



Fig. 2: Flicki Oglebay Dormer (left) and capsule Flicki (right) upon recovery in December 1988. Flicki Oglebay was a programmer at Scripps Institution of Oceanography from 1960 to 1987, and is co-author of the BOMM (for Bullard, Oglebay, Munk and Miller) system of programs for the analysis of time series.

7-track, 200 bpi computer tape that had been loaded into a special cartridge, and had to be manually wound onto a standard computer reel for reading. The tape had a capacity of 720,000 6-bit frames. (For comparison, the instruments that we now use to conduct ocean acoustic tomography experiments have an 80C86 microprocessor with up to 1 Mbyte of memory as the central controller, roughly equivalent to an IBM PC/XT personal computer, with approximately 20 single-chip microprocessors scattered through the remainder of the instrument to perform various tasks. Data are stored on four 40-Mbyte Winchester disks of the type used in lap-top computers, giving a total of 160 Mbytes of data capacity.)

While the electronics have changed greatly, upon rereading a description of the capsule written 20 years ago (Snodgrass, 1968), we were struck by how up-to-date the remainder of the capsule was. The precision of the quartz crystal pressure and temperature sensors that were used is unsurpassed to this day. The same design of spherical aluminum pressure housings is still in use for ocean bottom seismometers fabricated at Scripps. The capsule had an acoustic command/telemetry system not

unlike those currently in use on some subsurface instruments. The basic design of the acoustic release system is similar to ones currently in use, although the electronic components used to implement the filters, etc. have changed greatly. The entire system consumed about 0.25 watts of power, comparable to the power drain of the electronics used for ocean acoustic tomography.

Flicki is truly an oceanographic time capsule. And *Kathy* is still out there. The answer to the question of "What was the longest time you ever had a capsule on the bottom?" is now 18 years, and getting longer by the year.

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A REPORT FROM THE INTERNATIONAL CONFERENCE ON TIDAL HYDRODYNAMICS

By Bruce B. Parker

THE International Conference On Tidal Hydrodynamics was held November 15-18, 1988, at the National Institute of Standards and Technology in Gaithersburg, Maryland, USA. It was sponsored by the Office of Oceanography and Marine Assessment in the National Ocean Service, NOAA and the Physical Oceanography Committee of the Marine Technology Society. The conference was attended by 161 tidal researchers from 15 countries. A total of 52 oral papers were presented, plus 21 poster papers.

The conference was divided into six sessions: 1) Tidal Analysis and Prediction; 2) Tidal Hydrodynamic Phenomena and Modeling (subdivided into ocean, shelf, and estuarine tides); 3) Nonlinear Tidal Interactions In Shallow Water; 4) Internal Tides and Baroclinic Effects; 5) New Approaches To Tidal Data Acquisition; and 6) Tidal Applications, Products, and Services. An important part of the program were the ten review papers, describing our present knowledge in particular areas of tidal hydrodynamics.

David Cartwright, formerly of Bidston Observatory in the United Kingdom and presently at the NASA Goddard Flight Center, gave the keynote address and also presented a review paper on tidal detection from satellites. Others giving review papers included: Gabriel Godin (Mississauga, Ontario, Canada) on the analysis of tides and currents; Michael Parke (JPL, CalTech, Pasadena, CA, USA) on ocean tides; Allan Clarke (Florida State, Tallahassee, FL, USA) on continental shelf tides; David Prandle (Bidston Obs., Merseyside, UK) on tides in estuaries and embayments; Bruce Parker (NOS/NOAA, Rockville, MD, USA) on nonlinear tidal interactions; Christian Le Provost (CNRS, Grenoble, France) on the generation of overtides and compound tides; Paul LeBlond (U. of B.C., Vancouver, BC, Canada) on tidal interaction with nontidal phenomena; Helmuth Sandstrom (Bedford Institute, Dartmouth, Nova Scotia, Canada) on internal tides, and Stephen

Gill (NOS/NOAA, Rockville, MD, USA) on new directions in tidal products and services. Geoffrey Lennon (Flinders University of South Australia) and Bernard Zetler (Scripps Inst. of Oceanography, La Jolla, CA, USA) gave dinner speeches that were both entertaining and historically interesting. Six working group meetings on Thursday night provided an opportunity for further discussion of specific issues of concern to the attendees. On Friday afternoon there was a tour of the National Ocean Service, NOAA, the U.S. agency responsible for publishing tide and tidal current tables and other tidal products.

By all accounts the conference was very successful, primarily because of the quality of the speakers and the comprehensiveness of the program. One very important result of the conference will be a refereed volume that is expected to serve as a valuable reference on tides. A full list of authors, and abstracts for specific papers, can be requested via telemail from B.PARKER/OMNET. □

Bruce B. Parker, National Ocean Service, NOAA, Chairman of the Steering Committee for the International Conference On Tidal Hydrodynamics, Miami, FL 33149.

ASSIMILATION OF METEOROLOGICAL AND OCEANOGRAPHICAL OBSERVATIONS

By J. Labrousse

An International Symposium on Assimilation of Meteorological and Oceanographical Observations will be held in Clermont-Ferrand, France, from July 9-13, 1990. The symposium is organized by the World Meteorological Organization (WMO) with the co-sponsorship of various national and international scientific organizations, including The Oceanography Society. The working language will be English. An International Programme Committee (IPC) has been established, with O. Talagrand as its chairman. A Local Organizing Committee has also been set up with F.X. Le Dimet as its chairman.

The program of the symposium will cover all the aspects of data assimilation of meteorological and oceanographical observations, both operational and theoretical. A pre-print of the papers presented by the invited speakers, as well as those submitted to the symposium, will be published by WMO and distributed to all participants

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ULTRAVIOLET RADIATION AND BIOLOGICAL RESEARCH IN ANTARCTICA

By C. Susan Weiler

Springtime levels of stratospheric ozone over the Antarctic region have decreased dramatically since the late 1970's. By 1988, the Antarctic "ozone hole" was larger than the Antarctic continent and persisted until late November, while the ozone minimum had dropped to less than 50% of pre-hole values. Because ozone absorbs strongly in the biologically active UV-B (280-320 nm) portion of the solar spectrum, concern has been raised about UV-B effects on Antarctic organisms and personnel.

On June 7-8, 1988, the National Science Foundation's Division of Polar Programs and the United States Environmental Protection Agency's Corvallis Environmental Research Laboratory co-sponsored a work-

shop entitled "Ultraviolet Radiation and Biological Research in Antarctica." The goals of the workshop were to: present an overview of UV-B effects on organisms and human health; describe Antarctic ozone changes and atmospheric and aquatic UV-B transmittance; describe the network the United States Antarctic Program is developing for monitoring ultraviolet radiation; and provide a forum for discussions among established and beginning UV researchers. Fifty-one scientists from Australia, Chile, Argentina, and a variety of U.S. research institutions and federal agencies participated in the workshop.

A summary of the workshop, with an abstract and short list of key references from each of the 12 presentations, is available from Dr. P.A. Penhale, Division of Polar Programs, National Science Foundation, 1800 G St. N.W., Washington, D.C. 20550. □

C. Susan Weiler, 224 N. Bellevue Ave., Walla Walla, WA 99362.

THE 18TH INTERNATIONAL CONGRESS ON THE HISTORY OF SCIENCE: AUGUST 1989

By Eric Mills

A one day symposium titled "Historical Research on Oceanography, 1800-1950" will be held in Hamburg between August 1-4, 1989 (exact day still uncertain) during the Eighteenth International Congress on the History of Science (ICHS-XVIII). Speakers from the United Kingdom, Federal Republic of Germany, Monaco, the US and Canada will consider topics such as the interest of the German Reichsmarine in oceanography between the wars, the early

organization of oceanography in Britain, the history of expeditions, and recent historiography of oceanography. Time has been scheduled for discussion at the end of morning and afternoon sessions.

A meeting of the Commission of Oceanography, Division of History of Science, International Union of the History and Philosophy of Science, open to all, will be held at the end of the afternoon session.

For information and registration forms for the ICHS-XVIII contact: CPO Hanser Service; Postfach 1221; D-2000 Hamburg-Barsbüttel; Federal Republic of Germany. □

Eric Mills, Dalhousie University, Dept. of Oceanography, Halifax, Nova Scotia B3H 4J1, Canada.

ARGOS USERS CONFERENCE AND EXHIBIT

By Katherine R. Swenson

The 1989 North American Argos Users Conference and Exhibit is being held in San Diego, CA, USA, May 15-17, 1989. Argos is an environmental, global data collection and location system by satellite. The pur-

pose of this conference is to increase awareness of new processing, products, and applications for users, manufacturers, and to provide information for those who want to know more about Argos services. For more information and a preliminary program, contact Katherine Swenson, Service Argos Inc., 1801 McCormick Drive, Suite 10, Landover, MD 20785, Tel. (301) 925-4411. □

JOINT GLOBAL OCEAN

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BY-LAWS

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4. A quorum for the transaction of business at an Annual Meeting shall be at least two percent of the members present who are eligible to vote on May 1 of that year. The affirmative vote of a majority of the members present who are eligible to vote shall be required for the resolution of any question.

The Council may make other rules for meetings not inconsistent with the Articles of Incorporation or Bylaws. Business not set forth in the notice of the meeting shall not be transacted if three members eligible to vote object.

5. The Society may organize, sponsor, or co-sponsor such additional local, national, or international meetings as may be authorized by the Council.

6. The fiscal year of the Society shall conform to the calendar year.

ARTICLE XII. Publications.

The Society shall issue an official publication and such additional journals, papers, books and the like as may be authorized by the Council.

ARTICLE XIII. Amendments to the Bylaws.

1. No part of the Bylaws shall be amended or annulled except by mail ballot in the following manner: A proposed amendment shall be approved by the Council or submitted to the President in a petition signed by at least five percent of the members eligible to vote on the preceding May 1. The proposed amendment, with the reasons therefor, shall be published in the official publication of the Society at least ninety days before ballots for the amendment are mailed.

2. A proposed amendment, accompanied by a ballot, shall be mailed by the Executive Officer to each member eligible to vote at least sixty days prior to the designated date the ballots are to be counted. The ballots to be counted must be received by the Executive Officer on or before the designated date for counting the ballots.

3. The adoption of a proposed amendment shall require the affirmative votes of at least two-thirds of all members voting. □

ASSIMILATION OF OBSERVATIONS

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before the symposium starts. The extended abstracts of the papers (up to six pages) prepared according to the instructions to be distributed later should be submitted no later than December 15, 1989, to: The Secretary-General of WMO; Attention PTR; World Meteorological Organization; 41, av. Giuseppe-Motta; Case postale No 5; CH-1211 Geneva 20; with a copy sent to the chairman of the IPC: Dr. O. Talagrand; Laboratoire de Météorologie Dynamique; Ecole Normale Supérieure; 24, rue Lhomond; F-75231 Paris Cedex 05.

Participants will be notified of the acceptance of their papers by the IPC before March 1, 1990. For further information concerning the symposium, please refer to the above mentioned two addresses. □

J. Labrousse, Research and Development Programme Department, World Meteorological Organization

The Bermuda Biological Station for Research, Inc. Announces Opportunities for Research and Coursework in Blue-Water Oceanography and Subtropical Marine Science.

Financial aid is available for exploratory research, summer courses and graduate thesis work. Facilities include a UNOL-supported vessel and a well-equipped laboratory wing. 1989 course topics include larval biology, zooplankton ecology, global environmental change, ecophysiology of corals, seagrasses and mangroves, hazard assessment and ecological statistics. For more information, contact:

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