CONTACT LENSES ON TRIAL

Two groups have developed bifocal contact lenses that utilize a holographic optical element to achieve the differential focus necessary in bifocals. Pilkington Glass with Sola Ophthalmics has introduced a bifocal hard contact lens that has been undergoing clinical trials in the U.K. since October 1987, and Allergan-Hydron has developed a bifocal soft contact lens that also is in clinical trial in the U.K. and the U.S.A. Bifocal contact lenses have been on the market for several years, employing concentric rings of differential focus for near and distance vision, but these suit only 30% to 40% of people trying them. The new HOE technique allows the whole lens to act bifocally, obviating the need for different zones in the lens. The clinical trials are reporting high success rates. An article on these new lenses and the design of the HOEs will appear in the next issue of *Holosphere*.

A DOG'S LIFE

In the photo at the right, Marc Friedman, Ph.D. candidate at Northwestern University, Evanston, Illinois, inserts a holographic endoscope into the anus of an anesthetized pit bull terrier at the holographic lab of Lake Forest College in February 1988. A 150 microsecond-long pulse was "chopped" from a continuous wave argon ion laser and launched into a single mode fiber optic. The output passed through a 1.6 centimeter diameter Ilford green-sensitive holographic film to record a Denisyuk hologram of the wall of the dog's colon. A grant from the National Institutes of Health to Northwestern made possible this inside-the-body study—a technique that it is hoped in future will replace X rays. Dr. Hans Bjelkhagen, director of the research team, believes that theirs are the first in vivo recordings of such body parts; holographic endoscopes have been used in the past to record tympanic membranes and vocal chords. "It's a crappy job, but somebody has to do it," quipped Friedman.

X-RAY HOLOGRAPHY

Scientists at Lawrence Livermore National Laboratory in Livermore, California, have made the world's first X-ray laser hologram, of a tiny metal object. This step brings them closer to creating three-dimensional images of living cells, with a potential resolution finer than fifty nanometers. A powerful Nova laser (constructed of neodymium-doped glass) fires two beams onto a selenium-and-plastic foil, which explodes into an electrically charged gas that emits an X-ray beam. The beam is manipulated in much the same way as in conventional holography, making a three-dimensional X-ray image in an exposure of less than a billionth of a second. Theoretically, exposures of two hundred trillionths of a second are possible. Future research will focus on improving resolution and mastering shorter exposures. Uncertainties remain about which microbiological structures will be visible in X-ray holograms and how much damage to these structures is produced by the X-ray beam. It is hoped that in future the technique will allow researchers to map the process by which a virus attacks a cell, among other possible applications.

NEW MASKING FOILS

Rosco Cinefoils is marketing a new line of flexible aluminum foils for masking or reflecting light. They are available in mat black, satin silver or a black/silver combination, in rolls of various sizes. For more information: Rosco Laboratories Inc., 36 Bush Avenue, Port Chester, New York 10573. Telephone: (914) 937-1300; Telex: 131472 Rosco Ptch.

TWO-COLOR REFLECTION HOLOGRAMS

Holographic Images Inc. of Miami, Florida, has announced two technology developments. The company is offering 360° integral holograms, sixteen inches high by 107 inches in circumference. They also are producing two-color master reflection holograms that can be copied onto film for production in quantity. For more information: Leo Tonkin, 1301 Dade Boulevard, Miami Beach, Florida 33139; telephone (305) 531-5465.

Holographic endoscope in use