Materials Evaluation

An Official Journal of the American Society for Nondestructive Testing

August 1979/Volume 37/Number 9

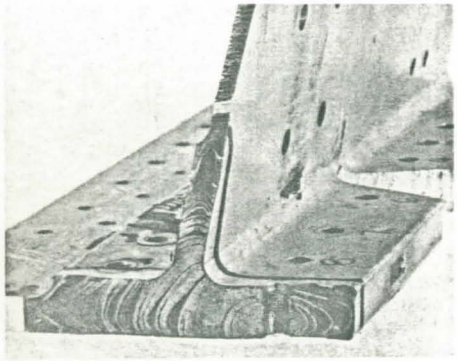
In this issue:

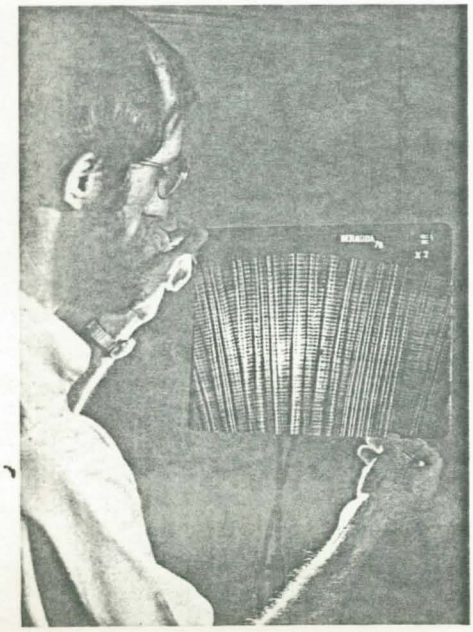
1979 ASNT Fall Conference Preliminary Program
Back to Basics
Proposed Change in ASNT Bylaws
1979 ASNT Fellows

Materials Evaluation

An Official Journal of the American Society for Nondestructive Testing

August 1979/Volume 37/Number 9





FEATURES

Papers Call: 1980 ASNT Spring and Fall Conferences 16
Proposed Change in the ASNT Bylaws 19
Fundamentals of NDT Course 21
1979 Incoming Section Chairmen's Meeting 23
1979 ASNT Fellows Announced 25
1979 ASNT Fall Conference Preliminary Program ..... **Center Section**

TECHNICAL PAPERS

Effect of Stress on Crack Detection by Radiography
by D. J. Hagemaier and D. Bowles 33
Techniques for Phasing into CRISP-E
by J. R. Alburger 38
Influence of Tensile and Cyclic Loading Upon Barkhausen Noise in a Mild Steel
by L. P. Karjalainen, M. Moilanen, and R. Rautioaho 45

DEPARTMENTS

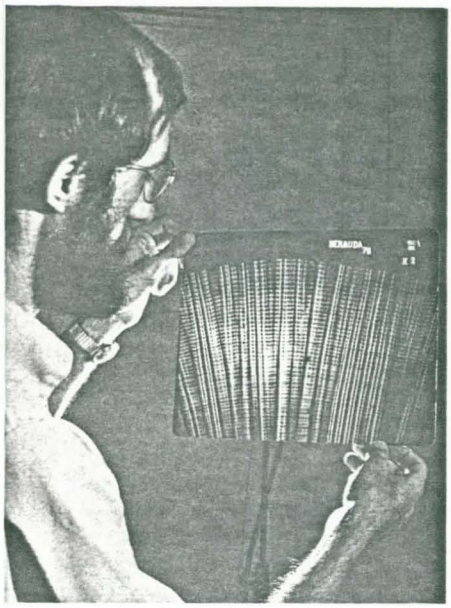
Calendar 2
Current Literature 10
New NDT Patents 12
Corporate Members 14
Back to Basics 17
ASNT Membership Application 29
Section News 53
Tech Hint
by Charles N. Sherlock 58
New Products and Services 59
New Literature 63
ASNT Employment Service 64

X Rays Provide Researcher With Views of Coral Growth Patterns

If Charles Darwin would have had X rays available to him in the mid-1800s, he might have learned much more about the coral reefs he explored. Today, modern X-ray (radiographic) techniques are helping researchers in the United States to study and document the growth patterns of coral skeletons—the hard, calcareous, hemispherical structures that are produced by the soft coral tissue.

"Radiography is invaluable to this type of coral study," says Dr. Richard E. Dodge, one of the researchers. "Before X rays were used to study coral, it was difficult—if not impossible—to measure coral growth rates and obtain large amounts of data." Dodge, an assistant professor at the Ocean Sciences Center of Nova University, Dania, FL, began studying coral off the shores of Jamaica in 1973. Since then, he has collected, studied, and presented scientific papers on coral from the waters of Puerto Rico, Barbados, Bermuda and other tropical islands.

Dodge has used X rays to investigate many aspects of the coral world, from the effects of dredging on coral in Bermuda to the effects of bombings in U.S.

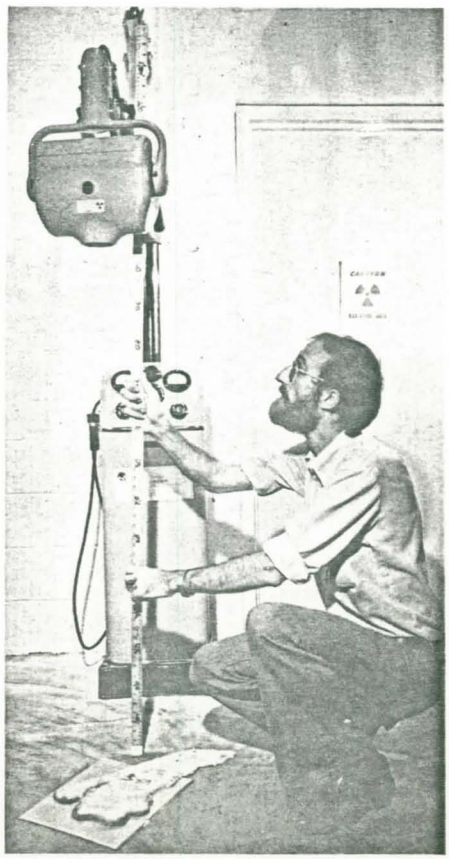


Coral growth rings on this radiograph give researchers method of determining the age of coral and learning how the environment affects coral species.

Navy target practices. "In Bermuda," he says, "we were able to tell from radiographs that between 1941 and 1943 many dead corals were found in Castle Harbor and had died probably at about the time that heavy dredging was being done to deepen the harbor area."

The researcher is very selective in his selection of coral to be studied. "I try to stay away from the rare corals because they are not representative of the general coral species." He adds "I don't want to further endanger a rare species. I try to be as nondestructive as possible because I don't want to damage the particular coral reef." Dodge goes snorkeling for most of the coral he researches. Reef-building corals do not grow below 100 feet deep because they need sunlight to live. Once the coral is brought ashore, Dodge prepares it for X-ray examination. First, he slices the coral into a rough slab using a common masonry saw. Then, he uses a geological rock saw to thin slice the specimen to about one-half centimeter in thickness.

The specimen is then taken to the X-ray room at the Ocean Sciences Center and readied for the exposure. The coral slice is placed on top of a sheet of Kodak Industrex AA film and the university's X-ray machine set at 100 kV. The average exposures are made between 10 and 60 seconds at a source-to-film distance of approximately 50 inches. The film is hand-processed in an on-site darkroom and checked by Dodge for quality control purposes. Actual growth ring measurements are made from positive prints. Using the radiograph as a "negative," prints are made on photographic paper in a photographic darkroom.



Dodge checks source-to-film distance between the X-ray machine's tube head and the film prior to exposure.

Dodge examines part of his coral collection prior to X-ray testing.

By this method, Dodge has been able to map out the relation between coral growth rates and nutrient supply in Bermuda. "From the X-ray studies, we found that nutrients are a major variable in the long-term growth of coral. It appears that coral grows faster during periods when nutrient supplies are high even though upwelling periods are classically colder periods, and coral is supposed to grow slower in colder water." A combination of data taken from the radiographs and some computer analysis led the researcher to the conclusion that nutrient supply was the key to growth—despite the decrease in water temperature.

The Ocean Sciences Center, under the direction of Dr. George Lawniczak, Jr., is concerned with studies and investigations in experimental and theoretical ocean sciences. In Dodge's area of study, plans are being readied to expand research of coral off the beaches of Fort Lauderdale, Dania, and Hollywood—locations adjacent to the center, and along the South Florida shore. Dodge expects to find a wide variety of coral species in Florida, and hopes some will exceed the age of his oldest finding. This coral is the "grandfather" of his collection, estimated by radiographs to have been born in the 1770s.

New Marketing Director at Vanzetti

Joseph Hansberry has been appointed to the newly created position of director of marketing at Vanzetti Infrared & Computer Systems, Inc., Canton, MA, manufacturer of fiber optic energy-saving systems for the metal, plastics, and semiconductor industries.

Hansberry has 18 years' experience in sales and marketing. For the past nine years he was associated with a leading manufacturer of industrial temperature instrumentation as general sales manager with responsibilities for national and international sales. At Vanzetti he will be responsible for all advertising, market and product development including sales promotion of the company's lines of Thermal Monitor and Process Control Systems.