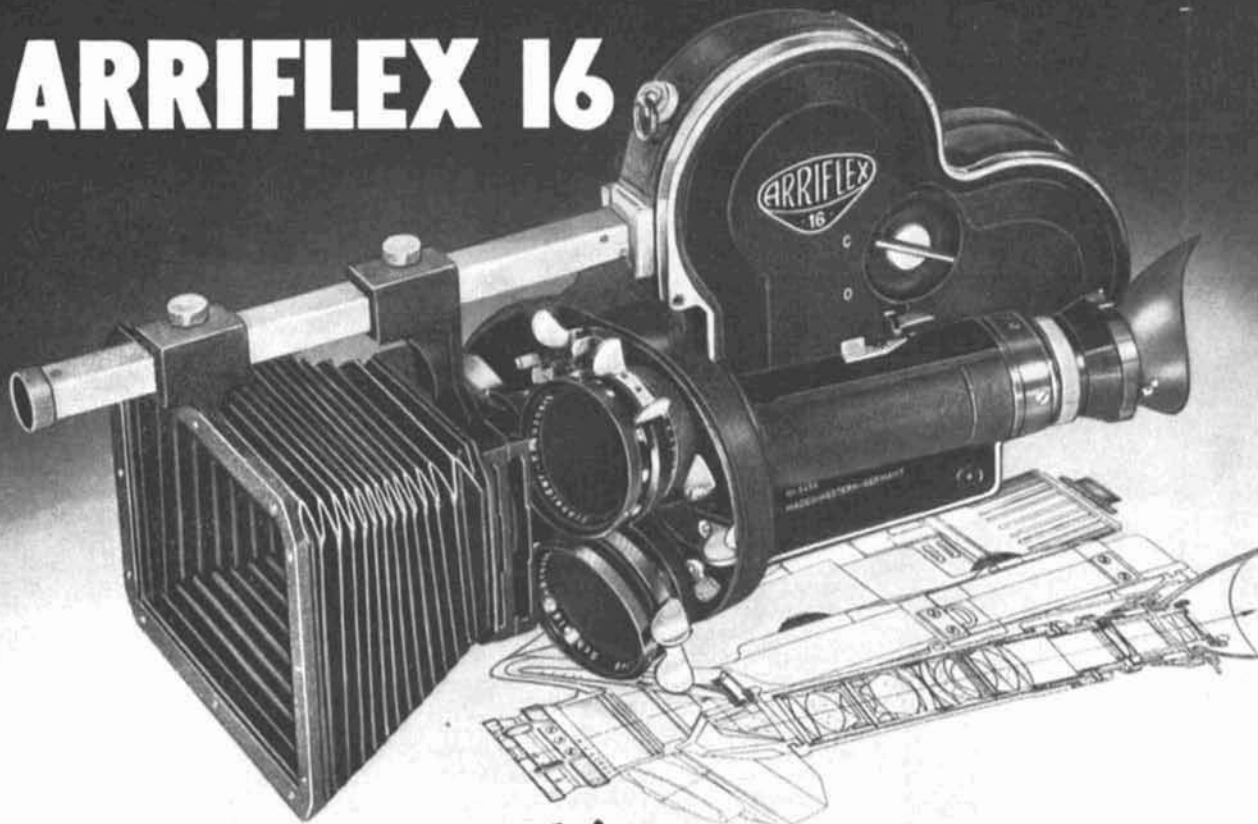
In the field of photographic equipment, Mr. Crabtree has shown leadership in fostering basic, practical designs for the application of photographic chemical and motion-picture processes. Such equipment includes portable apparatus for development of motion-picture film at normal and high temperatures, various motion-picture laboratory apparatus, such as timers, waxing machines, pneumatic squeegees, title-making apparatus, storage cabinets for motion-picture film, and rapid processing equipment.

Mr. Crabtree is a Fellow of the Royal Photographic Society (London), of the American Association for the Advancement of Science, the Society of Photographic Engineers, and of the Photographic Society of America. He is a member of the American Chemical Society, the Optical Society of America, and the Academy of Motion Picture Arts and Sciences. He is an Associate of the Oval Table Society (an honorary photographic society).

Numerous honors have been awarded to Mr. Crabtree for his research work. With Dr. M. L. Dundon in 1924 he received the Progress Medal of the Société Française de Photographie for outstanding research work in photography and for publication on the causes of fog in developers. In 1944 with G. T. Eaton and L. E. Muehler he received the Journal Award of the Society of Motion Picture Engineers for the most outstanding paper published in the *Journal* of the Society during the year 1943. Also in the year 1944 he was the recipient of the Henderson Award of the Royal Photographic Society for outstanding contributions to photographic processing. Then in 1950 his paper on "Rapid Processing of Films and Papers" was voted the most outstanding technical paper published in the *PSA Journal* for the year 1949, and for this he was given the first Journal Award of the Technical Division of the Photographic Society of America. In 1952, he was awarded the Gold Progress Medal of the Society of Motion Picture and Television Engineers "for his outstanding contribution in the fields of photographic chemistry, motion-picture processing and processing equipment." The Photographic Society of America granted him their highest honor, the Progress Medal, in 1956.

During World War I, Mr. Crabtree was a civilian instructor in the Army School of Aerial Photography at Rochester, N.Y. In World War II, he and members of his staff gave valuable assistance on photographic processing problems to the Army Signal Corps and the Air Force. He also helped the National Archives and the Library of Congress in connection with problems of restoration and preservation of valuable photographic records. On several occasions he assisted the Federal Bureau of

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Investigation on problems related to photographic chemistry.

In December 1938, Mr. Crabtree became actively associated with the American Standards Association as a member of the Sectional Committee Z38 on photography. When this work was reorganized in 1950 and the original Sectional Committee replaced by four new Sectional Committees, Mr. Crabtree was named the chairman of one of these, PH4—Processing. A record of close to 90 approved American Standards in the field of photographic processing were revised and initiated under his leadership while heading this committee. On December 3, 1956, he was presented a hand-illuminated scroll by the A.S.A. at a dinner in New York City honoring him for his outstanding services to that organization over a period of 18 years.

In 1924 Mr. Crabtree became a naturalized citizen of the United States. In private life he describes himself as a farmer and resides on Canandaigua Lake near Middlesex, N.Y., where he takes a lively interest in the affairs of the township.

For more than forty-three years, John I. Crabtree has worked diligently at his chosen profession of photographic chemistry. Much of the advancement of knowledge of general photographic chemistry and motion-picture processing reactions and techniques can be traced directly to his researches and that of colleagues under his supervision.—*Glenn E. Matthews.*

Film Storage

A report on "Fire Effects and Fire Control in Nitrocellulose Photographic Film Storage" has been prepared by the National Bureau of Standards.

The report presents the findings of an inter-agency committee appointed to conduct an extensive investigation into the hazards involved in the storing of nitrocellulose film with recommendations for safety measures.

The inter-agency committee, composed of representatives from government and private organizations, such as the National Archives, Department of Defense, Motion Picture Association of America, and the National Automatic Sprinkler and Fire Control Association, limited its investigation to the problems of storage of nitrocellulose film.

A booklet prepared by the Eastman Kodak Co. extends the field of inquiry to include the problems of storage of acetate or "safety" film. The booklet, entitled "Hazard in the Handling and Storage of Nitrate and Safety Motion Picture Film," may be obtained at no charge from the Eastman Kodak Co., Motion Picture Film Dept., Rochester 4, N.Y. A supplemental pamphlet now in preparation reports on "The Preservation of Nitrate and Safety Motion Picture Film."

As part of the Bureau of Standards investigation, a vault was constructed near Beltsville, Md., and an experimental program set up to investigate the effects of such factors as film containers, racks and sprinklers, to film load and venting.

The 20-page Bureau of Standards report gives a full description of the experiments carried out and procedures used, together

with recommendations for special situations. Conclusions generally are: (1) Each vault for the storage of nitrocellulose film should be provided with a vent of sufficient area to prevent the development of dangerously high pressures during a fire. (2) With closed-front compartmented racks and a film load of 5 lb/in. of vent area, pressures as high as 0.25 lb/in. were observed. Vaults, including doors, should be designed for such pressure, when they are to be equipped with such racks. (3) If open-front compartmented or skeleton film racks are employed and the film load kept at or below 5 lb/in. of vent area, pressures as high as 1.0 lb/in. may be developed during a fire. (4) Temperatures observed were sufficiently high that only masonry or other equally noncombustible construction should be used for film vaults. (5) The film should be stored in close-fitting metal cans or containers giving equal protection, placed on racks within the vault. (6) The film may be completely destroyed unless the vault is equipped with closed-front insulated compartmented film racks or adequate automatic sprinkler protection. The closed front compartmented racks employed should be so constructed to prevent the spread of fire from one compartment to another. By adequate sprinkler protection is meant one sprinkler head, preferably of the directed-spray type, for each 60 ft of vault. (7) The minimum destruction of film was obtained by the use of closed-front compartmented racks and automatic sprinklers of the directed-spray type.

Additional recommendations for property protection are: (8) The film in a vault or group of vaults represents a hazard to the surroundings so that vaults should be located where they may be expected to remain isolated from valuable property. (9) The vaults used should be equipped with vertical vents or means to deflect the discharge in a vertical direction. The minimum dimension of the vent should be greater than the maximum dimension of the film containers to be stored. The throat edges of the vent should be beveled or funneled at approximately 45° to prevent film containers sticking in and partially reducing the vent opening. (10) Any cover on the vent should be so designed and constructed that it will open before the internal pressure rises to 0.25 lb/in. (11) Any device such as electric or heating equipment that might ignite film should be placed and enclosed in such a manner that contact with film is not possible.

The Eastman Kodak project undertook to answer such questions as: (1) Will safety film burn? (2) In the event of a fire, does safety film give off gases which are poisonous or explosive? (3) What precautions are required in handling and storing safety film from the point of view of hazard? (4) How can safety film and nitrate film be readily distinguished?

The Eastman researchers found that safety film presented a minimum hazard in handling and storage. The real danger, they found, was that nitrate film might be mistaken for safety film when the two types are used by the same studio.

The Bureau of Standards publication may be purchased for 20 cents by addressing: Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.—*R.H.*