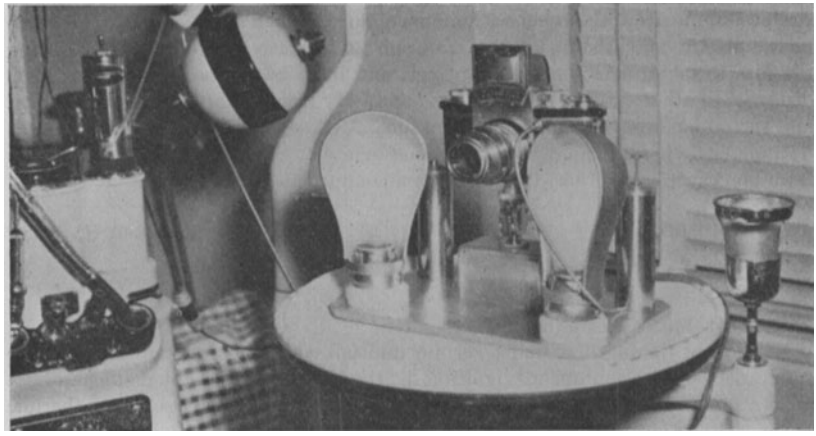

The Gibbs Photodont is here shown on a dental bracket table with a Kine Exakta V Camera, for which the exclusive U.S. distributor is Exakta Camera Co., 46 W. 29 St., New York 1. This unit is designed for dentists and doctors, to secure intra-oral Kodachromes and for photographing in the specialties of dermatology, plastic surgery and opthalmology. The built-in light unit is independent of the flexible camera mount, and, to minimize patient discomfort, the two lamps in a fixed position glow at a low intensity except at the moment a picture is being taken. This unit has a retail price of $59.50.

Letters to the Editor

I have read with interest the article appearing in the March JOURNAL, entitled "Spontaneous Ignition of Decomposing Cellulose Nitrate Film."

There is no doubt, as the authors state, that deterioration of film caused mainly by faulty processing can be a source of spontaneous combustion, but this does not tell the entire story. Spontaneous fires can also start in cellulose nitrate film without the preliminary warnings detailed in the excellent photographs appearing in the article.

We recently had a fire which took place with comparatively new film in which the gelatin had been removed by our usual washing process and we know that this film was clean and free of any extraneous matter when it ignited.

My contention is that cellulose nitrate can contain higher degrees of nitration than is wanted for film and this higher nitration at times is one of the causes of spontaneous combustion, particularly with elevation of temperatures. I realize that this is an alarming statement, but it is borne out by my experience. The remedy is that the film should, therefore, be stored under proper conditions.

For one thing, film should not be stored in iron drums, as they are conductors of heat and rapidly transmit the heat from one drum to another in a vault filled with such drums.

The fundamental thing in designing vaults and containers, and in storing nitrate film, is insulation, not conductivity. Insulation is obtained by separating quanti-

ties of film one from the other with a nonconductor, such as asbestos, wood, cardboard, plastics and other insulating material. Conductivity is obtained by storing the film in metal cans, on metal shelves, and in metal containers, such as steel drums. In other words, film should be kept away from metal as far as is practical and surrounded only by nonconductors such as those enumerated.

If under these ideal conditions a film does ignite or explode, due to deterioration from one cause or another, the fire is then confined to a small area.

April 13, 1950 JOSEPH H. SPRAY

Re: Mr. Spray's letter above.

We do not doubt that, under certain unusual conditions, new film can ignite spontaneously. Spontaneous ignition is the result of two phenomena, heat generation and heat dissipation. Heat is usually generated by some exothermic chemical reaction and is dissipated by conduction, radiation, and connection to the surroundings. When the rate of heat generation exceeds that of heat dissipation, the temperature of the material rises until ignition occurs. We understand that in Mr. Spray's plant the emulsion was removed from cellulose nitrate base film by washing in a hot caustic soda bath. The washed film was then cut to lengths and packed. The soda-ash residue that remains along with the film may react with it to generate more heat than is usually the case. Also, because of higher temperatures which prevail in certain parts of the plant, heat may not be dissipated as rapidly as desired. Under such conditions, material may self-ignite when it would not do so in normal storage. The paper, "Spontaneous Ignition of Decomposing Cellulose Nitrate Film," was written with an eye toward the prevention of fire in libraries and film exchanges. We still believe that under conditions prevalent in such installations, new film will not self-ignite.

The correspondent's contention that excessive nitration may be a cause of spontaneous ignition is interesting and should not be dismissed without careful study. However, there is the belief that because of the modern quality control methods used in the manufacture of nitrate film a uniform product results. Besides, if variation in the degree of nitration does exist, it has not been proven that the autogeneous ignition temperature will be affected. These two factors would have to be studied to confirm or deny the correspondent's hypothesis. We do know that Bureau of Standards investigators were unable to cause the spontaneous ignition of new film at ambient temperatures of up to 120° F.

We wholeheartedly agree with Mr. Spray that all nitrate film should be stored in insulated facilities under controlled temperature conditions. Engineers of the Interagency Committee for Nitrate Film Vault Tests have devised insulated racks which can, without the aid of sprinklers, contain a film fire to the reel in which it originated. Organizations storing quantities of nitrate film should consider, as a long-range project, the equipping of their facilities with this type of rack. Such a program may take years to execute, however, and will not reduce the danger of film fires in the near future. For that reason we recommend that procedure as outlined in the paper as being the only practical first aid solution to the problem for the immediate future.

June 12, 1950 JAMES W. CUMMINGS