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CALL FOR NOMINATIONS

OES DISTINGUISHED SERVICE AWARD
OES DISTINGUISHED TECHNICAL CONTRIBUTIONS AWARD

The OES Awards and Fellows Committee is requesting nominations for the two major Society awards: the OES Distinguished Service Award and the OES Distinguished Technical Contributions Award. The Distinguished Service Award is given to honor an individual IEEE member for outstanding contributions toward fostering the objectives of the Oceanic Engineering Society. The Distinguished Technical Contributions Award is given to honor an outstanding technical contribution to oceanic engineering in either the fundamental or applied areas. The recipient need not be restricted to being a Society or IEEE member. The award shall be for either a single major invention or scientific contribution or for a distinguished series of contributions over a long period of time.

Please submit your nominations with supporting materials no later than ~~April 30~~ May 15, 1987 to:

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REAL-TIME NAVIGATION INFORMATION AVAILABLE FOR PORTS

ADVANCES IN TECHNOLOGY AND INCREASED RECOGNITION OF NEED HAVE LED PORT AUTHORITIES TO IMPLEMENT MORE EFFICIENT SYSTEMS

Clifford E. McLain
System Planning Corporation

Joseph R. Vadus
National Oceanic and Atmospheric Administration

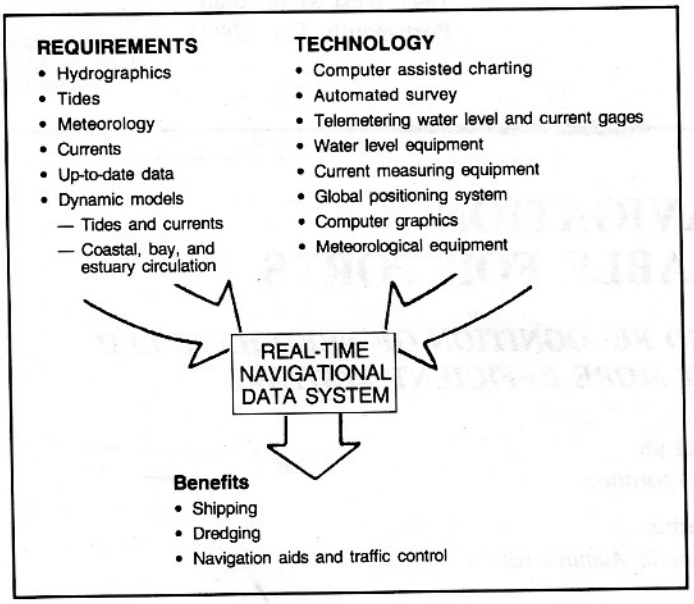
Reprinted with Permission from *SEA TECHNOLOGY,* June 1986

Over the past several years, the National Oceanic and Atmospheric Administration (NOAA) investigated the development of a real-time navigational system for port and harbor operations as a part of its general program to better understand and apply the dynamic behavior of tide and current in confined waters (bays and estuaries) to the needs of the various users of these waters. A real-time knowledge of actual water depths and currents would be particularly important to the safety and more efficient operation of deep draft vessels in transit to and from ports and also to the control of dredging operations in shipping channels. A study in which one of the authors (McLain) participated examined and analyzed a conceptual plan for such a system in 1981. Subsequently, NOAA sponsored a series of workshops in various U.S. port areas to determine specific needs of shipping and other operations in such areas. As a result of these studies, the concepts for a real-time navigational system have been applied in a series of operating systems now either in use or being planned for installation in a number of U.S. port areas.

Recent developments in microprocessor technology and computer graphics make possible relatively low-cost systems that can integrate, analyze, and display a wide variety of interrelated navigational data, incorporate models for spatial and temporal extrapolation between data fixes, and combine real-time instrumentation data with basic hydrographic data. Since positional data derived from a Global Positioning System (GPS) can also be displayed, the capabilities derived from several major technologies can now be combined to develop systems with a computer-stored and automatically up-dated real-time navigational data system. Such a system is the logical extension of data gathering and analysis systems that are defined by present requirements to provide tide and current data and to develop and test dynamic tide, current, and circulation models.

The available or rapidly developing technologies for computer-assisted charting: automated survey, telemetering water level and current gauges, water-level instrumentation and current measurement instrumentation, all place cartographic data in the appropriate computer format for storage and automatic computer graphics display. In addition, the general technologies of global positioning systems, microcomputers and storage systems, and computer graphics and display make possible the processing, analysis, and display of such data and the real-time up-

dating of stored data bases by any set of local instrumentation and associated processing system. Thus, a fully developed real-time navigational data system would permit the storage and continuous display of hydrographic information derived from stored data on board ship with provision for the overlay of ship position (and the adjustment of chart information centering on the ship position) and local, real-time tide (depth), current, and weather data. Highly accurate, detailed real-time data in critical navigational areas, as well as the more accurate prediction of future conditions (e.g., channel depths under changing tide conditions) should greatly improve navigation in marginal conditions of high traffic, shallow bottoms (or deep draft), restricted waterways, and difficult currents and winds.



Encouraging Results

Benefits of a real-time navigational data system may be expected to include: shipping operations permitting higher traffic density and greater draft operations with safety; improved efficiency of dredging operations; and improved navigational aids and traffic control (increased frequency of traffic in the Valdez Arm approach to Valdez Harbor, Alaska, for example, might be possible).

In its fullest configuration, such a real-time system would provide an overlay of high-accuracy local dynamic conditions to the electronically stored navigational data aboard in an integrated shipboard navigation system, combining the data with indicated ship position, course, speed, and "collision avoidance" and other navigational checks available from shipboard radar and depth-finding equipment.

Detailed specification and design of each local real-time system will depend on the needs and requirements of the local user community. The real-time system supplements an existing capability (nautical charts, tide and current tables, and tidal charts) and the need for existing capability will vary among port areas. Therefore, the structure and instrumentation of the system may vary depending on local conditions and requirements.

System Design Experience

The real-time navigational system would provide mariners with the ability to obtain water level, meteorological, current, and nautical chart data in real-time; displayed on a shipboard CRT or transmitted by radio, telephone or teletype on demand by the user. Data from water level, current, and weather sensors are telemetered to a central site for processing and then merged with digital nautical data. The data may also be used for prediction by means of a dynamic area model if one has been developed for the instrumented area. Data is stored in a file for periodic updating of the shipboard display system; alternately, display information is telemetered or radioed directly to the shipboard operator on demand.

In the actual systems that have been installed or are being planned to date, information from a local network of water level gauges (and, in some instances, meteorological and current meter information) is telemetered to a central microcomputer or processor and display. Information is then relayed to users via telephone, radio telephone, or other means. In no case has on-board display yet been used as the operating display method. The primary users are the pilots, who have found the real-time information to be very useful in those areas where the extension of the mean tide predictions of the national tide network are often at considerable variance from actual water depths.

Other Effects

NOAA's National Ocean Service (NOS) has now announced the availability of a new software program called Tides ABC. The purchase price of $1400 includes a Tides ABC program diskette and a copy of the user's manual. This program has been developed by NOAA for use with IBM-compatible personal computer systems and enables on-demand interrogation of NOS water level measuring stations that are equipped with telephone telemetry. Currently, 17 of the National Water Level Observation Network (NWLON) stations are equipped to provide this service in near real-time. This program will provide graphics or tabular presentations of observed and predicted water level data for periods of one to six days. It also provides the means to graphically present water level predictions for any date from 1983 through 1997. The application of Tides ABC should benefit a wide range of users involved in ship navigation, vessel traffic control, channel dredging and maintenance, and other coastal and port management activities. The use of such real-time water level data should improve the safety and efficiency of shipping operations in ports and estuaries.

Two specific areas requiring technical improvement — or at least lower cost options — are those of current measurement and local dynamic model predictions. Direct current meters have been found unreliable over long periods because of fouling (and, of course, direct meters can pose an impediment to navigation). Indirect acoustic current meters have proved to be accurate, but are more expensive. In the Delaware Bay area, NOAA has developed a local dynamic model that can be used for short-term predictions based on data received from the real-time instrument network (*Sea Technology*, September 1984).

Early Examples

Initial systems have been installed and used in a number of U.S. port areas. In all of these applications, off-the-shelf instrumentation has been found to be generally available that will interface with standard modems for data transmittal. In all cases, personal computers or other low-cost microprocessors have been used to process the instrument data for display. Higher level data processing capability would be required if complete nautical chart data were to be stored, updated, and presented, or to operate dynamic prediction models.

The need for new real-time systems has been recognized for a long time. An early system of water level gauges which transmitted measurements by telephone was operated by the Pilots Association of the Bay and River Delaware (PABRD). An early operating system using modem telemetry and display techniques was a four-gauge system installed and operated in ten New York and New Jersey port areas by the Maritime Association of the Port of New York (MAPONY). This system used telephone telemetry to transmit water level data from these gauges to a central data processing point where it was relayed to subscribers via telephone or radio telephone. Clients included pilots, tug operators, and barge operators.

Another early system was operated during 1984-1985 as a cooperative demonstration project between Sea and Meteorology, Inc., a Reston, Virginia, company, and the San Francisco Bay Marine Exchange.

Over the past year, the PABRD has implemented a real-time information system which uses a central personal computer to access data from four gauges via telephone telemetry. Another real-time system is in operation for the Columbia River. This system is of special interest since it is combined with a locally developed dynamic water level model for the river between Portland and its mouth at Astoria, Oregon. Other real-time systems are in various stages of development for the ports of Charleston, South Carolina; Miami, Florida; and Anchorage, Alaska.

A recent National Research Council Marine Board (NRCMB) report, "Advances in Environmental Information Services for Ports," recommends implementation of such systems based on cost/benefit analyses.

A similar report, "Real-Time Information Systems for Improved Port Operations," was recently published at the American Society of Civil Engineers' (ASCE) Conference on Ports and Harbors — Ports '86. One of the authors (Vadus) corroborated with the chairman of the NRCMB, Richard J. Seymour, on the paper.

In the future, other U.S. and worldwide ports may find it useful to install such real-time systems for accurate local navigational information. Areas with high tides, difficult current conditions, and restricted waterways are those where the greatest benefits will be realized. With the growing interest in all electronic navigation handling and display and increasing requirements for integrated collision avoidance systems in heavy traffic areas, it seems certain that the advantages of local real-time information systems will soon be combined with these advanced on-board navigational display systems and that the efficiency of port and harbor operations will be significantly improved through their use.

Clifford E. McLain has been with System Planning Corporation since January 1980. During his tenure there, he has served in numerous positions of responsibility including: vice president for development, vice president for corporate development and president of SPC Venture Corporation, an SPC subsidiary. He is founder and chairman of the board of LZS Publications Inc., a Virginia corporation, which publishes investment guides and indicators in the oil and gas investment field, He also served as president of the Year of the Ocean Foundation.

Joseph R. Vadus is affiliated with the Office of Oceanography and Marine Assessment in NOAA's National Ocean Service and has headed the Ocean Thermal Energy Conversion (OTEC) Ocean Engineering Program activities since 1976. At NOAA, he has also managed the Advanced Technology Program in the Office of Ocean Engineering. He is chairman of the U.S. Panel on Marine Facilities for the U.S.-Japan Cooperative Program in Natural Resources.

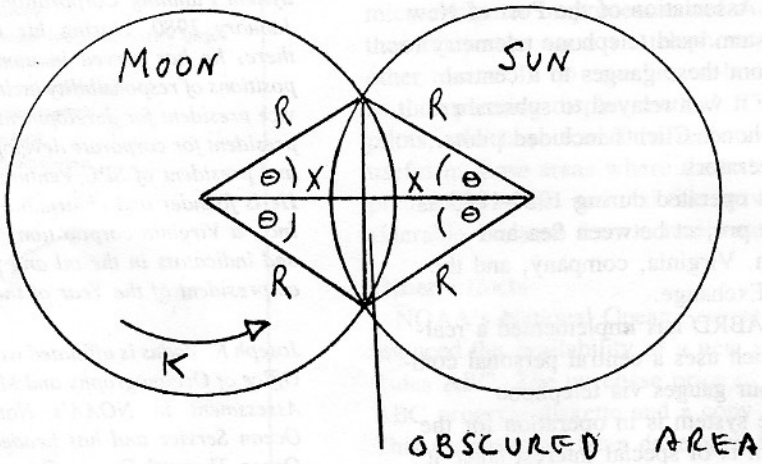
This article was adapted by the authors from their paper, "Real-Time Navigational Information Systems for Port and Harbor Operations," which was presented at the Oceans '85 conference in San Diego, California, sponsored by MTS and the IEEE.

'TIS A PUZZLEMENT

Last Quarter's Puzzle: Who Turned Out The Lights?

Last quarter's puzzle was to determine the intensity of sunlight during a total eclipse of the sun. Dr. W. H. Cronenwett of Norman, OK correctly answered this problem (somebody has actually solved a puzzle. Amazing! ed.)

The problem can be approached as finding the unobscured area of a stationary disc (the sun) which is overlapped by a second disc (the moon) of the same relative size that is moving at velocity K:



$$Obscured\ Area = 2[\pi R^2(\frac{2\theta}{2\pi}) - X\sqrt{R^2 - X^2}]$$

$$= \pi R^2\left[\frac{2\theta}{\pi} - \frac{2X}{\pi}\sqrt{1-\left(\frac{X}{R}\right)^2}\right]$$

The ratio of sunlight intensity to normal intensity equals the unobscured area divided by the total area, or:

$$Intensity\ Area = \frac{Unobscured\ Area}{Total\ Area} = 1 - \frac{Obscured\ Area}{Total\ Area}$$

$$= 1 - \left[\frac{2\theta}{\pi} - \frac{2X}{\pi}\sqrt{1-\left(\frac{X}{R}\right)^2}\right]$$

$$\theta = \cos^{-1}(\frac{X}{R})$$

$$X = \frac{K|t|}{2} - \frac{2R}{K} \leq t \leq \frac{2R}{K}$$

Continued on page 18

OFFSHORE TECHNOLOGY CONFERENCE '86: GLOOM...BUT WITH A SILVER LINING

Suzanne Pagano
Editor, Offshore Data Services

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Characterized much like Christmas shopping in August — no crowds, a leisurely pace, but still plenty to see — the 18th annual Offshore Technology Conference held May 5-8 in Houston, Texas, was one of the smallest conferences in recent memory. What has been frequently billed as the world's largest technical exposition — which in 1983 alone crammed nearly 110,000 attendees, pretty girls, exhibitors, and assorted other countees into the few acres of Astrodomain — this year's OTC drew a mere 27,961 to the four-day show.

The final attendance tally was a little less than half the 56,438 visitors who registered at OTC in 1985. The number of exhibiting companies — 1,200 — also was down from previous years when the offshore oil and gas market was much healthier than today and when the price of a barrel of oil hovered around the $30 mark and higher. The loss of attendance and exhibitors was directly attributed to the financial crunch caused by rapidly falling oil prices this year. The mood was unquestionably serious. The engineers, scientists and others in the industry who attended this year's meeting were in Houston on business, not frivolity.

Some Big-Name 'Defections'

Part of the atmosphere enhancement, considered a plus this time for the usual welter of smaller exhibitors, seemed to be the absence of the familiar "giants" on OTC's Times Square. Some of the biggest names — the largest U.S. equipment suppliers and service companies — elected to sit out this year's OTC: Cameron Iron Works, Hughes Tool, Halliburton and subsidiary Brown & Root, Baker Industries, and Smith International. Others like Dresser Industries, pared their efforts in booth size and representation.

One OTC representative explained that the exhibitor "defections" may have been helped in part by a change in exhibition policies. Under previous rules, missing one exhibit year meant virtual exile to space-available status the next. However, the new rules allow participation in alternate years without fear of losing the same-space-next-year option in future exhibitions.

The Canadian stand took this year's honors as the largest exhibit — in reality 50 separate company exhibits under a unified design scheme. That country apparently was pulling out all the stops, relying on a favorable dollar exchange rate in U.S. markets for its own hard-hit oil field industry. The U.K. boasted the largest number (116) of participating companies. Though it seemed like foreign visitors predominated, OTC officials said the actual attendance count from foreign countries was only 15%; and of the 1200 exhibitors, only 511 were from overseas.

Foreign participation was however strong with large group exhibits also from France, Denmark, Italy, Brazil, Japan, Norway and other countries trying to present new products and services to the oil patch. Numerous corporations from Mexico, Korea, Spain and Singapore also exhibited for the first time.

Many international visitors to the conference expressed concern to us that American companies were unable to participate in the exhibition.

Slow at First, Then Upbeat

After a slow beginning, the conference proved to be somewhat upbeat as signs were evident that there will be life in the oil patch in the long-term. Toward the end of the show, West Texas crude oil prices broke through the critical $15 per barrel barrier on the upside. Oil equipment suppliers, manufacturers, service contractors (such as diving companies and workboat operators), shipyards as well as design and engineering firms are now all operating in the survival mode. But it was apparent at the conference that research and development of new technology is advancing, with particular emphasis on deepwater technology and more cost-effective exploration and production methods.

The focus of this year's technical sessions was on practical experience, cost-cutting and improved efficiency, the areas of most concern in an industry whose survival is dependent on profitable operations at prices now only a third or fourth of what had been forecast.

On the information (as opposed to equipment) side of OTC, the heart of the conference seemed to be beating as valiantly as ever. The show's technical presentations rose to 250 papers, up from last year's 227.

In one of the general sessions, Pennzoil president Richard C. Howe said, "With the sharp decline in crude and natural gas prices, the real frontier today has suddenly become an economic one rather than a technological one."

Howe also predicted that oil prices will stabilize in the $20 range by year-end and remain constant for several years afterward — assuming OPEC members come to an agreement on production volumes. He warned, however, if prices do not improve from the current $14-$15 a barrel in the next few years, then oil consumers will face a repeat of the 1973 and 1979 price shocks where too much demand will again chase too little supply.

On another upbeat note, the U.K.'s minister of state for energy — Alick Buchanan-Smith — said, "Despite the difficulties, the North Sea is still very much in business." He said operating companies there are still producing crude and natural gas at the same rate as last year, although

many are cutting exploration budgets. He also said the energy community must be realistic and not just pessimistic if they expect to survive the current world oil price downturn.

At yet another session, the Scottish Development Agency's (SDA) chief executive said that expenditures in the North Sea U.K. sector will total around $30 billion over the next decade. Dr. George Mathewson said the latter scenario will prevail even if oil prices say at $15 a barrel "in real terms" during the period. He said the SDA estimates the expenditures will rise to around $50 billion if the oil price averages over $21 per barrel, again in real terms.

An Array of New Ideas

Exhibitors presented an array of new ideas for offshore exploration and production. Bethlehem Steel introduced its new mat tower unit, a hull that can be used for drilling or production, depending on the client's needs. The mat tower is designed for up to 185-meter waters with a minimum water depth of about 9 meters.

A group of French companies, including C. G. Doris and Bouygues, introduced their new concrete tensionleg production platform, dubbed the PLTB 1000. This system is rated for production in water depths as great as 1000 meters. Another international design/engineering/construction group, Norwegian Contractors, introduced new state-of-the-art floating oil production systems based on a column-stabilized semisubmersible concrete floater. The contractor also introduced new Condeep-type platforms with a predrilled template option, a feature that will further increase the competitive potential of these platforms.

In spite of the not-unexpected drop in exhibition attendees, we were told by most exhibitors that the quality of "lookers" does seem to increase as the show totals go down. They claimed OTC '86 was no different.

Despite the doom and gloom atmosphere hanging over the industry at the moment, the sponsoring engineering societies have agreed to hold OTC '87 as scheduled during the first week of May. Conference sponsors said they are confident the oil and gas industry will turn around by that time and many equipment manufacturers and suppliers will return to OTC.

ELECTRICAL PERSONALITIES

JOSEPH HENRY (1797-1878)

The electrical contributions of Joseph Henry were many. The first of these was the discovery of self-induction; the second was the construction of a practical electric telegraph; and the third, the determination of the oscillatory nature of lightning and the discharge from a Leyden jar.

It was at the Albany Academy that Henry, without a knowledge of the experimental discoveries of Faraday, carried out experiments in electromagnetic induction, using electromagnets. In other experiments Henry transformed electrical into mechanical energy by constructing an electric motor of novel design. He balanced a straight iron bar (on which an electromagnetic coil had been wound) on knife edges upon which rested trunions set in the bar's center. Below the electromagnet a bar magnet was placed so that the north poles faced in the same direction. Two batteries, one at each end of the electromagnet, were connected to their respective coils and equivalent pairs of leads terminated each coil end. When one end of the bar was depressed the coil was energized and thereupon moved up at the same time reversing the current and depressing the other coil which became energized. Thus a rocking motion was given to the bar electromagnet.

William Sturgeon in London, in 1825, improved Ampere's simple magnet by winding a wire carrying current about an iron, horseshoe-shaped bar. He did this by covering the iron bar with insulating varnish and winding a bare, copper helix upon it. Henry, in 1829, exhibited his improved horseshoe magnet at the Albany Academy. It was made by coating the wire with insulating material, thereby enabling him to wrap the coil much closer. Further, he polished the end faces of the iron magnet and added an armature to bridge the gap between these faces, thereby closing the magnetic circuit. An additional improvement consisted of winding the magnet with multiple layers of windings. Henry thereby built up two classes of magnets — those having a few turns of wire with large cross-section and those having many turns of fine wires. The former he called quantity magnets, the latter intensity magnets. With these differing constructions Henry was able to demonstrate Ohm's law, which was first announced in 1827.

In another step in the study of the character of induced currents, Henry wound two coils on a common toroid form. One coil was wound upon an insulating covering of the first and it consisted of many turns of fine wire. With this assembly Henry could deliver currents of high intensity (voltage) or high quantity (current) by selecting the proper relationship of the number of turns of the coils, thus inaugurating transformer design.

The step from scientific curiosity to engineering was made with a magnet that Henry built at Albany. This, a horseshoe magnet, was only 9½ inches high, had an iron core 2 inches square and weighed 21 pounds. Upon this bar was wound nine coils of wire, each of 60 foot length. These coils had terminals that could be connected in series

or in parallel. With current in the coils it was found that a 7 lb. armature, fitted to the pole faces, could lift a weight of 650 lbs., an astonishing demonstration for that time.

In 1832, Henry moved to Princeton as Professor of Natural Philosophy, the term then still used for Science. Here he constructed his largest electromagnet, one capable of holding a weight of 3600 pounds. With this large magnet Henry generated induced electric currents. He covered a piece of copper wire 30 feet long with insulating varnish and wound this about the iron armature which was then fastened to the poles. The terminals of this smaller coil were attached to a galvanometer while the terminals of the coils of the large magnet were attached to the dry plates of a voltaic battery. At a signal from Henry the plates were plunged into a vessel of dilute acid. At the instant of immersion the galvanometer needle deflected 30 degrees, indicating the generation of an induced current in the armature coils. After an instant the needle returned to zero. Withdrawing the battery plates from the acid produced a motion of the needle in the opposite direction but of lesser intensity. In his paper Henry also announced his discovery of self-induction. This occurred when he broke a circuit consisting of a battery and a long wire, especially one wound into a coil form, whereupon there appeared a long spark at the break points. Henry believed that the long wire became charged in some manner while the current flowed; a break in the circuit caused a reaction on itself with resulting spark.

While still at Albany, Henry constructed a telegraph consisting of more than a mile of wire stretched about a room at the Academy. At one end of this long circuit he placed a bar magnet, one pole of which was planted between the legs of a horseshoe magnet. When the circuit was closed the magnetic coil was energized and caused the bar magnet to shift horizontally, thus striking a bell with its farther end. A later modification caused dots to be placed on a coil of moving paper. A code of rings or dots was related to the alphabet, thereby providing a practical electric telegraph.

Henry extended the experiments of Faraday in the mutual induction of two adjacent coils to spaces between them, bordering on radio communication. He presented a paper in 1838, "On the Induction of Secondary Currents at a Distance". In these experiments Henry placed two coils, one four feet in diameter and a small secondary coil of many turns of fine wire, at varying distances up to four feet apart. He then had an observer take a second coil into an adjacent room and managed to communicate signals to him. In 1842 Henry magnetized steel needles by discharging a battery of Leyden jars into an aerial placed several hundred feet away from his telegraph line on the Princeton campus.

Henry studied lightning discharges by their magnetic effect on steel needles. He used the metal roof of his laboratory as an aerial by soldering a wire to it and leading this wire into the laboratory, through a magnetizing coil, and then grounding the wire in a deep well. He found that even distant lightning flashes magnetized the needles, sometimes in opposite polarity. This led him to the conclusion that lightning discharge was oscillatory in character, similar to that from Leyden jars. He also studied Leyden jar discharges by using a glass cylinder with a helical strip of tin-foil pasted both outside and inside of the cylinder thereby producing a true transformer. A needle placed in the coil of the secondary became unevenly magnetized when a Leyden jar discharge was sent across the primary, again proving the oscillatory nature of the discharge.

At Princeton in 1836 Henry constructed a telegraph across the campus using two wells for the ground return. Through this circuit he sent signals from his home to his laboratory. He also adapted the telegraph receiver mechanism to act as a relay for closing a secondary circuit. When the primary electromagnet caused a counterbalanced arm to be brought down to the magnet poles, the outer end of the arm caused a wire to dip into a pool of mercury, thereby closing the secondary circuit. The relay principle found very wide use in telegraphy and in other circuit-closing mechanisms.

Henry was appointed the first Secretary of the Smithsonian Institution in 1845, a position in which he established the practice of reporting meteorological changes throughout the country by telegraph. Henry was hesitant in publishing his observations and thereby lost priority on several of his most important discoveries. He applied for no patents and sought no monetary rewards. He stated: "The only reward I ever expected was the consciousness of advancing science, the pleasure of discovering new truths and the scientific reputation to which these labors would entitle me." A fire that occurred in his office at the Smithsonian in 1865 destroyed all of his early papers; otherwise, Joseph Henry, the best known physicist of his time, would be more widely known today.

The 1893 International Congress of Electricians met in Chicago and established the 'henry' as the International unit of inductance.

Reprinted from *Instrumentation and Measurement Society Newsletter*, October/November 1985.

MISCELLANY

The Following Articles Reprinted from *Instrumentation and Measurement Society Newsletter*, January/February 1986

THIS HISTORY INCLUDES WOMEN

National Women's History Week, March 1-8, closing with International Women's Day, was proclaimed in the early 1900s to recognize the work of women in the labor and international workforce.

This year's theme was ''Women: Builders of Communities and Dreams.'' The quiz below will acquaint you with women throughout history who have, in some way, affected history by pursuing their dreams.

National Women's History Week Quiz

1. Who was the first woman to receive a medical degree in the U.S.?
2. Who was the only woman to win the U.S. Medal of Honor?
3. Did a mother and daughter ever win a Nobel prize?
4. What woman struck out Babe Ruth?
5. What year did the American woman get to vote?
6. What year were women assigned aboard ships in the Atlantic and Pacific oceans?
7. Who invented the circular saw?
8. Who was one of the youngest persons ever to receive a U.S. patent?
9. Who, at 70-plus years of age, was the first white woman to 'mush' across 750 miles of Alaskan wilderness alone?
10. Who had the highest score of anyone — men and women — on the first civil service examination given in 1883?
11. What myth was dispelled in 1878 when Emma Nutt was hired as a telephone operator?

Answers to Women's History Week Quiz

1. Elizabeth Blackwell in 1849.
2. Mary Walker for her services as surgeon in the Fifty-Second Ohio Regiment during the Civil War.
3. Yes. Irene Joliot-Curie and her mother, Marie Curie.
4. Jackie Mitchel, who was the first woman pitcher in the history of professional baseball in 1931. She played for Chattanooga and struck out Babe Ruth her second day on the team.
5. 1920.
6. December, 1978.
7. Sister Tabith Babbit, a Shaker, who got the idea from watching her spinning wheel.
8. Becky Schroeder, who invented a luminous writing board in 1974 when she was 12.
9. Nellie Cashman.
10. Mary Francis Hoyt, a Vassar graduate, who began a $900-a-year clerkship Sept. 5, 1883.
11. That the job of telephone operator was a ''men only'' occupation, since they alone were thought capable of handling such complex technology. Nutt was chief operator when she retired after 33 years with the phone company.

THE LONE RANGER

Return with us now to those thrilling days of yesteryear, when out of the East comes the thundering typewriter of the amazing Fran Striker, creator of the daring and resourceful masked rider of the plains, the Lone Ranger, not to mention his great horse, Silver, and his faithful Indian companion, Tonto.

Fran Striker, author of 3,000 Lone Ranger radio scripts, writer for *The Green Hornet* and *Sgt. Preston of the Yukon* radio series, author of 18 novels and an unknown number of television shows, may be on the verge of one more, posthumous, literary venture.

His son, Fran Striker Jr., has dug out his father's last novel, polished it up and written a final chapter based on the original outline. As soon as he finds a publisher, *One More River,* the last creation of the creator of the Lone Ranger, will finally see the light of day.

And, in addition to that, Fran Striker Jr. wants to rerelease his father's eight Tom Quest novels because, as he says, "young people now need some real heroes."

The Masters of the Universe, Spider-Man and the other superheroes that infest Saturday morning television are all very well, he says, but they are not *real*, not like the Lone Ranger or Tom Quest, a youthful adventurer and explorer with a flair for scientific gadgets.

"Kids need heroes they can emulate," he said, "How can you emulate Aquaman?"

For that matter, how can you emulate the late Fran Striker -- writer, chemist, carpenter, saxophonist, photographer and maker of elaborate fireworks extravaganzas?

"He was amazing," says his son and biographer, a 48-year-old computer programmer from Runnemede, N.J. "At the height of the popularity of the Lone Ranger radio series, he was writing three scripts a week, plus two Green Hornet scripts a week, and his novels.

"He also was writing the plots and dialogue for all of the Lone Ranger comic strips, and every time the Lone Ranger made a public appearance — even if only to open a shopping center — he scripted the appearance."

The elder Striker became a professional writer in 1915 at the age of 12 when he sold a short story to a newspaper in his home town of Buffalo, N.Y. He was paid $1, a small fortune for a 12-year-old at a time when you could buy a hot dog for a nickel.

He studied chemistry at the University of Buffalo, but never worked in the field. The lure of the typewriter was too strong.

In 1928, after a fling at producing stage shows, he took a job with a Buffalo radio station, where he had previously earned some money playing his saxophone. His titles at the station included announcer, musician, studio manager, writer, actor and program director.

It was at this time that he began writing radio dramas, including a western series called *Covered Wagon Days.* In the years before the Lone Ranger rode into his life, Striker wrote 41 series of radio dramas ranging from science fiction to what would now be called "sitcoms."

He free-lanced the scripts to stations all over the country, earning about $2 per script. By the middle of 1932, 92 stations had used Striker's scripts.

Then along came George W. Trendle. He had taken over station WXYZ in Detroit and had severed the station's relationship with the CBS network. His idea was that a local station could produce local programming and find local sponsorship without being tied to a network. He had heard of Striker's work and, on Dec. 28, 1932, he sent a letter reading, in part: "Will you please write up three or four Wild West thrillers, including all the hokum of masked rider, rustler, killer Pete, heroine on the train tracks, fight on top of the boxcars, Indian bad men, two-gun bank robbers, etc."

Striker, according to his son, dug out a script he had previously written for *Covered Wagon Days,* a script that began: "In the small communities of the West, gambling and gunfighting were everyday affairs, and a man never left his house without being prepared to shoot in defense of his life. Throughout the entire West, in those turbulent days, were circulated stories of a masked rider, a modern Robin Hood, seen by few, known by none. Few men dared to defy this man, and those that did. . .lost."

From this, the character named the Lone Ranger evolved. After a few scripts, Striker decided that his hero needed somebody to converse with to move the plots along. Thus, Tonto was born.

The first show aired on January 31, 1933. The Detroit station paid $4 for each script, and Striker was also selling the same scripts to stations in Buffalo and Omaha for similar amounts. A year or so later, Trendle hired Striker as a staff writer and bought the rights to the Lone Ranger from him for $10. (In the late 1950s, Fran Striker Jr. says, Trendle sold the right to the Lone Ranger to Lone Ranger Television Inc., a subsidiary of the Wrather Corp., for $3 million.) For the same $10, Striker also gave up the rights to two other series he had created, *Manhunters* and *Thrills of the Secret Service.*

"Dad figured he had been treated with legal fairness," Striker said. "In spite of all of his achievements, he was essentially a humble person." He was also a cheerful, friendly and sentimental person who liked parties. "

"He was a good father, but he had kind of weird working habits. He would get up about noon and go down to the station [WXYZ]. He would come home for dinner and, afterward, fall asleep on the sofa listening to Lowell Thomas. "He would wake up about 10 p.m. and go into the room he used as an office, and he would write until 4 or 5 in the morning. If he wandered out of his office while we four kids were still awake, we knew that it was no use trying to talk with him. He just wasn't with us. His mind was full of plots and gunfights and bank robbers."

During the 1950s, Striker wrote or edited all of the Lone Ranger television scripts and the Lone Ranger film "serials," in addition to writing his Tom Quest books and his adult western, *One More River.*

He was killed in an automobile accident in 1962 at the age of 58.

"I had thought of writing Dad's story for many years,

but never got around to it,'' Fran Striker Jr. said. ''Then, as 1983 approached, the 50th anniversary of the Lone Ranger, I decided to go ahead and do it.'' By this time, he said, his own three children had reached adulthood, and he had more time to devote to writing. The result was *His Typewriter Grew Spurs*, a 143-page biography put together from old scripts, letters, notes, conversations and memories. ''The job was made a lot easier by the fact that Dad was a saver. He kept everything.''

So does his son. Fran Striker Jr. has a vast collection of scripts, letters, posters and placards, photographs — and one genuine silver bullet given to his father by an admirer.

Admirers abound, even to this day. Striker says hardly a week goes without fan letters from people with questions about the inventon and early adventures of the Lone Ranger. ''They ask about when Tonto came along, which stations carried the first episodes, when the Lone Ranger first appeared in the movies. They say that the Lone Ranger was part of their childhood, and they want to know more about where he came from.''

Striker published the paperback *His Typewriter Grew Spurs* himself and sold it ''by word of mouth. I sold enough copies to cover the publishing costs, and that is all I was interested in.''

But he will seek to have *One More River* published commercially. The same goes for the Tom Quest books. In the meantime, he keeps busy answering fan mail from Lone Ranger buffs seeking information, trying to answer that old question: ''Who *was* that masked man?''

THE WINNER NEVER QUITS

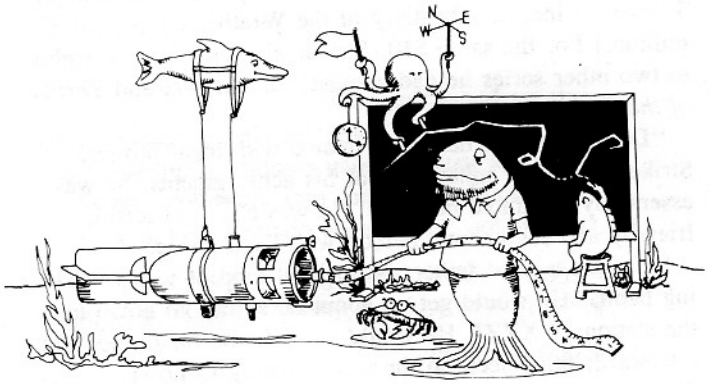
Two boys were walking down a country road, when they came to a small freight loading platform on which were two milk cans to be loaded for delivery in a nearby city.

The boys looked around, and seeing no one, lifted off the cover of Can Number 1 and dropped in a big bullfrog. Then they lifted off the cover of Can Number 2 and dropped in another bullfrog. The boys continued down the country road, and later the cans were picked up and loaded for city delivery.

During the journey, the bullfrog in Can Number 1 said: ''This is terrible! I can't lift off the cover of the can because it's too heavy. I have never had a milk bath before, and I can't reach to the bottom of the can to get enough purchase to lift off the cover, so what's the use'', and he gave up trying and quit! When the cover on Can Number 1 was taken off, there was a big dead bullfrog.

The same conditions existed in Can Number 2, and the frog said to himself: ''Well, I can't lift off the cover, because it's too tight and too heavy. I haven't got a brace and bit to dril a hole to save myself, but by the great Father Neptune, there is one thing I learned to do in liquids and that is to swim.'' So, he swam, and swam, and swam, and churned a lump of butter and sat on it, and when the cover was lifted off, out he jumped, hale and hearty, with the biggest frog broad jump every recorded in frog history.

''The Winner Never Quits, and the Quitter Never Wins!''



CURRENT MEASUREMENT TECHNOLOGY COMMITTEE NEWS AND INFORMATION

A primary objective of the Current Measurement Technology Committee (CMTC) of the Oceanic Engineering Society (OES) is to provide a focus for information exchange and promote cooperation and coordination among those in the marine community involved in current measurement. To this end, this column has been established as a regular feature of the *OES Newsletter* and everyone is encouraged to participate by submitting news items and information about active or planned current measurement efforts to Bill Woodward (301) 443-8444 or Jerry Appell (301) 443-8026 for publication in the column. This will be an effective forum only if everybody participates, so let's hear from you.

''POCKET BASS''

''Pocket BASS'' is a single sensor, four-axis, acoustic current meter benefiting from micro-miniaturization techniques to be a small stand-along current sensor. It does not exist yet, only awaiting development. BASS has enjoyed success as a bottom boundary layer current meter array where it has measured the mean velocity profile as well as the turbulent kinetic energy and the Reynolds stress in the lowest 5 meters of the ocean for up to 7 months at a time. It has also been used in the surface boundary layer and on a free drifting platform for internal shear measurements. In trying to make BASS available to other users, I plan to miniaturize the electronics and make the acoustic transducer array more manufacturable. The Pocket BASS should be about 18 inches tall and 4 inches in diameter, equipped with either a SAIL interface for use as a sensor in an array of instruments or with an RS232 interface for use as a stand-alone instrument with internal data storage. In situ processed data would be available in either mode. For further information contact Sandy Williams, WHOI (Telemail: A. Williams), 617-548-1400.

NOAA-RADS UPDATE

The Ocean Systems Division of NOS/NOAA has recently removed both Remote Acoustic Doppler Sensing (RADS) systems that were deployed in the Delaware Bay and the Port of Miami. The RD system in Delaware Bay was in continuous operation for a period of 23 months, and the AMETEK Straza System in Miami was operating for 16 months. The RD had no failures during that period except for the clock battery. The AMETEK suffered two failures, the first was repaired and resulted in a 2-month down time; the second is undiagnosed at this time but resulted in a decision to remove the system.

The RD system had a series of three sea truth experiments conducted over a 16-month time span which indicated that performance remained constant. Several reports have been published on the intercomparison initially conducted in October of 1984.

The AMETEK system has been given to the NOAA/AOML laboratories in Miami for future use. The RD system is being returned to RD for modifications, and it is planned to deploy the instrument in October of 1986 during the Army Corps of Engineers "SUPERDUCK" experiment for study of near-surface measurment characteristics. For further information contact Jerry Appell (Telemail: NOAA.OSD), 301-443-8026.

TELEMETRY OF OCEAN CURRENTS

A critical step in the collection of ocean measurements is the recording/transmission of the information. There is a growing emphasis in the use of telemetry to collect real (or near-real) time data. Is there much interest in the community in this approach for current measurements? Mel Briscoe and the Woods Hole Oceanographic Institution (WHOI) have some efforts underway in this area, and we would like to assess the general level of interest in the telemetry of currents especially from the deep sea. Telemetry applications would obviously impact the design/construction/modification of current measuring devices; and if the interest level is sufficient, it may be worth a group discussion to review capabilities, available options, etc. Mel has agreed to host such a get together if appropriate. Any ideas, suggestions, comments, contact Mel Briscoe, WHOI (Telemail: M. Briscoe), 617-548-1400; or Bill Woodward, NOAA/NOS (Telemail: W. Woodward), 301-443-8444.

RDI DOPPLER INSTALLATION ON TEXACO PLATFORM

The Ocean Engineering Research Group of the Scripps Institution of Oceanography has acquired one RDI acoustic Doppler meter for installation on a Texaco offshore platform now being installed northwest of Pt. Conception in 670 feet of water. The installation should be accomplished by the fall of 1986. The unit will be operated from a permanent installation on one leg of the platform to provide general current profile information and to assist in decisions about drilling mud exhausting. Data will be both recorded on the rig and telemetered to Scripps via our Coastal Data Information System in conjunction with wave data. Our main interest is to obtain long-term historical data sets on California Current movements (none exist now). The exact sampling and data format has not been finalized yet, and I am watching the evolution of standards via the ADCM on OMNET. To data, we have not operated the instrument in this exact mode before, and our long-term experience should yield some valuable data on overall performance for the community. For further information contact Meredith Sessions at Scripps (Telemail: M. Sessions), 619-452-2561.

DOPPLER SESSION AT FALL AGU MEETING

An acoustic Doppler Profiling poster session is planned for the fall AGU meeting. All aspects of Doppler profiler use will be addressed including scientific results, instrument intercomparisons, data processing algorithms and hardware development. For further information contact Eric Firing at the University of Hawaii (Telemail: E. Firing), 808-948-7894.

PROCEEDINGS AVAILABLE

The Proceedings of the IEEE Third Working Conference on Current Measurement have been printed and are now available. The IEEE is the exclusive sales agent for this publication, and you must purchase it through them. For purchasing information you may contact them at the following address:

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The Catalog number of the Proceedings is 86CH2305-1 and must be referenced in any information request. If for some reason you are not able to get in touch with the Sales Unit, please contact Bill Woodward, 301-443-8444.

CALL FOR PAPERS!

OCEANS 87

Twelfth Anniversary
Joint MTS/IEEE
Conference and Exposition

CONFERENCE AND EXPOSITION:

THE OCEAN - AN INTERNATIONAL WORKPLACE

SEPTEMBER 28 - OCTOBER 1, 1987

World Trade and Convention Centre, Halifax, Nova Scotia, Canada.

The Marine Technology Society (MTS) and the Institute for Electrical and Electronics Engineers/Oceanic Engineering Society (IEEE/OES) invite papers from interested authors for the OCEANS '87 CONFERENCE AND EXPOSITION.

The OCEANS '87 theme, "The Ocean - An International Workplace" is intended to highlight the worldwide co-operative aspects of ocean engineering, such as the development of equipment and methodologies for the exploitation of offshore resources, and the delimitation of relationships between the ocean and global climate.

Papers are requested that address a variety of viewpoints regarding international developments in science and technology and their environmental, sociological, and political implications. The conference is designed to be a forum for formal and informal meetings of scientists, educators, manufacturers, service organizations, public officials and environmentalists.

To achieve this goal, OCEANS '87 encourages submission of papers that:

- identify world needs that can be met through developing ocean technology;
- explore the impact on the environment of the growing interest in extracting ocean resources and offer solutions;
- describe new frontiers in marine science and technology and their potential for environmentally secure industrial development;
- forecast new areas of research and development, and
- discuss international programs in science and technology.

Accepted papers will be presented at the World Trade and Convention Centre, Halifax, Nova Scotia, Canada, September 28 to October 1, 1987. Those papers that are accepted, received by the publishing deadline, and considered of professional quality will be presented in the Conference Proceedings which will be available at the Conference.

ABSTRACTS DEADLINE: FEBRUARY 1, 1987

TECHNICAL PAPERS, TUTORIALS AND POSTERS WILL BE PRESENTED IN THESE FIELDS:

Advanced Marine Technology
Signal Processing
Robotics
Artificial Intelligence
Underwater Imaging
Vehicles
Real-time Measurements
Pop-up/Drifting Buoys
Fast Profilers
Remote Sensing
Novel Acoustics Applications
Fibre Optics

General Ocean Sciences
Global Mass Transfer Processes
Ocean Circulation
Marine Ecology
Fisheries Oceanography
Marine Optics
Seawater Properties
Marine Geology/Geophysics
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International Co-operation
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Ocean and Coastal Engineering
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Marine Resources
Renewable Resources
Assessment and Management
Ocean Mining
Offshore Oil and Gas
International Jurisdiction
Economic Potential
Food and Drug Resources
Pollution
Mariculture

Conference Format
Following a tutorial day, and a plenary session dedicated to the conference theme, multiple, parallel programs are planned. Each program will focus on the challenges facing the marine sciences and the technologies being applied. Sessions will use either a workshop or paper presentation format. Participants are encouraged to identify challenges, their current status and future goals.

Submittal of Abstracts and Papers
Abstracts should be submitted no later than February 1, 1987 on the form provided in this announcement. Authors of papers selected for presentation at the OCEANS '87 Conference will be notified by mail no later than March 1, 1987. Detailed instructions for the preparation of final manuscripts will be provided following notification of selection. Final manuscripts and accompanying illustrations must be received by the Technical Program Committee by June 1, 1987.

Abstracts should be sent to:
OCEANS '87
Dr. David McKeown
Technical Program Chairman
Bedford Institute of Oceanography
P.O. Box 1006, Dartmouth,
Nova Scotia, Canada B2Y 4A2

Evaluation of Abstracts
Each abstract will be reviewed by the Technical Program Committee. Authors should indicate which category or categories, noted in opposite column, they feel to be most appropriate to their subject matter.

Expenses Related to Papers and Their Presentations
Authors are responsible for all expenses incurred, including time spent, costs for preparation of manuscripts and illustrations, travel to the conference, and conference registration fees. It is also the responsibility of the authors to prepare camera-ready manuscripts, including half-tone photographs, for the conference publication.

Presentation of Papers at the Conference
The Technical Program Committee will assign papers to the appropriate sessions. Since formal papers and supporting data will be published in the Conference Proceedings, presentations generally will be limited to 15 to 20 minutes, including a substantial question period. **AUTHORS ARE RESPONSIBLE FOR OBTAINING APPROPRIATE RELEASES FROM GOVERNMENT SPONSORS. PLEASE ALLOW SUFFICIENT LEAD TIME FOR CLEARANCES!**

Exhibits
An extensive exhibit of marine products and services is planned as part of the OCEAN '87 Conference and Exposition. Special events will be scheduled at the exhibit hall to encourage interaction of exhibitors and attendees.

For information on exhibits call or write:
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Return by February 1, 1987

Please print or type form. All information must be submitted only on this form.

Authors' Names and Affiliations as they should appear in the Program:

Complete mailing address and telephone number of at least one author who will usually be available for contact:

Paper Title

ABSTRACT (Please limit your abstract to 200 words.)

Two topic areas most appropriate for this paper:
(Note topic areas on previous page).

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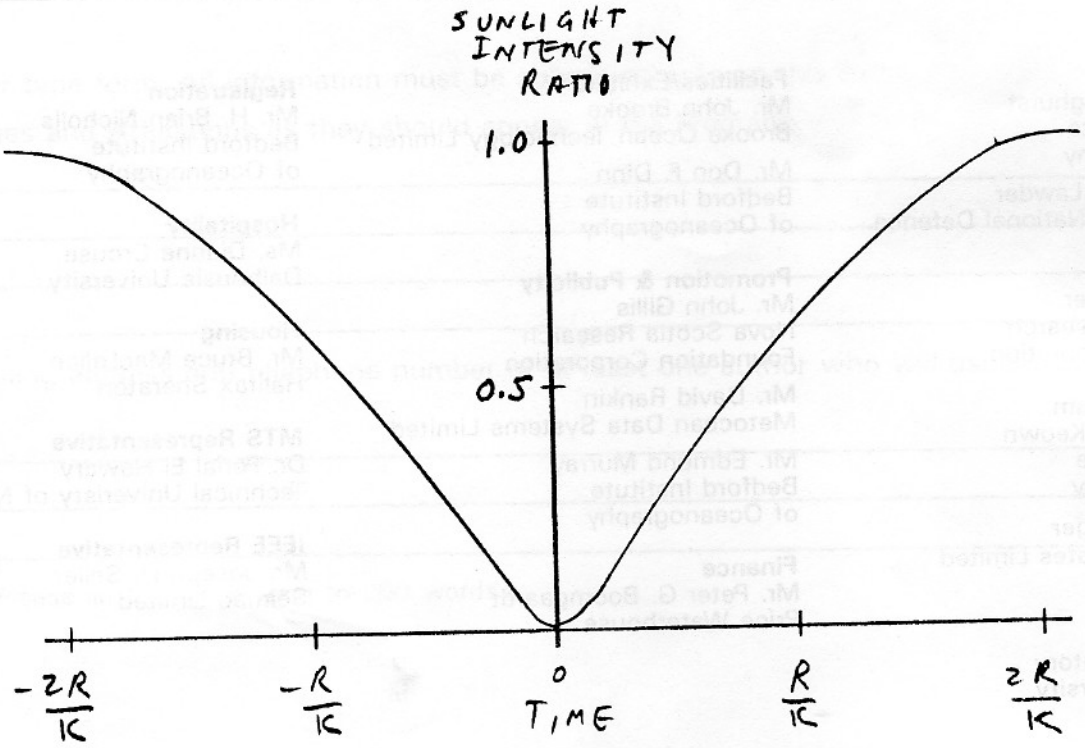
Continued from page 6

'TIS A PUZZLEMENT

A graph of intensity versus time appears as follows:



This Quarter's Puzzle: Who's All Wet?

This quarter's puzzle will be of practical benefit to other OES members who live in the Pacific Northwest. Do you stay drier by running or walking through the rain? If you walk slowly, only your head and shoulders get wet, but for a longer period. If you run, your front gets wet, but is exposed for less time than if you walked.

Dave Hollinberger
1607 Mahan
Bremerton, WA 98310

JOURNAL OF OCEANIC ENGINEERING

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APPLICATIONS OF OCEAN REMOTE SENSING TO COMMERCE

AND ENVIRONMENTAL MONITORING

Papers are invited that present new approaches to the analysis and utilization of satellite and airborne data for the economic and social benefits of major industries that are operated in or interact with the ocean, individual nations and the global community. These should include state-of-the-art methods of dealing with the present and future satellite sensors and data systems, and their interfaces with the user communities.

GUEST EDITOR

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ISSUE MONTH: 1987 JULY

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INTERNATIONAL SYMPOSIUM ON MARINE POSITIONING (INSMAP 86)

14-17 OCTOBER 1986

U.S. Geological Survey National Center Auditorium
Reston, Virginia

The following technical program sessions will be presented:

INSTRUMENTATION IN MARINE ENVIRONMENT — Sea Beam Mapping; Starfix; Hydrorange Acoustic Cable Tracking; Del Norte Spread Spectrum Radiolocation; Lasers and Nearshore Positioning; Polarimetric Radar; Japanese Geodetic Satellite; Evaluation of Large Ship GPS System; Positioning with the SDS III.

GPS IN MARINE POSITIONING — GPS Marine Kinematic Positioning; Combined Use of GPS Pseudorange and Doppler Measurements; Seafloor Benchmark Positioning; Comparison of Loran-C Positions with GPS Data; GPS-Aided Inertial Positioning; Precise GPS-Aided Marine Positioning; Dual Band Interferometric GPS Marine Navigation; Codeless GPS Positioning; GPS Positioning for Surface Element of Seafloor Geodesy System; Performance Appraisal of ARGO Calibration System Using GPS.

MARINE MAPPING & CHARTING — Multipurpose Marine Positioning Experiment in North Sea; Mapping Nuclear Craters on Enewetak Atoll, Marshall Islands; Image Processed Sidescan Sonar Data; Gloria Processing; Offshore Surveying with GPS and Loran-C; Electronic Chart Program in Canadian Hydrographic Service; MAGPEN Cartographic System; USGS's CONMAP & CMIS; Predictive Loran-C Positioning.

POSITIONING IN OCEANOGRAPHY — RAFOS Navigation System; Integrating Marine Navigational Systems in Post Cruise Processing; Referencing Acoustic Doppler Current Shear Profiles; New Sound Velocity Measurement System; Position Locating System on Data Buoys.

CALIBRATION & INTERCOMPARISON — Test Results on Variation Calibration; Uncertainty of Position Errors in Navigation; Errors in Radiopositioning Systems; Calibrated & Monitored Loran; Accuracy of Multiple Lines of Position.

APPLICATIONS/REQUIREMENTS — Monumented Marine Control; Navigation for Surveys of Trans-Pacific Fiber-Optic Cables; Mapping an Ocean Rift with Acoustic Transponder Positioning; Positioning Requirements for Delimiting National Maritime Jurisdictions.

WORKSHOPS — Satellite Altimetry for Oceanography; Precise Marine Positioning for Geodesy/Geophysics; GPS Applications in Oceanography; Instrumentation for Marine Positioning; Positioning in Marine Mapping and Charting.

FOR REGISTRATION INFORMATION CONTACT:
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1986

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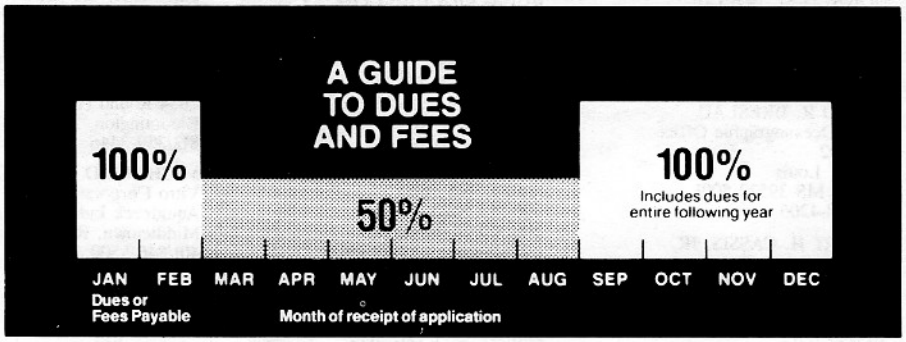

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