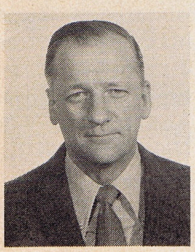
# Three Edgerton 'Alumni' Make Splashes For Themselves As Heads Of Their Own Companies

**By Larry L. Booda**
Editor

Dr. Harold E. "Doc" Edgerton has enjoyed two successful careers, sometimes individually, sometimes concurrently. As co-founder of EG&G, Inc., he has been a successful businessman. As a professor at the Massachusetts Institute of Technology he has inspired young people to specialized endeavors in technology. His "alumni", whether from the company or from the MIT laboratory, have scattered into industry and academia. Three of them now head their own companies. This is a thumbnail sketch of "Doc" and his three business-academic offspring who have become individual entrepreneurs.

Doc Edgerton was a pioneer in the field of high speed photography, both still and motion picture. His methods were used in monitoring nuclear weapons tests. He was also a pioneer in the application of stroboscopic (extremely short and extremely powerful,) light to photography and other uses. But most of all Doc, over the years, has worked closely on oceanographic instrumentation, sonar and deep sea cameras.

**Sam Raymond**



An idea of what Samuel "Sam" Raymond, president of Benthos, Inc., thinks of his former boss is his company's address — Edgerton Drive, North Falmouth, Mass.

Raymond recalls his first sight of Doc on a wintry night in Hartford, Conn., when he gave a lecture on high speed photography and stroboscopy at the Bushnell Memorial Auditorium. "Although I was just a boy at the time I clearly recall his slow motion movies of humming birds and of a hammer smashing a light bulb," Raymond states. "Years later Doc told me that he recalls that lecture because he seemed unable to arouse the people in the front row. When the house lights came on he saw that they were students from a local school for the blind."

"My admiration for Doc and his work grew while I attended MIT in the late 1940s," he continues, "And over the years I followed his activities through magazine articles."

Raymond recalls that in 1959, while working for Hughes Aircraft Co. in California, he decided to move back to New England. "I had to decide what I really wanted to do. And what was that? Dream job — work for Doc Edgerton on his deep sea cameras. (I had been diving for many years and had built many underwater camera cases.) The timing couldn't have been better. EG&G had just started its first production of the deep sea 35mm cameras that Doc had developed for Capt. Jacques Yves Cousteau and the Woods Hole Oceanographic Institution, with support from the National Geographic Society. No one had been assigned to look after the cameras and pingers at EG&G, so I was it. For three years I shuttled back and forth between Doc's strobe lab at MIT and EG&G in Boston."

In 1959 Raymond met Gary Hayward in the lab. He had just graduated from MIT with a degree in electrical engineering and had gone to work for Edgerton. The two worked together on cameras and pingers, while Hayward worked with Edgerton and William MacRoberts of the lab on the development of a new underwater sound source called the "boomer."

They were exciting years, Raymond reports, with a lot of time spent at sea, following Edgerton closely, including his example of working long, hard hours and his "unfailing positive attitude" regardless of the situation. If a new design failed a test, Edgerton would say, "Oh boy! Now we're going to learn something."

Raymond made a 16mm color movie of EG&G products and took it on a four-week lecture tour of oceanographic laboratories. At first the oceanographic products were a small part of the overall company gross, but by 1962 had risen to $300,000 per year.

Raymond says that Edgerton and EG&G helped him grow personnally and made it possible to do what he always wanted to do — start his own business. In 1962 he said goodby to Hayward, who was himself leaving to join the aerospace industry. But their paths were to cross again, for in 1972 Hayward joined Benthos as Chief Engineer.

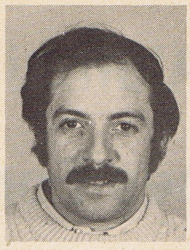
In 1973 Benthos purchased the line of Edgerton 35mm Deep Sea Cameras from EG&G, Inc. and updated the products. Raymond says, "I didn't

want to copy EG&G or to compete with them, so I looked at holes in the market." He also moved to Cape Cod near the Woods Hole Oceanographic Institution. There he found many scientists making their own instruments. With the designer's permission — and usually his blessing — an instrument could be engineered for commercial production. Raymond also collaborated in the development of new oceanographic devices. With Peter Sachs of WHOI he developed the Boomerang Corer which plunges into the ocean floor, takes a core and returns to the surface. An electronic flash ("Shades of EG&G," he says) inside a spherical glass float aids recovery of the corer. The floats became a bigger product line than the corer.

Raymond now employs 30 people making the above mentioned products plus water samplers and pressure test vessels. Gross sales last year were $940,000.

Benthos is noted for its stock, of all things, of 16 inch shells intended for use in big Navy guns. Bought as Navy surplus, they are converted to take advantage of their high quality thick steel construction as pressure vessels.

**Marty Klein**



Martin "Marty" Klein, somewhat the junior of Raymond, and now president of Klein Associates, Inc., Salem, N.H., was a student at MIT. He was supposed to write a thesis and was at a loss for ideas. "One day I walked into Doc's lab to see what I could do. He put me to work on an early version of the subbottom profiler out on the Charles River," he said.

Edgerton, recalling the same incident told *Sea Technology*, "I remember Marty Klein. He walked by and looked in. I thought he was lost. He was just shopping around for something to do. I was ready to go out on a project so I took him along. I said, 'We have a bunch of junk here. Why don't you take it and transistorize it and make it smaller?' "

Klein worked with many different instruments and immersed himself in high speed photography. "We fired bullets through apples and cars," he says. "Doc had an uncanny ability to get through as a person to motivate others to accomplish experiences. That's what he called them, experiences, not experiments. He would take you out with one of his devices. You would run it, not him."

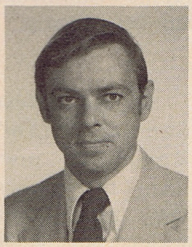
After working in the lab for three months Klein then joined EG&G and remained there for five years. During that time he worked up to division engineer. He states that he wanted freedom to design instruments and other hardware himself. "I was frustrated by the big company attitude. But I left reluctantly."

Among the experiences he remembers with Edgerton, one was in Israel looking for an ancient harbor using a subbottom profiler and side looking sonar. Another time they looked in the Mississippi. Off Boston they were asked by the owner to look for a sunken tug. By luck they picked up a target in 30 minutes. They threw a buoy over the side. Somehow it snagged a gas bottle on the tug which surfaced. It was identified by the owner. "Doc and I looked at each other and winked, telling the owner that we usually aim for the name plate," Klein recalls. In this case they didn't even have to send a diver down. The owner was flabbergasted.

Klein Associates, with 17 employees, is working all over the world. Its workers must know seamanship, for they encounter rugged conditions, especially in the North Sea. The company's main specialty is side scan sonar. It was used in the clearing of the Suez Canal last year, for instance, and has been used in looking for icebergs. He reports that business has doubled for each of the last two years.

Klein doesn't consider the triumvirate as being directly competitive. In fact they even refer business to each other.

**Ed Curley**



Of the three, Edward P. "Ed" Curley is the one who didn't attend MIT, being instead a graduate of Phillips Andover Academy and Yale University. So the other two refer to him as a "Yalie." Curley is now president of EPC Labs, Inc., Beverly, Mass.

His early experience involved him in the development of high speed automatic transistor test equipment and

early in interconnection of integrated circuits at Clevite Transistor. In 1962 he joined EG&G as a Senior Project Engineer. His responsibilities included design and development of various oceanographic instruments including recorders, sound sources, hydrophone arrays and processing equipment.

In 1967 Curley left EG&G to form EPC Labs. His aim was to develop a digitally compatible (computer compatible) oceanographic research recorder. After two years of development the Model 4100 recorder was produced. After several more years, according to Curley, the 4100 gained 80% of the domestic market. This series of recorder has found widespread use in the oil exploration/geophysical market. Since the 4100 was designed with a large capacity, it was joined by a smaller companion, the 4600.

In 1971 these designs were found useful in the military sonar field and in laboratories and ships.

The present product mix of EPC Labs is 70% commercial and 30% military or quasi-military. In 1974 EPC International was formed to expand in the worldwide field.

**Edgerton To Return To USS Monitor**

Now officially retired as a professor, Doc Edgerton still goes to his lab every day and works long hours. His graduate students in stroboscopy are few. But his enthusiasm in teaching is demonstrated by the fact that he has a class of freshmen. (Freshpersons?)

Asked why he keeps so active, he replies, "I've got about ten lifetimes of things to do."

One of Doc's early interests was in side looking sonar. At first he simply turned a Fathometer sidewise, as did the British with their Asdic. That method doesn't show a shape, just that something is there. He learned about the acoustic equivalent of side scan radar in Denmark, where he saw the Westinghouse classified military version. Doc is now working on a book of sub-bottom "sonograms."

This August he will return to the site of the U.S. Civil War ironclad *USS Monitor* off Cape Hatteras, N.C. Edgerton participated in the original search for the site with University of North Carolina scientists. His cameras and side scan sonar were instrumental in discovering the wreck. He wants to recover a camera lost when it snagged the collapsed upturned bottom. He thinks that the film will reveal many details. He also wants to photograph the turret, which lies partially visible beyond the deck line, with a horizontally oriented camera to see whether the portholes are visible or not. Also on the agenda is a subbottom profiler search of the surrounding sandy bottom to see if any objects such as hatches are buried there.

*Sea Technology's* Editor has a personal reminiscence about Doc. After the Saturday sessions of the internationally known Boston Sea Rovers clinic some years ago, the usual party along the waterfront was given. About 3:30 a.m. Doc offered Dr. Eugenie Clark, well known marine biologist, and the Editor a ride to their hotels. His car was a Volkswagen bus which just the day before had arrived by ship from Scotland. In the back were his cameras and diving gear still smelling of Scottish sea water. He delivered his passengers, arriving home at 4:40 a.m.

Subsequently, it was discovered that Doc was at the Boston Zoo at 8 a.m. photographing the superfast eyelid action of an owl.

That's Doc Edgerton. ►