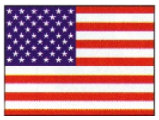
Chapter 4. An Unprecedented Decade of Successes for UH Marine Science Programs: 1957-1967

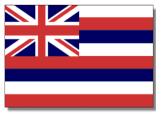
"Throw a lucky man into the sea,
and he will come up with a fish in his mouth"

Anonymous
Arab proverb

By the time UH was celebrating its 50th anniversary in 1957, marine biological research was being conducted at field laboratories in Waikiki, on Coconut Island in Kaneohe Bay, and at remote facilities at Enewetak Atoll. Oceanography and fisheries research were both well established scientific disciplines facilitated by capable seagoing vessels and collaboration with the neighboring POFI laboratory of the US Bureau of Commercial Fisheries. Several academic departments had specialized courses in marine sciences. Federal funding opportunities were available through newly formed agencies including ONR and NSF. The seeds had already been planted in the territory for a new academic program in oceanography and for the establishment of a geophysical institute. Quality researchers and competent administrators were in place at UH, especially Robert Hiatt who had tirelessly worked to establish opportunities for research and training in marine sciences. The next decade would see unprecedented growth in these and related initiatives, as well as statehood for Hawaii.

4.1. Statehood for Hawaii: 1959





In 1893, Queen Liliuokalani was overthrown in a revolution that toppled the monarchy. A provisional government, the Republic of Hawaii, was established with Sanford Dole serving as the first governor. In 1898, Dole went to Washington, DC to ask US President William McKinley to annex the Republic of Hawaii, and on 14 June 1900 the US Congress passed the Hawaii Organic Act that provided territorial status to the islands.

Nearly six decades later, on 21 August 1959 at approximately 1015 hr Hawaii time, US President Dwight D. Eisenhower proclaimed statehood for the Territory of Hawaii. By 1020 hr Republican William F. Quinn was sworn in as the first state governor and one minute later James K. Kealoha was sworn in as lieutenant governor. Two US senators, Hiram Fong and Oren Long, and one representative, Daniel K. Inouye, immediately began their terms as our elected officials in Washington.

This proclamation of statehood was a very long time coming, dating back to the end of WWII. As early as 1947, territorial Governor Ingram M. Stainback (1942-1951) was

campaigning for statehood during hearings on the US Department of the Interior appropriations bill. The hard work had paid off – the dream was now a reality. Thus began a new phase of the history of UH, now a state university with full access to federal funding for research and other academic opportunities.

In November 1962, the Democrats took control of Hawaii for the first time. John A. Burns ousted incumbent Governor William Quinn, Dan Inouye was elected to the US Senate, and Tom Gill and Spark Matsunaga were elected to US Congress. This was, in part, a reflection of the popularity of John F. Kennedy who had been elected US President in 1960. Burns, Matsunaga, and Inouye would go on to make numerous invaluable contributions to UH in general and to UH marine programs in particular. Inouye, now one of the most senior members of the US Senate, continues to provide a strong link between Washington and Honolulu. (note: The democratic control of the state would last 40 years, until Republican Linda Lingle was elected governor in 2002.)

4.2. HIG Becomes a Reality



"The breadth of research activity furthermore is not confined to the Hawaiian Islands but literally encompasses the globe, its land areas, the seas, the sky and outer space."

George P. Woollard
Inaugural HIG Director, July 1966

Throughout its early history, the institute – the collection of scholars – and the planned HIG building were almost synonymous because the success of the research was inextricably tied to the availability of modern, well-equipped laboratories. So there was much joy and excitement when, on 12 March 1958, the long-awaited news about funding for the Geophysics Institute building finally arrived in the territory. As reported that day in the *Honolulu Star-Bulletin*, the US Department of the Interior authorized legislation to create the institute and sent the report to the Bureau of the Budget (now Office of Management and Budget, OMB) for executive action. The Geophysics Institute, as an integral part of the research mission of UH, had been recommended in a previous NSF report that was ordered by the US Congress in 1956 under public law 909. The US Department of the Interior's proposed budget line for the new facility was $2.5 M.

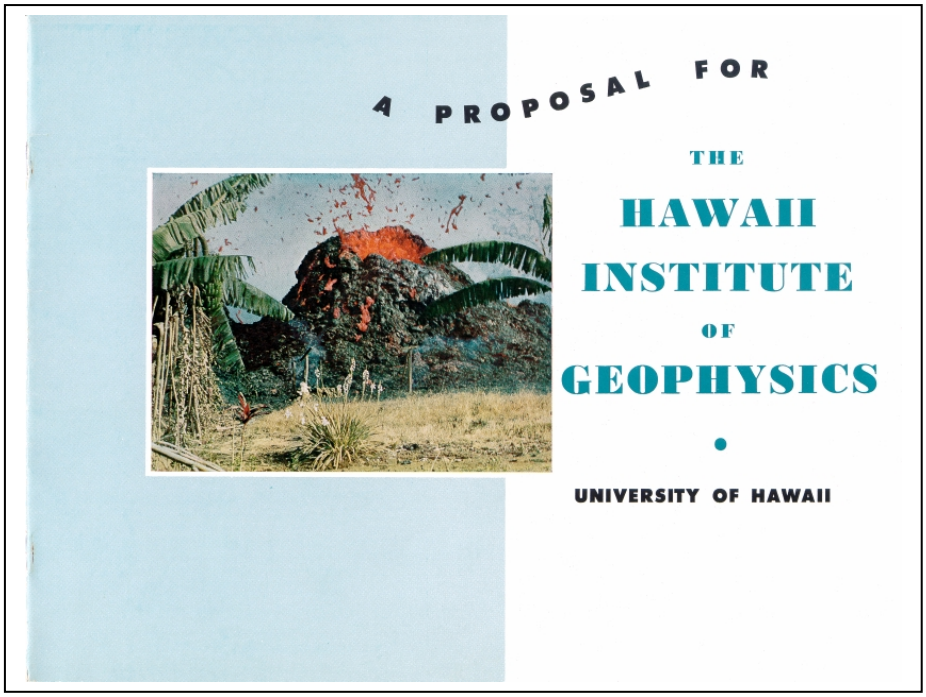
The Bureau of the Budget, unfortunately, recommended against enactment at that time; they held that NSF had authority for this project. Five months later, in August 1958, and at the request of territorial delegate John A. Burns, the bill was reviewed by the House Committee on Interior and Insular Affairs and approved for funding at a cost not to exceed $2.5 M. According to newspaper accounts, the bill provided for "the construction, equipping and operation of a geophysical institute in the Territory of Hawaii" and that this entity would be "part of and under the control of the University of Hawaii." On 30 December 1958 it was formally announced by Robert Hiatt, then UH

dean of the graduate school and director of research, that NSF intended to fund the construction of the Geophysics Institute building. HIG, as a focal point for research in earth and ocean sciences at UH, was about to become a reality.

The next few years were consumed with planning, including building site selection. A full color brochure, prepared by UH with a grant from the Territory of Hawaii Economic Planning and Coordination Authority with specific architectural plans by Clifford Young, was used to promote the institute during the extended evaluation process (Figure 4.1). A preliminary study of the proposed HIG including location, detailed architectural drawings, and cost estimates had the institute located on a proposed site on Dole Street near the present Holmes Hall (Figure 4.2). The original design (Figure 4.3) called for a main laboratory/office building approximately 65,000 square feet (at a cost of $22/square foot), with several small auxiliary buildings including housing for guest scientists. The main 1-story building would have had a large courtyard, a machine shop, a library, and a large number of specialized laboratories. There was also to be a covered, outdoor wave tank. A connected 2-story administration building had a large auditorium and open space designed for public exhibits. Among other specific equipment, the plans also called for a single "electronic analog computer" with a price tag of $100 K. HIG was eventually sited next to Bilger Hall, so a new design was required.

During the welcoming address to delegates attending the 10th Pacific Science Congress in August 1961, UH President Laurence H. Snyder – who also served as congress president (see note, below) – announced that federal authorities had approved a request to provide funding for the construction of a Geophysics Institute and a new Pacific Biomedical Research Center (PBRC; see section 4.12), both on the UH campus. According to *The Honolulu Advertiser* report of the Pacific Science Congress ceremonies held in Andrews amphitheater, Roger Revelle – President Kennedy's personal representative at the congress and former director of Scripps Institution of Oceanography – termed Hawaii "a national platform in the mid-Pacific for geophysics, oceanography, fisheries, ionospheric studies and many other facets of the studies of the earth." He went on to say, "it is my personal hope that through the new Geophysical Institute and allied activities, Hawaii will become a world center in the earth sciences."

(note: In 1920 – on the eve of the emergence of the University of Hawaii in 1921 – the 1st Pacific Science Congress was held in Honolulu. The conference was sponsored by the US National Academy of Sciences (see *Box 3.1*). Later, in 1953, UH marine science participation in the Pacific Science Congress grew with Robert Hiatt, William Gosline, Max Doty and others in attendance at the 8th congress in the Philippines. By the late 1950's – it was time to move the venue back to Honolulu. In a 1958 letter from Detlev Bronk – then president of the NAS – to Laurence Snyder – then president of UH and president of board of directors of the AAAS – an invitation was extended to serve as president of the 10th Pacific Science Congress in 1961. The conference would be co-sponsored by UH and the Bishop Museum, in addition to other organizations. This late August 1961 meeting was used to showcase UH and, especially, UH marine science programs.)



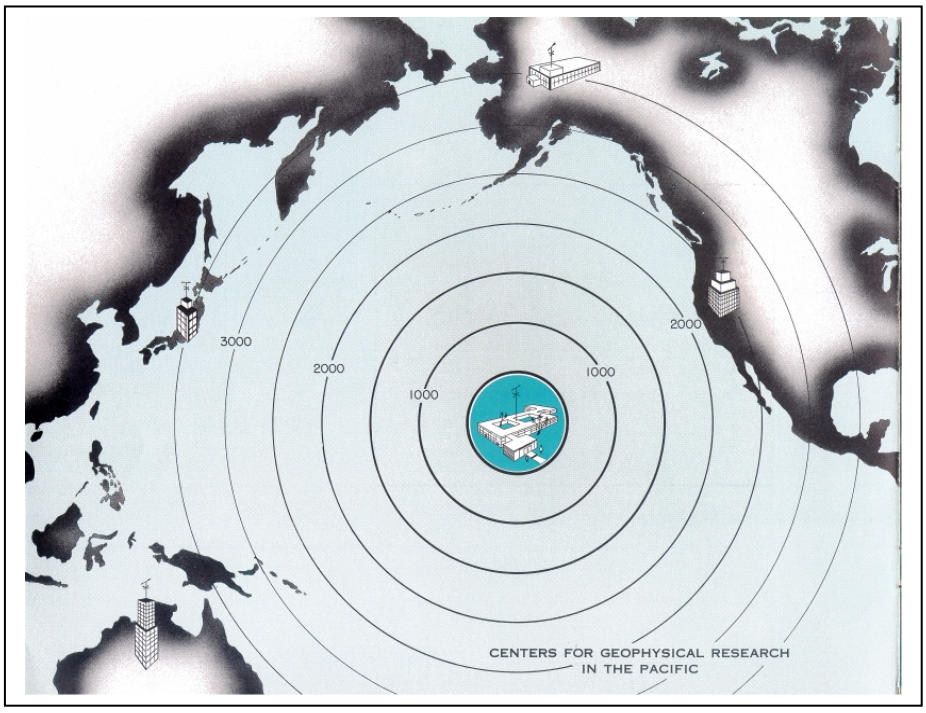
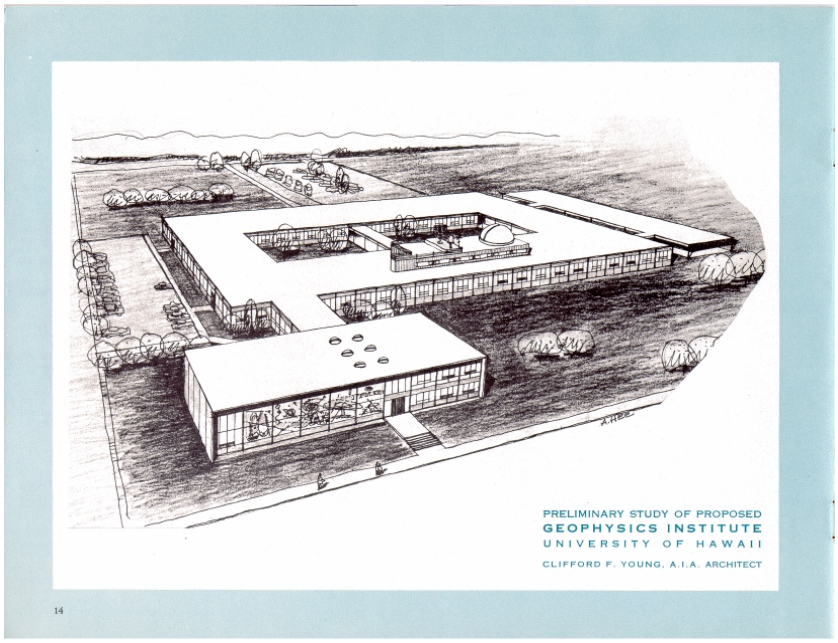


Figure 4.1: Cover of the formal proposal to create a new geophysical institute in the Territory of Hawaii (top) and map of the Pacific basin showing the ideal, central location of Hawaii relative to geophysical institutes in Alaska, California, Japan and Australia (from SOEST archives).



Figure 4.2: Map of UH campus, circa 1958, showing the planned location (in white) for the new geophysical institute (see also Figure 4.3) in the area now occupied by Holmes Hall just mauka of the quarry. The large structure near the center of the photograph is the new chemistry building (the not yet named "Bilger Hall") and the rectangular structure just to the left of the proposed site is the Pineapple Research Institute where Krauss Hall now stands. Ultimately, HIG was built at a different location so a new planning document was required. (from SOEST archives)

Coincidentally, or not, the FY 1962 budget request for the HIG building was presented to the National Science Board, the governing body of the NSF, on 31 August 1961 in Honolulu during the Pacific Science Congress; this was the science board's first meeting outside of Washington, DC. By this time, however, it was only a matter of protocol; the funding for UH-HIG was certain. The members of the National Science Board, including Detlev W. Bronk (note: Bronk was a distinguished scientist who is credited with formulating the modern theory of the science of biophysics. He also served as a science advisor to President Harry Truman and – according to the so-called "Eisenhower Briefing Document" – was a member of the "Majestic 12 Group." Bronk served as the 6th president of The Johns Hopkins University from 1949 to 1953), then president of the NAS and chair of the National Science Board (Figure 4.4), were all present the very next day, 1 September 1961 at 1600 hr, to participate in the HIG ground-breaking ceremonies on the university's Manoa campus (Figure 4.5). The dream of Robert Hiatt and many others was finally a reality. According to Hiatt's own historical account of the formation of HIG published in *Malamalama: A History of the University*



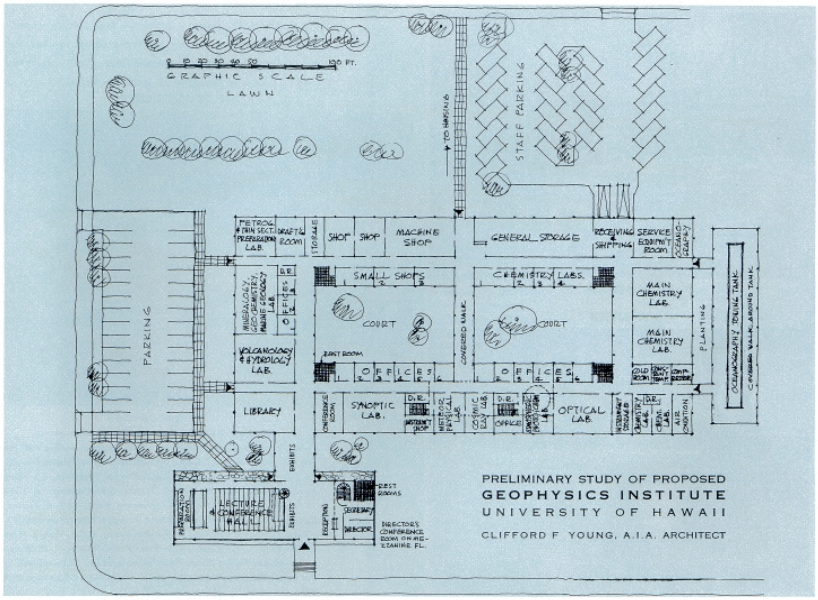


Figure 4.3: Original design for the new geophysics institute at the University of Hawaii, aka HIG. For reasons unknown to the author, this plan was never implemented and instead a new building design was drawn up and eventually approved for construction at a new site on the UH campus. (from SOEST archives)

of Hawaii, Jack Naughton (chemistry), Don Sherman (soil science), Ken Watanabe (physics), and Colin Ramage (meteorology) were key faculty at the start.

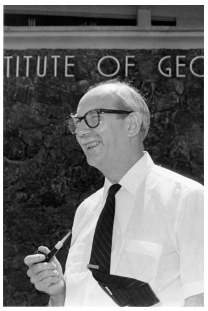


Figure 4.4: National Science Board Chairman Detlev Bronk addressing the participants and guests assembled for the HIG groundbreaking ceremonies on 1 September 1961. (from UH at Manoa Masao Miyamoto collection; negative B61-00027)

According to NSF documents and records concerning the HIG building, a $300 K grant was initially awarded in FY 1961 to Robert Hiatt. At that time, the federal FY began on July 1 (i.e., FY 1961 began on 1 July 1960). This initial grant was for detailed architectural and engineering studies. In FY 1962, $2.7 M was awarded to Hiatt for "construction of, and equipment for, an Institute of Geophysics at UH." These two grants, totaling $3 M, were a larger financial commitment than had been anticipated, and the extra funds were put to good use.



Figure 4.5: HIG groundbreaking ceremonies on 1 September 1961. At top, Robert Hiatt – the person most responsible for the creation of HIG – addresses the assembled crowd. At bottom, Robert Hiatt, Detlev Bronk, Laurence Snyder, and two unidentified guests of honor take part in the ceremonial breaking of the ground. (from UH at Manoa Masao Miyamoto collection; negative package B61-00027)



4.3. George Prior Woollard: The Inaugural Director of HIG

With the new HIG building fully funded and under construction, it was time to recruit a permanent director for the institute. The administration was seeking an outstanding scientist to lead this new organized research unit, someone with a grand vision for the future and excellent leadership skills. In 1963, UH was successful in their international search when George Prior Woollard was appointed inaugural Director of HIG (see *Box 4.1*).

(note: According to Ralph Moberly's "Early history of the department of geology and geophysics," Colin Ramage – then UH professor of meteorology and oceanography and later chair of the Department of Geosciences – was also a finalist for the position of inaugural director of HIG. He was, according to Moberly, the favorite among several UH administrators.)

Box 4.1: **"Doc" Woollard Aboard!**

"A great man is always willing to be little."
Ralph Waldo Emerson
(1803-1882)



According to a *Honolulu Star-Bulletin* article by Janos Gereben that was published on 7 Dec 1974, George Woollard was born in Georgia in 1908. At age 11, Woollard went aboard a ship from the US as a cabin boy, arrived in England, had himself adopted (his birth surname was Prior), attended school and then did another trans-Atlantic cabin boy trip at age 13, landing him back in Georgia. He later attended Georgia Tech and, while working to raise money for college, he lost an eye in an industrial accident. He went on to graduate school at Princeton University where he received a PhD degree in geophysics in 1937. He worked on underwater sound at WHOI during WWII and published the first manual on factors governing sound ranges. He moved to the University of Wisconsin in 1952 where he would eventually serve as director of the Polar Research Institute that he had created. Among other achievements, Woollard – as head of the Polar Research Institute – helped to established an integrated research program for the polar regions during the IGY (1957-1958; see *Box 3.13*). The article by Gereben also noted that "Woollard collects children as a hobby" – four of his own and five adopted!

George Prior ("Doc") Woollard was named the first permanent director of the Hawaii Institute of Geophysics and professor of geophysics in the Department of Geology and Geophysics in 1963. At the time he joined the UH faculty, Woollard was an elected Fellow of the Geological Society of America (GSA) and a Fellow of the American Geophysical Union (AGU); in 1963 he also served as president of AGU.

continued

***Box 4.1:* "Doc" Woollard Aboard! (continued)**

When Woollard joined UH, he was one of the leading geoscientists in the world. His research expertise was in the area of gravity and magnetics and in 1973 Woollard was awarded AGU's highest honor, the William Bowie Medal, for his "outstanding contributions to fundamental geophysics and his unselfish cooperation in research." The presentation by Walter Langbien and Woollard's acceptance were both published in *EOS* (1973, vol. 54: 708-709). Among others, Woollard thanked his former students for whatever good he had achieved in science; "Finally, I cannot overemphasize the fact that whatever degree of achievement I may have accomplished to justify my getting the Bowie Medal tonight, it in large measure can be attributed to my students." He went on to say, "These men literally worked like slaves to carry out the programs I felt were necessary if we were to understand gravity…" Previous awardees included W. Bowie, H. Bigelow, H. Sverdrup, M. Ewing, H. Benioff, and R. Revelle; UH had a real "big fish" on board!

Citation on Awarding the
William Bowie Medal to
George P. Woollard, 17 April,
1973



Thirty-Fifth Presentation

WILLIAM BOWIE
MEDAL
to
GEORGE P. WOOLLARD

for outstanding contributions to fundamental geophysics and for unselfish cooperation in research

GEORGE P. WOOLLARD is a man of huge and cheerful vitality, with an infectiously lively and critical interest in every aspect of geophysics. He has stimulated not only his students but his colleagues and collaborators all over the world. Not only does he, often without knowing it, spur them all to fresh efforts by his enthusiasms, but he has also always participated himself in the travels and the troubles and the tiresome reductions of mountains of data; and each time in the end he has surprised most of them by his quietly purposeful interpretations in terms of structural geology, his life-long interest.

For a few years, physical oceanography at Woods Hole expanded his interests to global dimensions. Then for many years, from his home base at Wisconsin, he and his men flew with gravity instruments of every conceivable type to every continent and to every island airport in the world, seeking first the most trustworthy gravity measurements, and next the most thoroughly reliable interpretation of the gravity maps they drew together.

While his personal research time was largely devoted to gravity, his stimulus and participation with his Wisconsin colleagues encompassed the whole range of geophysics, with emphasis on seismic investigations and magnetism and on the less studied polar regions. His encouragement and support embraced colleagues and friends everywhere, however, and the capacity that he has for supporting the interests of others finally led him to accept the challenge of Hawaii, where he now has a whole wide-ranging Institute pushing forward the boundaries of geophysics, including oceanography.

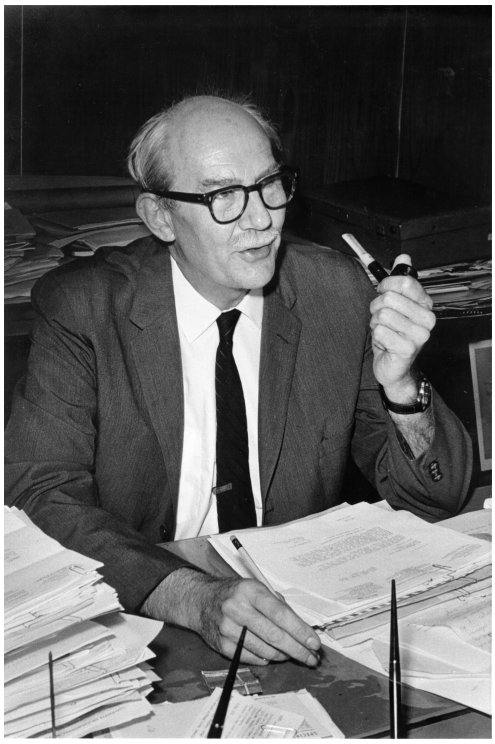
The members of the American Geophysical Union salute their former President with the well-deserved Bowie Medal.

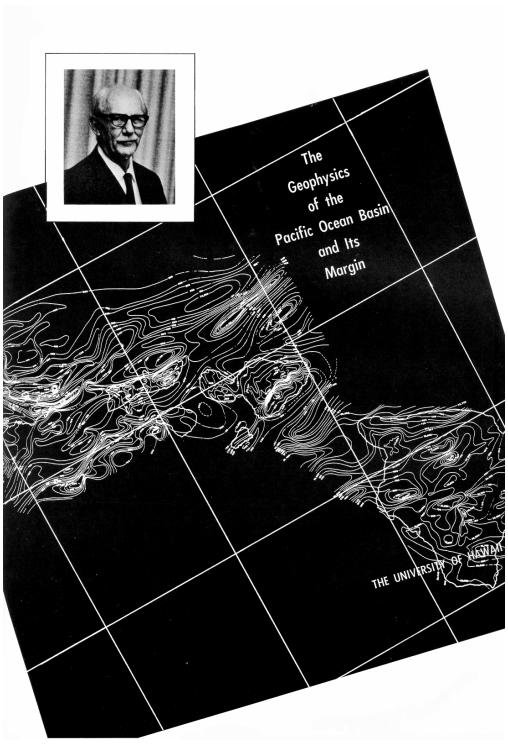
Walter Langbein

continued

***Box 4.1:* "Doc" Woollard Aboard! (continued)**

For more than a decade, Woollard helped shape the future of marine science and especially marine expeditionary science at UH. In December 1974, HIG hosted an international symposium at the Kahala Hilton to honor George Woollard on the occasion of his 66th birthday, and to recognize the scientific contributions that he and his associates have made over the years. The symposium title was "The Geophysics of the Pacific Ocean Basin and its Margin"; the papers presented at the symposium were later published as an AGU monograph (below). More than 100 invited participants, including senior scientists from the US and more than 25 other countries. According to a *Honolulu Star-Bulletin* article on this historic event, the characteristically straight Woollard said "it's certainly nice of them to do it now and not wait until I'm dead."





Inaugural HIG director George Woollard with pipe, at his desk, and cover of the Woollard Symposium volume, circa 1974. (from SOEST archives)

In 1976 Woollard retired as HIG director, but remained on the UH faculty. According to a newspaper report at that time, Woollard was quoted as saying that he plans to focus on three things he always wanted to do but never had the time – "writing poetry, drawing, and playing the cello." Doc Woollard died on 8 April 1979 at the age of 70. In a memorial tribute, prepared by Val Godley from letters and cables received from colleagues around the world, the common thread was Woollard's generosity and his humanity. He always put people first. UH, and the science community in general, had lost a giant. Among the many acknowledgements of Woollard's contributions to science is the George P. Woollard award given annually by the Geological Society of America's Geophysics Division to "recognize outstanding contributions to geology through the application of the principles and techniques of

continued

***Box 4.1:* "Doc" Woollard Aboard! (continued)**

Geophysics (http: //geoscience.unlv.edu/pub/GSA_Geop/Woollard.html; past recipients have included Manik Talwani, Charles Drake, Norm Sleep, and Don Forsyth, among others). Mount Woollard, a 2,367 m peak located at 80°33'S, 96°43'W in Antarctica discovered by the Marie Byrd land traverse party during IGY (1957-1958), stands in Woollard's honor for his contributions to polar geophysics.

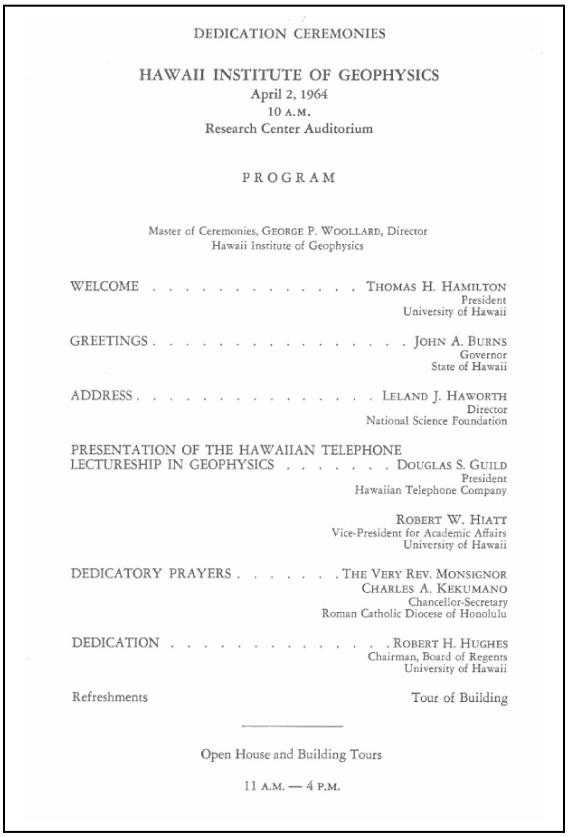
When Woollard assumed the directorship of HIG, there were 11 "full time equivalent" (FTE) faculty positions assigned to his organized research unit. Through his leadership and by the addition of new state- and federal government-supported positions, HIG would emerge as the leading research entity on the UH Manoa campus. Woollard's influence at local, national and international levels was profound and eventually led to the formation of a world-class marine research organization (especially marine geology and geophysics). Working closely with Director Woollard was an 18-member advisory board that included both UH and private sector scientists; at the time of Woollard's appointment as inaugural HIG director, Robert Hiatt was the chair of the HIG advisory board.

The UH Academic Development Plan I (ADP-I) was completed in 1963, the same year that George Woollard became the director of HIG. The stated objectives of HIG, at that time, were "to take advantage of the unique position of Hawaii as a national laboratory for geophysical research covering the broad field of earth sciences." The ADP-I plans for HIG included (1) seeking support for an adequate ocean-going research vessel and shore facilities, (2) working with US Corps of Engineers to obtain use of the hydrodynamical model facility at Kewalo Basin (note: This facility would eventually be turned over to UH), and (3) working by split appointments and other means to enhance collaborations with UH academic departments.

The official dedication of the HIG building on 2 April 1964, culminated a decade-long and oftentimes steep uphill battle (Figure 4.6). Leland J. Haworth, then director of NSF, was the keynote speaker. UH President Thomas Hamilton, Governor John Burns, and UH Vice President for Academic Affairs and former UH Dean of the Graduate School and Director for Research during the formative years of HIG gestation – Robert W. Hiatt – were also among the distinguished program participants. Inaugural HIG Director Woollard served as the master of ceremonies.

An information brochure that was distributed at the dedication of the HIG building provided some history of the institute as well as current facts and figures concerning the research and funding portfolios. According to this information, research grants and contracts (exclusive of building, laboratory, equipment and computers) was $100 K in 1958-59, $500 K in 1960-61, and >$2 M in 1963-64. The latter period represented funding for 30 separate grants and contracts that were obtained by the 11 principal investigators in the institute. State of Hawaii support over these same time periods was only $25 K, $40 K, $260 K showing the large leverage of the extramural support.

In conjunction with the HIG building dedication ceremonies, the Hawaiian Telephone Company sponsored two lectures by Homer Newell, then associate administrator of the Office of Space Science and Administration of NASA. On 2 April in Bilger auditorium, Newell presented a lecture on "Space and Geophysics" and on 4 April the topic was "Project Apollo."



DEDICATION CEREMONIES

HAWAII INSTITUTE OF GEOPHYSICS
April 2, 1964
10 A.M.
Research Center Auditorium

PROGRAM

Master of Ceremonies, GEORGE P. WOOLLARD, Director
Hawaii Institute of Geophysics

WELCOME . . . . . THOMAS H. HAMILTON
President
University of Hawaii

GREETINGS . . . . . JOHN A. BURNS
Governor
State of Hawaii

ADDRESS . . . . . LELAND J. HAWORTH
Director
National Science Foundation

PRESENTATION OF THE HAWAIIAN TELEPHONE
LECTURESHIP IN GEOPHYSICS . . . . . DOUGLAS S. GUILD
President
Hawaiian Telephone Company

ROBERT W. HIATT
Vice-President for Academic Affairs
University of Hawaii

DEDICATORY PRAYERS . . . . . THE VERY REV. MONSIGNOR
CHARLES A. KEKUMANO
Chancellor-Secretary
Roman Catholic Diocese of Honolulu

DEDICATION . . . . . ROBERT H. HUGHES
Chairman, Board of Regents
University of Hawaii

Refreshments Tour of Building

Open House and Building Tours

11 A.M. — 4 P.M.

Figure 4.6: Dedication ceremony for HIG

By late spring 1964, the 4-story HIG Research Center (Figure 4.7) containing laboratories, classrooms, offices, specialized support facilities and a geosciences library was fully operational. Eventually HIG would house the largest non-military computing center in the Pacific including the centerpiece, an IBM 7040 computer. Another unique part of HIG was the famous "globe" (Figure 4.8). Many of us have seen it sitting there in the "globe room" but what may not be generally known is that, in April 1964, this was the only globe in the world to show both physical relief on the continents and ocean depth contours. It was built by Rand McNally and Company for UH, at a cost of $13 K.

The HIG research center supported undergraduate and graduate education in geosciences administered through the Department of Geosciences which was part of the university's College of Arts and Sciences. Selected faculty held split instructional and research appointments, and the chair of the Geosciences Department was also the associate director of HIG. This provided a functional link between the education and research missions of HIG.



Figure 4.7: HIG building (top) from the intended front – facing west – and (bottom) view of HIG courtyard from the top of the Marine Sciences Building, circa 1985 (from SOEST archives)

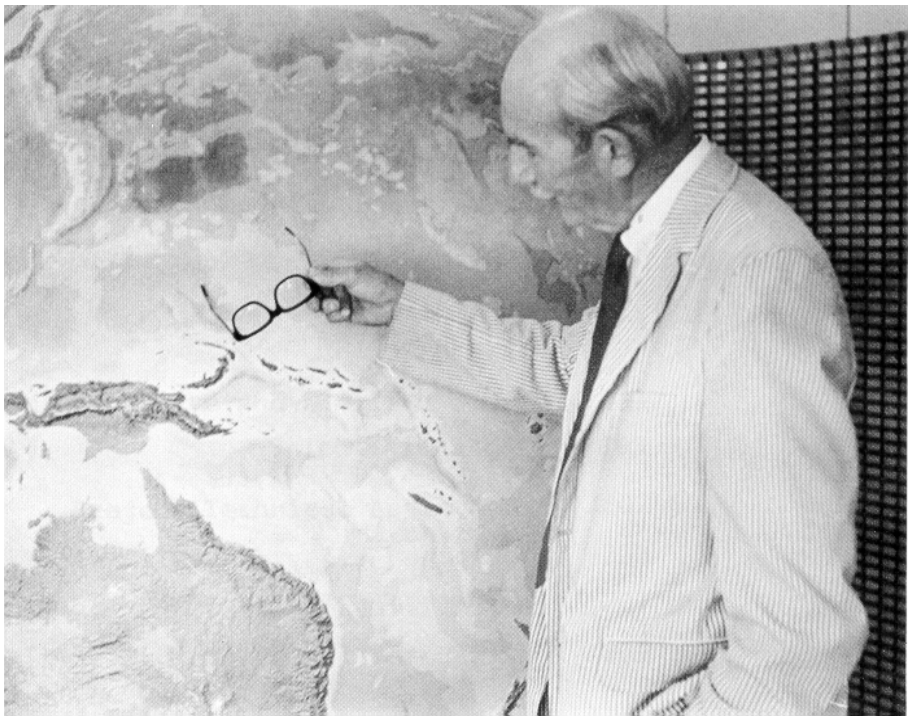


Figure 4.8: George "Doc" Woollard – the inaugural director of HIG – examining details of the seafloor in the southwest Pacific on the "famous" HIG globe. (from SOEST archives)

Under Woollard's leadership, HIG developed new research programs many of which attracted national and international recognition. In these early days, HIG enjoyed strong financial support from ONR, both for marine expeditionary research and for support facilities, including research vessels. By 1967 UH rated 42nd in the nation in federal research funding, up from 94th just 3 years before that time, to a total of $18.7 M. A significant proportion of the new federal funding that catapulted UH to this new ranking as one of the nation's premiere research universities was obtained by HIG faculty for marine-related research programs (see *Box 4.2*).

During his visit to Hawaii in April 1964 to help dedicate the new HIG building, NSF's Director Haworth also commented on other research projects that might favorably impact UH, including Project Mohole. In a 2 April 1964 interview with *Honolulu Star-Bulletin* reporter Helen Altonn, Haworth stated that "Hawaii has a very good chance of getting the nod as the location of the nation's $68 M project designed to drill deep into the earth's crust." Subsequent selection of the Mohole Project at an ocean site near Maui gave a large boost to the growing marine sciences programs at UH. Also cited as an indication of UH's commitment to marine sciences and their stature was the announced appointment of Henry Stommel – one of the nation's leading oceanographers at that time – to the Captain Cook Chair in Oceanography. Unfortunately for UH, neither Mohole nor Stommel would ever materialize. In the case of Mohole, spiraling costs and political

disfavor would eventually lead to the project's cancellation (see *Box 4.3*). In the case of Stommel, this was largely UH's own failure (see section 4.10).

***Box 4.2*: University "Report Cards"**



"If you think education is expensive, try ignorance."
Derek Bok
(1930-)

In 1905, Andrew Carnegie founded the Carnegie Foundation for the Advancement of Teaching to bring attention to the profession of education. In the early 1970s, the foundation developed an objective means of classifying, evaluating and ranking the nation's institutions of higher learning. From 1973 to 1987, doctoral-granting research universities, like UH at Manoa, were placed into category I or category II depending on whether they were in the top fifty institutions (a "I" designation) or the next fifty (a "II" designation). The level of federal funds received for research was a major criterion in this ranking process. In 1987, there was a change in ranking criteria so the number of Carnegie Research I universities increased nearly two-fold relative to previous rankings. Today, there is an effort to classify – based on programs and mission – rather than rank, *per se*.

The Carnegie Classification of Institutions of Higher Education (http://www.carnegiefoundation.org), is a well accepted guide of a given university's performance levels in teaching and research. According to the revised 2000 Carnegie classification, Doctoral/Research Universities-Extensive are institutions that offer a full range of baccalaureate programs and are committed to graduate education through the doctorate, and have an emphasis on research. During the period of study they must have awarded 50 or more doctoral degrees per year across at least 15 disciplines. UH at Manoa classifies as one of 151 total institutions nationwide (approximately 3-8% of all institutions of higher education) that qualify as Carnegie Doctoral/Research University-Extensive Research University I.

US News and World Report and other sources sometimes use the Carnegie classification to develop college rankings and many institutional administrators use the Carnegie ranking as an indication of their level of achievement, a university "report card" as it were.

By 1985, UH at Manoa had become one of the top 25 universities in the nation in earth, ocean, and physical sciences based on the amount of federal research support spent in these fields. Of course this is just one of many key indices of excellence, but grant support is certainly an important first step and reflects favorably on the quality of the faculty.

Box 4.3: **UH and the Lost Promise of Project Mohole**



(View of CUSS-I, the converted navy barge used for Project Mohole's tests in spring 1961; NSF photograph)

The Mohorovičić discontinuity or simply Moho – the boundary between the Earth's crust and mantle that was named for Andrija Mohorovičić, the Croatian geologist who first proposed the existence of such a feature – was the target of a large international research effort termed Project Mohole. An authoritative account of the interesting and historic events leading up to this project, including the key role of the American Miscellaneous Society (AMSOC; see *Box 4.12*), is provided by Willard Bascom (1980).

The scientific objective of Project Mohole was to drill approximately 10 km into the crust from an ocean-based platform (the Earth's crust is significantly thinner beneath the ocean compared to the continents). The program began in 1959 and the first test hole in the seafloor was completed in March 1961 off La Jolla, California. At that time, the prime contractors for the Mohole Project, Brown and Root, were still searching for the ideal site for the "big deep hole." Because the drilling platform would be on site for a fairly long period of time, weather was a consideration; the ideal site would also need to be close to a major US port.

In spring of 1962, scientists from Scripps Institution of Oceanography mounted a site selection expedition called "Hilo Expedition" to explore areas of the eastern and central North Pacific Ocean between California and Hawaii. Eventually they selected a site about 120 miles N-NE of Maui, and in 1962 this location was endorsed as the Mohole Project target, with drilling to begin in 1968.

Almost immediately, the local press and UH administrators alike were claiming that this site in Hawaiian waters, which was selected based on geology and logistical considerations, was our new opportunity for academic leadership in marine sciences. In a 3 October 1965 *The Honolulu Advertiser* article, Gordon Lill, the Mohole Project Director, was quoted as saying that "UH will eventually become the greatest center for Pacific studies that the world has ever seen….Mohole is the ticket." Of course, the ocean scientists knew that it would take more than a hole to make UH world-class. Nevertheless, the physical proximity of this high profile, big-science program to UH did provide many potential opportunities. For one, NSF funding facilitated a much needed upgrade to the UH-HIG computing facilities to handle the anticipated data derived from the Mohole Project.

Unfortunately, Project Mohole soon became Project "Nohole." According to an authoritative account by Edward Winterer in the NRC's book *Fifty Years of Ocean Discovery*, after an expenditure of about $57 M, congress denied further funding and NSF had to abandon Mohole, and with the demise of this project, UH lost a potential opportunity. Ironically, one of the greatest ocean science failures – Project Mohole – led to the creation of NSF's Deep Sea Drilling Program (DSDP), which by most measures has been one of its greatest scientific successes.

The DSDP at NSF had its roots in the failed Project Mohole. In 1964, four academic institutions (Lamont, Miami, WHOI, and Scripps) formed the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES), and in 1966 congress awarded $5.4 M in new research dollars to begin the new program. Scripps was awarded the prime contract and in 1967 they subcontracted to Global Marine to supply the drill ship, *Glomar Challenger*. In 1968, HIG became a member of JOIDES and a major participant in the DSDP and its successors. Membership was also held by UH in Joint Oceanographic

continued

Box 4.3: **UH and the Lost Promise of Project Mohole (continued)**

Institutions, Inc. (JOI) – a consortium of US academic institutions that were incorporated in 1976 to bring the collective capability of the individual institutions to bear on large oceanographic research projects.

By the end of 1983, the scope and requirements of the new science programs had surpassed the capability of the vessel, so a new ship – the *SEDCO* 471 – owned and operated by British Petroleum and Schlumberger was acquired and rechristened the *JOIDES Resolution*. The name *Resolution* honors the *HMS Resolution*, the great sailing vessel commanded by Captain James Cook more than 200 years ago. The DSDP program was renamed Ocean Drilling Program (ODP); the prime contract also moved from Scripps to Texas A&M University. The newest international venture, set to begin on 1 October 2003, is the Integrated Ocean Drilling Program (IODP). This program will use two vessels: a conventional scientific drill ship provided by the US, and a riser-equipped drill ship, *Chikyu*, provided by Japan.

Over the years, UH researchers have made numerous and significant contributions to the DSDP program, and many faculty have served as lead scientists on selected expeditions – sometimes to exotic locations. Ralph Moberly also served as editor of DSDP volumes 32 and 89, a scientific publication series connected with this international ocean drilling field program.

4.4. HIG-Makai: "Towards the Sea" with a New Emphasis on Oceanography



"for whatever we lose (like a you or a me)
it's always ourselves we find in the sea"
E. E. Cummings
(1894-1962)

As the name HIG implied, the initial mission of the institute would be broad and interdisciplinary, with a sectional organization that was patterned after AGU. Accordingly, emphasis was initially placed on disciplines like geology, volcanology, meteorology, astrophysics, geochemistry, seismology, hydrology, and physical oceanography. All of these programs would benefit from Hawaii's natural geographical and geological advantages as a mid-plate hotspot in a mid-ocean setting, with relatively easy access to both high mountains and the deep abyss.

After the loss of the hydrology section, which left HIG to form the Water Resources Research Center in 1964, the loss of the J. K. K. Look Laboratory to the new Ocean Engineering unit in the College of Engineering in 1966 (see *Box 4.4*), the split of the astronomy and aeronomy division to form a new Institute for Astronomy in 1967, and the departure of the Department of Meteorology with their Hilo Cloud Physics Laboratory in 1970, HIG became a predominantly oceanographic institute (except in name!) with special emphasis on physical oceanography, marine geology and geophysics, and marine geochemistry. The affiliated academic departments at that time in the early 1970s were geology and geophysics, chemistry, and oceanography. The previously interdisciplinary Department of Geosciences ceased to exist.

Box 4.4: **The J. K. K. Look Laboratory (1964-2002)**

The J. K. K. Look Laboratory of Ocean Engineering was dedicated by Governor John A. Burns on 28 July 1964. The 10,000 sq. ft. hydrodynamics laboratory located near Kewalo Basin was built by the State for the US Army Corps of Engineers to study the behavior of tsunamis in Hilo Harbor and included a scale model of the harbor for research purposes (see below).



J. K. K. Look laboratory's scale model of Hilo Harbor. (from UH at Manoa Masao Miyamoto collection; negative C68-00115)

The laboratory was named for James Kwock Kim Look (1929-1960), a civil engineer and a 1959 graduate of the UH. He was employed by the US Army Engineering District in Honolulu and lost his life while obtaining engineering data during the major tsunami that struck at Hilo, Hawaii on 23 May 1960.

The Look Laboratory was turned over to UH on 1 January 1966, first to HIG then to the College of Engineering after the establishment of the Department of Ocean Engineering, for use in general oceanographic engineering studies. Later, a hyperbaric facility for studies of human physiology was added. When SOEST was established in 1988, that new administrative unit assumed management of the Look Laboratory. In the 1990s, the laboratory began to deteriorate, in part due to lack of funding for new research projects, and in September 2002 the laboratory was permanently closed and the land was returned to the State.

In his swan song "State of HIG" report published in the 1973-1975 biennial report of the Hawaii Institute of Geophysics, retiring Director Woollard characterized the transition from a broad to a narrow research focus using the old adage "The best laid schemes of mice and men go oft awry." -- Most of these changes, especially the shift in research emphasis from earth to ocean sciences, were unplanned! However, it took many years, and a new director, before HIG invited biological oceanography into their mix of marine research disciplines.

On 1 July 1976, Charles E. Helsley became the second director of HIG, replacing George Woollard. Helsley, a Cal Tech and Princeton trained geologist, had been a faculty member at the University of Texas and director of the Institute of Geosciences at the Dallas campus. His research interests were in the areas of rock magnetism and crustal seismology. The 41-year old Helsley began his new job with an annual salary of $38,500 (Figure 4.9).

By the time Helsley assumed the directorship of HIG, the research portfolio of the institute was almost entirely marine-oriented. At the same time as the institute was moving "makai" or towards the sea, there was a fairly large and growing rift between HIG and the Department of Oceanography that culminated with the oceanography "independence movement" of 1980 (see section 8.). Many, but not all, oceanography department faculty had split appointments in HIG; the exceptions were the biological oceanographers who were further subdivided between a group having split appointments with the Hawaii Institute of Marine Biology (e.g., Jed Hirota, Tom Clarke, John Caperon) and those having 100% oceanography department affiliation (e.g., Dick Young, Ed Laws and, in 1978, Dave Karl). At that time, there was little interest in, or support of, the subdiscipline of biological oceanography within HIG. Just as the earth sciences program was the ancestral home to all ocean disciplines except biology, HIG facilitated all branches of marine research except biological oceanography.



Figure 4.9: Chuck Helsley – second director of HIG – circa 1976 when he joined HIG (left), and buried under paperwork approximately a decade later. (from SOEST archives)

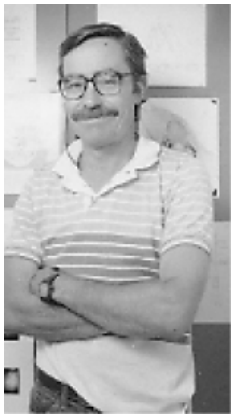
The misperception was that all marine biological sciences were adequately represented by HIMB and, later, PBRC – when in reality these units dealt only with coastal marine habitats, including coral reefs, or with laboratory-based research on detailed physiological, biochemical or genetic studies of selected marine organisms. Oceanic biology, pelagic ecology, and biogeochemistry were not generally acknowledged either within HIG or within the more traditional biological research units. The subtle distinction between biological oceanography and marine biology was real and this eventually led to a physical split between these two groups of biologists, both at UH and within other marine sciences programs elsewhere in the country.

The small but growing group of biological oceanographers who concentrated on studies of the open sea did not fit nicely into either the geosciences-oriented HIG or the coastal and laboratory focus of HIMB or PBRC. They would have to await the formation, in 1986, of a new research division in HIG, Oceanic Biology (see *Box 4.5*). The HIG/Bio-Ocean pioneer who changed all this was Richard Young, an expert in deep-sea biology. Dick joined the UH oceanography faculty in 1969 and soon thereafter initiated an extensive, well-funded ship-based field program. Through his efforts, biological sciences were finally tolerated within HIG; however, it would take nearly another decade and several new faculty members before there was any formal recognition of this key subdiscipline. (note: Dick Young, who retired from active service in 2002, was the longest serving faculty member in the history of the department of oceanography to date.)

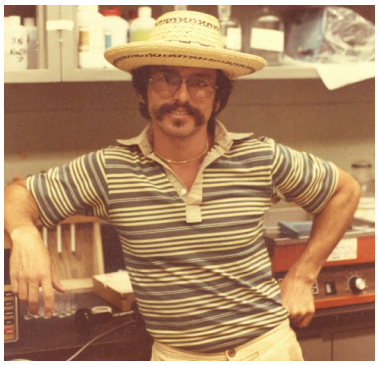
Box 4.5: **Oceanic Biology: A New HIG Division and Direction**

In 1986, HIG Director Chuck Helsley approved a proposal to establish a new research division in HIG, the first new program since the institute was founded. The new HIG mission, oceanic biology, was both forward-looking and controversial (at that time) for a "geophysics" institute. Later, Lamont-Doherty Geological Observatory and even the Ocean Drilling Program would add biological themes to their research portfolios, and a few years ago even AGU added a new biologically oriented section – Biogeosciences; once again HIG, under Helsley's leadership, was well ahead of its time!

The new Oceanic Biology Division began in 1986 as a small but diverse group – Dave Karl (Division Head, marine microbial ecology and biogeochemistry), Dick Young (pelagic/nekton ecology, deep-sea biology), Jim Cowen (microbial geochemistry), Chris Winn (marine microbial ecology), Gordon Taylor (protozoan ecology and biochemistry), and Edith Chave (fish).



Dick Young (left) established the "need" for a new Oceanic Biology division in HIG by his well-funded deep ocean research programs. Dave Karl (right) assumed Oceanic Biology division head responsibilities when the unit was founded in 1986.



Over the next decade the Oceanic Biology Division grew in number and in reputation with several key hires including Mike Landry, Bob Bidigare, and Craig Smith. The Oceanic Biology Division also grew by the addition of several key, non-tenure track faculty. However, the Department of Oceanography's biological faculty was still not fully integrated because at least three tenured oceanography faculty (Ed Laws, Tom Clarke, and Jed Hirota) retained split appointments within HIMB. Another biologist with connections to oceanography, Rick Grigg, had a full appointment at HIMB. The Oceanic Biology

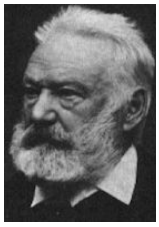
continued

Box 4.5: **Oceanic Biology: A New HIG Division and Direction (continued)**

Division thrived for more than a decade until it was "closed for business" with the major reorganization following the creation of SOEST in 1988 (see section 10.1).

According to an authoritative historical account entitled "Marine Biology or Oceanography" in the book *Oceanographic History: The Pacific and Beyond*, Keith Benson argues that despite the characteristically distinctive natures of marine biology versus oceanographic institutions in the modern setting, they were not so different in their early 20th century development period. For this reason, unfortunately, the two labels are still sometimes used synonymously and therefore, incorrectly. Even today at UH we have a graduate specialization in "marine biology" that sits outside of oceanography as the graduate field of study, and a newly created undergraduate degree in marine biology that is administered by the biology program in the College of Natural Sciences. The Hawaii Institute of Marine Biology remains as an organized research unit in SOEST, but it is functionally and administratively separate from both the marine biology degree program and the biological oceanography programs within SOEST.

4.5. UH Department of Oceanography: A Second Attempt



"An invasion of armies can be resisted, but not an idea whose time has come."
Victor Hugo
(1802-1885)

On 3 April 1962, several years after Robert Hiatt's failed first attempt to establish a department of oceanography in 1956, Mariano A. Estoque – then a meteorologist in HIG – submitted a formal proposal to Graduate Dean Hiatt for the establishment of a MS degree program in the field of oceanography (Figure 4.10). Although it is not obvious from the written record, there is little doubt that Hiatt was probably behind this initiative. (note: Although the correspondence implies that Estoque was chair of the "Department of Meteorology and Oceanography," this unit was not even listed in the UH Graduate Bulletin as either a field of study or a department. It is likely that Estoque's affiliation must have been the HIG division of meteorology and oceanography, an informal academic entity at that time.)

The faculty listed in the 1962 proposal as "principally involved" in the new MS degree program in oceanography were: (1) Carl Adams, an assistant professor of HIG's division of meteorology and oceanography since 1960 and an expert in tropical meteorology, (2) Tairo Laevastu, an associate professor of HIG's division of meteorology and oceanography since 1962 and an expert in fisheries, (3) Richard Barkley, Chief of the Oceanography Investigation Unit of the US Bureau of Commercial Fisheries, Honolulu Biological Laboratory since 1960, and (4) Gunter Seckel, an oceanographer with the US Bureau of Commercial Fisheries, Honolulu Biological Laboratory since 1953. Ironically, the self-proclaimed "chair of the Department of Meteorology and Oceanography," Mariano Estoque, who had research interests in numerical analysis and prediction and

atmospheric boundary layer phenomena, was not listed in the proposal to establish the MS degree in the graduate field of oceanography as an "interested party." After the formation of the Department of Oceanography, he retained his previous affiliation with the Department of Meteorology.



April 3, 1962

MEMORANDUM TO: Dean Robert W. Hiatt

FROM: M. A. Estoque, Chairman
Department of Meteorology and Oceanography

SUBJECT: Proposal for a program in Oceanography

Enclosed is a proposal for a M.S. program in Oceanography. Dr. Laevastu has discussed the proposal with the department heads and professors concerned and the program has met with general approval. Upon a suggestion from Professor Tester, a small meeting will be held in his office on April 6, 9:00 a.m., to discuss the coordination and cooperation in teaching of existing courses in marine science and the possible use of the University's research vessel for coordinated inshore studies.

The results of this meeting would not affect the wording of the Graduate School Bulletin material, the program or the proposed courses in the enclosed proposal as the suggestions by different individuals concerned have already been fully met.

Respectfully yours,

M. A. Estoque
Mariano A. Estoque

MAE:bf
encls.

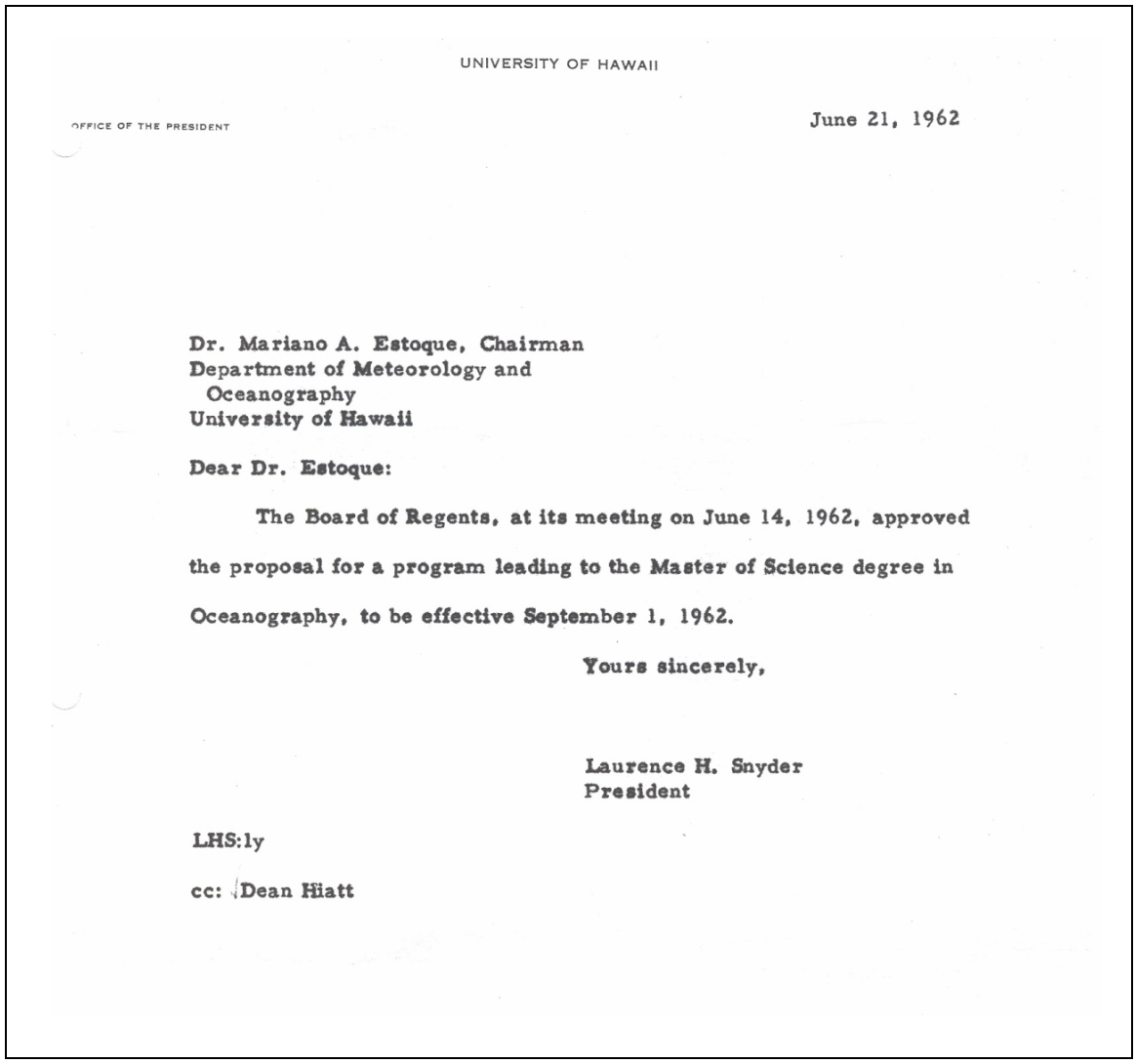
cc: Prof. Doty
Prof. Tester

Figure 4.10: Mariano Estoque – a meteorologist at HIG – submitted the proposal leading to a formal MS degree program in oceanography in 1962. (photo of Estoque reproduced with permission from *The Honolulu Advertiser*)

According to the proposal, the initial focus of this new program would be on sea-air interactions and oceanographic forecasting – a very modest beginning. Despite this advertised focus, it is apparent that the field of oceanography and marine expeditionary research at UH in general had their roots in biological sciences, namely fisheries, invertebrate and vertebrate physiology and marine ecology; three of the four founding oceanography faculty were fisheries oceanographers!

With time, and with the anticipated expansion of graduate faculty, other specializations would be possible. Besides formal courses and laboratory studies, sea practice on research ships would be required. For the MS degree, according to the proposal, reading knowledge of Japanese, German, Russian, Spanish, French, or a Scandinavian language would be required. The "Scandinavian" language requirement option was undoubtedly influenced by Hans Pettersson – a visiting professor from Sweden!

On 1 June 1962, in a memorandum to UH President Laurence H. Snyder, Bruce E. White, then Vice President and Dean of Faculties, wrote "The Administrative Council voted approval of the proposed program leading to the Master of Science degree in Oceanography." A few weeks later, on 14 June 1962, the UH-BOR added their final approval to the new program, effective 1 September 1962 (Figure 4.11). A formal degree-granting academic program in oceanography was finally launched in the state of Hawaii. Once the field of study was established, formal departmental status quickly followed about two years later.



UNIVERSITY OF HAWAII

OFFICE OF THE PRESIDENT

June 21, 1962

Dr. Mariano A. Estoque, Chairman
Department of Meteorology and
Oceanography
University of Hawaii

Dear Dr. Estoque:

The Board of Regents, at its meeting on June 14, 1962, approved the proposal for a program leading to the Master of Science degree in Oceanography, to be effective September 1, 1962.

Yours sincerely,

Laurence H. Snyder
President

LHS:ly

cc: Dean Hiatt

Figure 4.11: It's official!

During a visit to UH in August 1964, H. Burr Steinbach – described in newspaper reports as "the top biological statesman in the US" and a leading marine scientist, educator, and administrator who would go on to assume the position as founding dean of the WHOI-MIT joint PhD program in 1968 – praised UH President Tom Hamilton, Vice President for Administration Richard Takasaki, and Vice President for Academic Affairs

Robert Hiatt for their collective "ability, dreams and brains to pull it off." The "it" he was referring to was the creation of a comprehensive, interdisciplinary, and world class program in marine sciences, including the newly established graduate degree program in oceanography. Hawaii was finally on the map!

The inaugural class of five full-time students entered the Department of Oceanography in Fall 1964, although formal graduate courses in oceanography (UH course code "OCN XXX") were available at least one year before that time. Two students, Jesse B. Burks and George Pararas-Carayannis, were aboard in Fall 1963 as probationary, unclassified graduate students; both were formally admitted into the MS degree program in Fall 1964 as part of the inaugural class along with Thomas R. Kendall, Ross R. Grunwald, and David C. Hurd. The first MS degree was granted to Thomas R. Kendall in Spring 1966 for his research on "Transports in the Pacific Equatorial Countercurrent" (see Table 4.1).

Table 4.1: The First Oceanography Students



"He's got more degrees than a thermometer."
Woody Allen
(1935-)



"A lot of fellows nowadays have a BA, MD or PhD. Unfortunately they don't have a JOB."
"Fats" Domino
(1928-)

MS Degree	***Thesis Title***	***Date***
Kendall, Thomas Robert	"Transports in the Pacific Equatorial Countercurrent"	Spring 1966
Burks, Jesse B.	"The Flow of Water through the Molokai Channel"	Fall 1967
Latham, Richard C.	"Kauai Channel Currents"	Spring 1967
Pararas-Carayannis, George	"The Barium Content in the Calcareous Skeletal Materials of Some Recent and Fossil Corals of the Hawaiian Islands"	Spring 1967
Grunwald, Ross R.	"The Distribution of Zirconium in Hawaiian Sediments"	Summer 1967
Malone, Thomas C.	"Community Metabolism in a Hawaiian Fishpond and Its Relationship to Selected Environmental Factors"	Fall 1968
MS and PhD Degrees	***Thesis and Dissertation Titles***	***Date***
Bathen, Karl H.	"A Descriptive Study of the Physical Oceanography of Kaneohe Bay, Oahu, Hawaii"	Spring 1968
	"Heat Storage and Advection in the North Pacific Ocean"	Spring 1970

Hurd, David Crockett	"Determination of Several Species of Soluble Copper in Seawater" "Interactions of Biogenic Opal, Sediment, and Seawater in the Central Equatorial Pacific"	Spring 1969 Fall 1972
Patzert, William C.	"A Study of Eddies in Hawaiian Waters" "Seasonal Variations in Structure and Circulation in the Red Sea"	Fall 1969 Summer 1972
PhD Degree	***Dissertation Title***	***Date***
Smith, Stephen V.	"Calcium Carbonate Budget of the Southern California Continental Borderland"	Spring 1970
Bennett, Edward B.	"Turbulent Diffusion, Advection, and Water Structure in the North Indian Ocean"	Summer 1970
Duncan, Charles P.	"The Agulhas Current"	Summer 1970
Maragos, James E.	"A Study of the Ecology of Hawaii Reef Corals"	Fall 1972
Valencia, Mark J.	"Tertiary and Quaternary Sediments of the Ontong Java Plateau Area"	Fall 1972
Christensen, Niels Jr.	"Numerical Simulation of Free Oscillations of Enclosed Basins on a Rotating Earth"	Summer 1972

4.6. Oceanography Program Leadership: The Early Years (1962-1967)



"There is no limit to what you can accomplish if you don't care who gets the credit."

Harry S. Truman
(1884-1972)

As mentioned previously, Mariano Estoque, a meteorologist in HIG, was the acting chairperson of the graduate field of oceanography for the first two years. His job at that time was to answer student inquiries and to respond to requests from the Dean of Graduate Studies. When the Department of Oceanography was created prior to the start of the Fall 1964 semester, Vernon Brock, a fisheries biologist, was selected as the inaugural chairperson to lead this new department (see *Box 4.6*). Since 1964, the Department of Oceanography and the oceanography graduate field of study have been led by the same chairperson.

Chairman Brock served with great distinction, during which time new faculty and students were recruited and new research programs were initiated. One faculty member, in particular, must be viewed in a historical context as a benchmark hire. Klaus Wyrtki, the leading oceanographer of the 40-year history of the graduate field and department of oceanography, joined UH as professor of oceanography in 1964 after spending three years as a research oceanographer at the Scripps Institution of Oceanography (see *Box 4.7*). At that time Scripps was the largest and most well respected institution for marine science research and graduate education in the world, so attracting a big "academic fish" to a small but expanding "departmental pond" was a major step forward. Many other UH oceanography faculty with Scripps connections (either PhD or post-doctoral training) would eventually be recruited to the department over the years, including John Caperon, Tom Clarke, Bob Clutter, Pierre Flament, Brent Gallagher, Richard Grigg, Gordon

Groves, Jed Hirota, David Karl, Peter Kroopnick, Mike Landry, Douglas Luther, Julian McCreary, Mark Merrifield, Garth Murphy, Niklas Schneider, Craig Smith, Grieg Steward, and Nancy Withers. In some circles, the UH Department of Oceanography became known as "Scripps-west."

Box 4.6: **Vernon E. Brock: The Inaugural Chair of the Department of Oceanography (1964-1965)**



Vernon E. Brock received training in biology and fisheries at Stanford University. He worked as a Fisheries Biologist in several locations before accepting the position of Director, Hawaii area Bureau of Commercial Fisheries in 1959. For many years he was the leading Territorial, then State, authority in Pacific fisheries, especially the biology of tuna. Vernon Brock left his position as director of the Hawaii area laboratory of the Bureau of Commercial Fisheries of the US Fish and Wildlife Service to assume the directorship of the Bureau's Biological Laboratory in Washington, D.C. This was Hawaii's loss, and D.C.'s gain, especially with our new emergent programs in marine science, including fisheries oceanography.

In 1963, Brock moved back to Hawaii, first as professor of zoology (1963-1964) and Director of the Hawaii Marine Laboratory / Hawaii Institute of Marine Biology (1963-1969), then in 1964 as the founding chairman of the new Department of Oceanography and professor of oceanography. He also continued as director of HIMB, the only Department of Oceanography chairperson to have ever held both titles. In 1960, William Gosline – then a professor of zoology at UH – and Vernon Brock published the first edition of *Handbook of Hawaiian Fishes* which continues to be the standard reference in this discipline even four decades later.

***Box 4.7*: Klaus Wyrtki: UH's World-Class Oceanographer**



"Science is always a progress.
You want to know something better."
Klaus Wyrtki

Klaus standing proud in 1991, as the recipient of the Sverdrup Gold Medal. (from SOEST archives)

Klaus Wyrtki was born and raised in Germany. He was educated in mathematics, physics, and geography at University of Marburg, and in oceanography, physics, and mathematics at the University of Keil. He received his Doctor of Natural Sciences degree in 1950, *magna cum laude*. Klaus then worked in Germany, Indonesia, and Australia before accepting a position as an associate research oceanographer at the Scripps Institution of Oceanography in 1961. He moved to UH in 1964 to begin a long and distinguished academic career as professor of oceanography in what was then a relatively small, embryonic department.

continued

Box 4.7: **Klaus Wyrtki: UH's World-Class Oceanographer (continued)**

His decision to leave Scripps was based primarily on the nature of his position there, the structure of their academic programs, and his own career ambitions. In an article published in the 2002 volume *Oceanographic History: The Pacific and Beyond* titled, "Reflections on my knowledge in the Indo-Pacific," Klaus pointed out the strong distinction that existed then at Scripps between researchers and the "real" faculty -- professors. He was hired as a researcher and, likely, a researcher he would remain. His interests and goals were broader so he moved to Hawaii to get fully immersed in both teaching and research. During his tenure at UH, Klaus would set the departmental standards for excellence in both mission categories. He is, without question, the most influential of all oceanographers ever to have been affiliated with the Department of Oceanography during our 40-year history.

Klaus' research interests were both fundamental and "trend setting." He was chairman of the NORPAX science committee (1974-1980) that helped to establish a series of sea level stations throughout the Pacific. In a 11 July 1983 Helen Altonn *Honolulu Star-Bulletin* article Klaus was described as an "El Niño detective" because of his systematic tracking of this large scale ocean-atmosphere phenomenon. Later, in 1985, the comprehensive Tropical Ocean-Global Atmosphere or TOGA program emerged with Klaus once again in a leadership position. Among many important scientific contributions, Klaus was an active participant in the International Indian Ocean Expedition (1961-1965) and in 1972 he prepared the most comprehensive physical oceanography atlas ever produced for this remote region of the globe; this was also the first "computer made" atlas ever constructed.

Klaus retired from the UH faculty in 1994 but has remained very active in both science as well as more leisurely pursuits. In 1996, the Klaus Wyrtki Center for Climate Research and Prediction was established at UH with NOAA funds to carry on the work Klaus had initiated during his distinguished career at UH. The focus of the center is the El Niño/Southern Oscillation phenomenon. In February 1999, on the occasion of his 75th birthday, Hans von Storch, Jürgen Sündermann, and Lorenz Magaard conducted an extensive 4-hr interview with then emeritus Professor Klaus Wyrtki covering a range of topics from marine science to contemporary "climate politics." The taped interview was subsequently transcribed and published by GKSS-Forschungszentrum Geesthacht GmbH as a GKSS report. In 2003, the Department of Oceanography established the "Klaus Wyrtki Excellence in Graduate Teaching" award in his honor.

Klaus is an elected fellow of both the American Meteorological Society (AMS) and the American Geophysical Union (AGU), and is the recipient of many other honors and awards including the Rosenstiel Award in Oceanographic Sciences (1981), AGU's Maurice Ewing Medal (1989), AMS's Sverdrup Gold Medal (1991), and the prestigious Albert Defant Medal (1992). In recognition of his pioneering research, the *Shaman II* – a 57-foot longline fishing vessel that was donated to UH by Charles Wells – was recently renamed the R/V *Klaus Wyrtki* (see section 13.10).

In April 2003 it was announced that Klaus would receive the prestigious Prince Albert I medal for his fundamental contributions to physical oceanography. The Prince Albert I medal was established by the International Association for Physical Sciences of the Oceans (IAPSO) and Prince Rainier of Monaco to honor the pioneering contributions of the late Prince Albert I of Monaco (1848-1922). The first medal was awarded to Walter Munk, a world-class physical oceanographer at Scripps in 2001; Klaus was the second recipient. Then in January 2004 it was announced that Klaus would receive the National Academy of Sciences' Alexander Agassiz Medal for "fundamental contributions to the understanding of the oceanic general circulation of abyssal and thermocline waters and for providing the intellectual underpinning for our understanding of ENSO." This prestigious award dates back to 1913 when it was established by a gift from Sir John Murray to the Academy.

In January 1966, Richard G. Bader (see *Box 4.8*) arrived in Honolulu from his previous assignment at NSF, to assume the position of chair of UH's growing

oceanography program; however, he did not last very long. His tenure, though brief, was quite successful, leading to the establishment of the PhD program in 1967 (see section 4.9). During summer 1967, Bader notified the UH administration of his intent to leave the university. In a 7 September 1967 *Honolulu Star-Bulletin* article he indicated that he was leaving for "an unusually challenging job in Florida" as the assistant director of the Institute of Marine Sciences at the University of Miami. Bader predicted a two-fold increase in UH oceanography faculty by 1971; "I see a marvelous future" he added.

Box 4.8: **Richard G. Bader: Oceanography Chair #2 (1966-1967)**



(reproduced with permission from *The Honolulu Advertiser*)

Richard G. Bader was trained broadly in plant physiology, geology, paleoecology, geochemistry, and radiochemistry at the University of Chicago and Oak Ridge Institute for Nuclear Studies before accepting positions in oceanography at the University of Washington (1952-1955) and Texas A&M (1955-1961).

In 1961 Bader began a 4-year science administration career in the oceanography program at NSF before moving to UH in January 1966 to assume his new position as professor and chairman of the Department of Oceanography and head of oceanography division at HIG. Bader was at the helm during the critical period of the growth for the Department of Oceanography and marine sciences in general. His previous administrative experience at NSF proved to be invaluable.

In 1967 Bader left Hawaii to lead a new effort in marine sciences at the University of Miami.

A few months later, in October 1967, Robert Hiatt – then Vice President for Academic Affairs – announced that Garth I. Murphy would become the third chair of oceanography, effective 15 October 1967 (see *Box 4.9*). In a *Honolulu Star-Bulletin* interview, Hiatt admitted that the development of ocean sciences had been "painfully slow." We need "greater faculty depth" he added. The faculty included 5 physical, 3 biological, 2 chemical, and 2 geological oceanographers. At that time, the prestigious Captain James Cook Chair was still vacant (see section 4.10).

Box 4.9: **Garth I. Murphy: Oceanography Chair #3 (1968-1970)**



(reproduced with permission
from *The Honolulu Advertiser*)

Garth I. Murphy received his Ph.D. in biological oceanography at Scripps Institution of Oceanography in 1965 and joined UH as professor of oceanography that same year. Prior to arriving in Honolulu, Murphy had worked as biologist and director of the POFI laboratory, US Bureau of Commercial Fisheries Honolulu branch office (1951-1959) and as coordinator of the California Cooperative Fisheries Investigation (CalCoFI) in La Jolla, California (1959-1965). Murphy would continue, and strengthen, the long-standing tradition at UH of excellence in fisheries oceanography.

4.7. Oceanography's "Honor Roll"



"Those who live by the sea can hardly form a single thought of which the sea would not be part."

Hermann Broch
(1886-1951)

Since it was established in 1962, the oceanography graduate field of study at UH has enjoyed outstanding leadership from a cadre of dedicated, unselfish faculty members. The tradition in this field of study has become to elect the chair from the pool of tenured faculty; however, the first two Department of Oceanography leaders (Vernon Brock and Richard Bader) were hired explicitly for their leadership qualifications that were so vital at the start of the new program.

Over the years, the department has been blessed with skilled, competent leadership (see Table 4.2 and biographies that follow). Edward Dixon "Dick" Stroup and Lorenz Magaard were both twice elected chair of the department by "popular demand"; Edward Laws was elected three times! Both Magaard and Laws went on to serve in higher level UH administration positions.

Table 4.2: Department of Oceanography Leaders (1964-present)*	
Term	***Chairperson***
01/01/1964 to 12/31/1965	Vernon E. Brock
01/01/1966 to 12/31/1967	Richard G. Bader (resigned to accept faculty position at University of Miami
01/01/1968 to 06/30/1970	Garth Murphy
07/01/1970 to 06/30/1973	Keith E. Chave
07/01/1973 to 06/30/1976	James E. Andrews
07/01/1976 to 06/30/1979	Edward D. Stroup (first term)
07/01/1979 to 06/30/1982	Stanley V. Margolis
07/01/1982 to 06/30/1984	Edward D. Stroup (second term)
07/01/1984 to 06/30/1990	Lorenz Magaard (2 consecutive terms)
07/01/1990 to 06/30/1993	Edward A. Laws (first term)
07/01/1993 to 06/30/1996	Michael R. Landry
07/01/1996 to 06/30/1999	Michael Mottl
07/01/1999 to 07/31/2001	Edward A. Laws (second term; resigned to accept position as Acting Vice President for Research and Dean of the Graduate School and later interim Vice Chancellor for Research)
08/01/2001 to 06/30/2003	Christopher Measures (resigned)
07/01/2003 to 06/30/2006	Edward A. Laws (third term)
*In September 1962 the graduate field of oceanography was established. Mariano Estoque, a meteorologist in HIG, served as chair of the field of study. Vernon Brock was the first chairperson of the Department of Oceanography.	

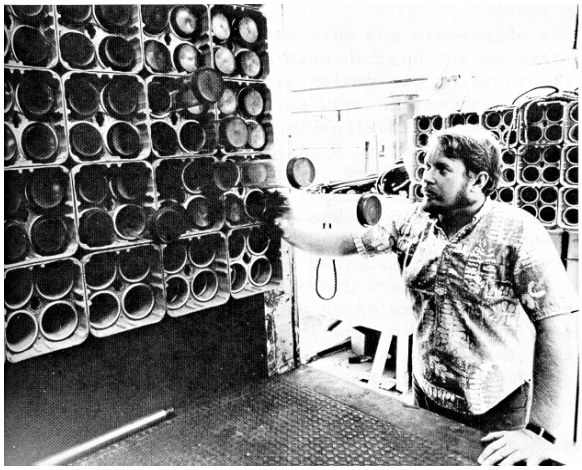
KEITH E. CHAVE was trained in geology at the University of Chicago and worked at Lehigh University for 15 years before joining the UH oceanography faculty in 1967 as a full professor; Keith served as department chair from 1970 to 1973. Throughout his UH career Keith was interested in the geochemistry of skeletal materials from a diverse spectrum of marine organisms ranging from unicellular planktonic microorganisms to coral reef ecosystems. At his retirement luncheon in December 1992, Keith was presented with a beautiful card – conceived and drawn by Conrad Neumann – that summarized his UH career as "ringmaster" in the science circus!





Keith Chave (oceanography department chair #4: 1971-73) outside his HIG office circa 1983 (left) and in C. Neumann's caricature in 1992. (from SOEST archives and Conrad Neumann)

JAMES E. ANDREWS was trained in oceanography at the University of Miami and joined the UH oceanography faculty in 1968 as an assistant professor; Jim served as department chair from 1973 to 1976. He was aboard as chair during the infamous "faculty purge" of 1973 (see *Box 4.10*). At UH, Andrews built a well-funded research program in deep sea sedimentation and stratigraphy with competitive funding from ONR and NSF. He and his students also conducted swath mapping of the deep sea floor in many remote areas of the western Pacific Ocean and conducted pioneering research on the origin of manganese nodules and other seabed mineral deposits. Jim has the dubious distinction of having created the HIG-Ocean TGIF (see *Box 4.11*). Jim left UH in 1983 to pursue other career opportunities, and over the intervening years he has held many high-level science administration positions with the Office of Naval Research.





Jim Andrews (oceanography department chair #5: 1973-76) at work in the deep-sea core sample laboratory circa 1970 (left) and in his campus office circa 1973 (right). (from SOEST archives)

Box 4.10: **The 1973 Faculty Purge**

In June 1973 termination notices were sent to 168 UH at Manoa tenure-track faculty members who were not due for tenure consideration until Fall 1974 or later. The notices informed these mostly young faculty that their contracts would expire 30 June 1974 due to fiscal austerity measures imposed by a State of Hawaii budget deficit. Several of the "fired" faculty were in the Department of Oceanography, including Stan Margolis who would go on to lead the "oceanography independence movement" of 1980 (see section 8).

Later, in September 1973, the termination notices were rescinded by UH President Harlan Cleveland – but significant irreversible damage had already occurred, and campus community morale had hit an all-time low.

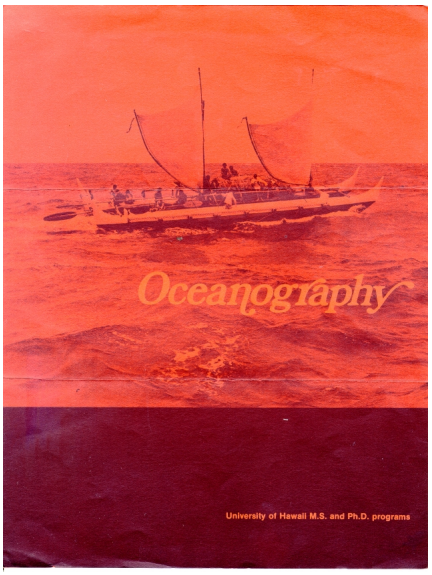
Box 4.11: **Thank God It's Friday (aka "TGIF") – a UH Ocean-HIG Tradition**

"A seaman in general would as soon part with his life as with his grog."
John Williams
Lieutenant to Capt. James Cook

One of oceanography department chairman Jim Andrews' most lasting legacies at UH was the establishment of the TGIF marine science fellowship tradition. According to Jim, he got the idea for a HIG/Ocean-wide TGIF after attending a similar function at Scripps in the early 1970s. The informal atmosphere provided an opportunity for students, staff, faculty, and administrators to meet at week's end to exchange information, data, ideas, and to encourage scientific collaboration. The HIG courtyard was the site and the keg of beer and free popcorn encouraged cross-disciplinary attendance. To set this up, Jim needed permission from the highest levels of the UH administration. He did just that, and TGIF was born!

Over the years TGIF also doubled as a cheese-and-wine hui, and as a family-oriented picnic affair complete with a 3' x 4' brick barbecue grill. Unfortunately, the UH administration demanded that the grill be removed less than a month after it was so carefully constructed by Steve Dang. During the late 1980's the TGIF tradition was threatened with extinction when UH food services attempted to shut it down on the grounds that only they could serve food and alcohol on campus. Chuck Helsley – then director of HIG – saved the day by declaring TGIF a "private club" complete with membership cards and alcoholic drink vouchers (see below). Since that time, TGIF has maintained a peaceful coexistence with those who would rather see it disappear. To this day the Andrews' tradition lives on.





Front cover of the Oceanography Department's brochure circa 1980 featuring the Hokule'a *(SOEST archives)*

EDWARD DIXON "DICK" STROUP was trained in physical oceanography and joined the UH oceanography faculty in September 1964, while still working on his PhD degree at the Johns Hopkins University. Dick was one of the very few UH faculty members to have been born and raised in Hawaii. Over the next three decades, Dick became the heart and soul of the department. He served two terms as chair (1976-79 and 1982-84) and was at the helm for the expansion of the department into the new six-story Marine Sciences Building, during the period 1982-83 (see section 7). Dick was a physical oceanographer and popular teacher; he was recognized around Oahu beaches as the "Ocean 201 Professor." Dick was also involved in diverse community activities from church choir and bell-ringing, to Polynesian culture and voyaging. He served as a member of the board of directors and chair of the research committee of the Polynesian Voyaging Society. In April-May 1987, Dick participated as a crew member on the double-hull canoe *Hokule'a* during the Rangiroa-to-Hawaii Voyage of Rediscovery sponsored by the Polynesian Voyaging Society. Dick retired from full-time service on 31 July 1996, and passed away on 30 September 1998. In 2003, the Department of Oceanography established the "Edward D. Stroup Excellence in Undergraduate Teaching" award in Dick's honor.





Dick Stroup (two-term oceanography department chair: 1976-79, 1982-84) and his parrot-friend. The Polynesian Voyaging Society's double-hull canoe, Hokule'a, at right. (from SOEST archives and D. Karl)

STANLEY V. MARGOLIS was trained in geology at the UC Riverside and joined the UH oceanography faculty in 1972 as an assistant professor; Stan served as department chair from 1979 to 1982. Stan was a natural and effective leader; at UH he led the "oceanography independence movement" of 1980 (see section 8). During his tenure Margolis built a research team that focused on marine sediments, especially their importance and interpretation in the context of paleoceanography, using fossils of microorganisms. He also conducted research on lunar materials collected during the Apollo mission and extraterrestrial materials collected from several Cretaceous-Tertiary boundary impacts. Largely on the basis of Stan's chemical analyses of a sample of marble, the J. Paul Getty Museum purchased what is now known as the "Getty Kouros" – an unusually fine Greek statue that was believed to date to the 6th century B.C. A *Scientific American* article written by Stan (vol. 260, p. 104-110, 1989) discussed the scientific basis of authenticating ancient marble statues. A few years after leaving UH for a new faculty position in the Department of Geology at UC Davis, Stan passed away after a brief illness. This was a great tragedy and enormous loss; Stan was only 49 years old and at the peak of scientific productivity at the time of his death. UC Davis later created the "Stanley V. Margolis Stable Isotope Laboratory" in his honor. In the early 1990s, a small, independent geological laboratory – Osservatorio Geologico di Coldigioco – was established near Coldigioco, Italy. Most of the buildings in Coldigioco are renovated 300-400 year old residential or farm buildings. Margolis Hall, named in Stan's honor, houses a classroom and a wood-burning pizza oven! Since 1993, Carleton College has sponsored a "geology program in Italy," part of which is taught in Margolis Hall.











Stan Margolis (oceanography department chair: 1979-82). Following Stan's death in 1992, the geology department at UC Davis established the Stanley V. Margolis Stable Isotope Laboratory. Also named in Stan's honor is Margolis Hall, the white building shown at bottom left, complete with a 300-year old wood-burning pizza oven (bottom center). Margolis Hall is part of the Osservatorio Geologico di Coldigioco (The Geological Observatory of Coldigioco; http://www.acad.carleton.edu/curricular/GEOL/coldigioco) near Coldigioco, Italy, shown at top left.

LORENZ MAGAARD was trained in mathematics at Christian-Albrechts University in Kiel, Germany and worked at WHOI before joining the UH oceanography faculty in 1972 as an associate professor. For the next decade he would continue to build his reputation as a world-class researcher and educator. However, in 1982 Lorenz would make a significant shift in his career from undivided attention to his research in physical oceanography to UH academic leader and science administrator. From July 1984 to June 1990, Lorenz served an unprecedented two consecutive terms as chairman of the Department of Oceanography. In April 1985, Lorenz established the "Friends of Oceanography" as a town-gown fund-raising entity of the University of Hawaii Foundation. Over the years, "Friends" has helped to support many key functions of the department but it never really established the capital necessary to re-establish the Captain Cook Chair of Oceanography (see section 4.10), or its successor, as was initially proposed. Magaard was also largely responsible for the creation of SOEST (see section 9), and served as its inaugural associate dean.





Lorenz Magaard (two-term oceanography department chair: 1984-90). Magaard's leadership of marine sciences during his second term as chair led to the creation of SOEST (see section 9).

EDWARD A. LAWS was trained in chemical physics at Harvard University and worked at Florida State University before joining the UH oceanography faculty as an assistant professor in 1974. Over the intervening years, Ed emerged as one of the department's most effective teachers and researchers, and a tireless community servant. From 1990 to 1993 and again from 1999 to 2001, Ed served as department chair; in July 2003 Ed began an unprecedented third term as department chair. Over the years, Ed has been an extremely active and conscientious faculty member. For example, he has trained more PhD students than any other faculty member in the history of the department (nine as of fall 2000), and at one point in time (Spring 1983) Ed was the major professor for 20% of our entire graduate student population (9 of 46), mostly supported by his research grants. This level of activity was in addition to his typical "greater than required" classroom teaching load. In 2000, Ed was called on to assist the senior executive vice president for research and graduate education, and in 2001 – when Evan Dobelle became president of the UH system – Ed was appointed interim vice chancellor for research and dean of graduate division. Ed served in this capacity until November 2002 when he rejoined the Ocean faculty.

For most of his adult life, Ed has unselfishly given of his time and talents to help the less fortunate in the world around us. In 1980 Ed received the prestigious Thomas Jefferson Award for community service based on his untiring volunteer education work at the Oahu Correctional Center. Ed has written three textbooks, including the highly acclaimed *Aquatic Pollution*, now in its third edition.





Ed Laws (unprecedented three-term oceanography department chair: 1990-93, 1999-2001, 2003-present) at work (left) and at aloha luncheon for departmental secretary Linda Yoshida, circa 2001. (from SOEST archives and D. Karl)

MICHAEL LANDRY was trained in oceanography at the University of Washington (UW) and worked at Scripps and UW before joining the UH oceanography faculty as an associate professor in 1987. In 1986 Mike also received a MBA from UW with a specialization in "finance and operations management" – this pre-adapted him for success in the "business-side" of university-based research and administration. Mike served as chairman of the Department of Oceanography from 1993-1996. At UH Mike continued his previous research in marine ecology and built a substantial field research enterprise. During the Joint Global Ocean Flux Study (JGOFS) era, from 1988-2002, Mike and members of his research team participated in process studies ranging from the Arabian Sea to the Southern Ocean, as well as serving as a co-PI on the JGOFS Hawaii Ocean Time-series (HOT) project. In 1995 Mike was elected a fellow of the American Association for the Advancement of Science, and in 2001 he received the UH-BOR Excellence in Research Award. In 2003 Mike resigned from UH to join the faculty at Scripps where he had studied many years before as a post-doc in the food chain research group.



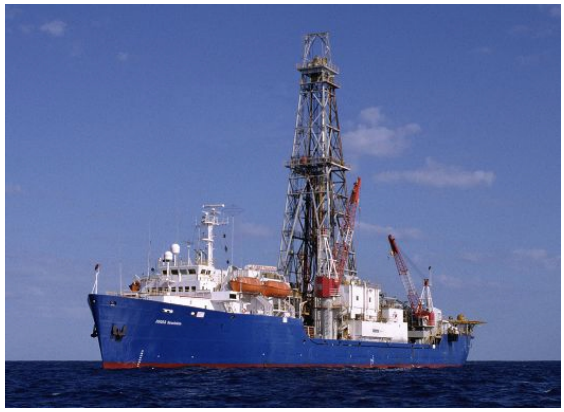


Mike Landry (oceanography department chair: 1993-96) shown at work (left) and with John Craven (right), circa 1995.

MICHAEL MOTTL was trained in geology at Harvard University and worked at Stanford University and WHOI before joining HIG in 1986 as an associate geochemist. Two years later he moved to the Department of Oceanography as an associate professor; Mike served as chair from 1996-1999. Mike's research interests center on trace element and isotope geochemistry and on geochemical implications of plate tectonics. His research is field-oriented, and he has logged more than 2 years at sea on numerous expeditions, including 7 two-month legs aboard scientific drill ships. He has also logged 22 submersible dives, mostly at active spreading centers and other plate boundaries. In 1991, Mottl and Earl Davis led a major international expedition (*JOIDES Resolution*, leg 139) to the northern Juan de Fuca Ridge. During this field campaign, the ship drilled 22 holes at four sites ranging from a region where near-freezing seawater is being drawn into the seafloor to cool the hot rock below, to the other end-member where hot (300°C), solute-enriched hydrothermally altered fluids pour out of the seafloor. This experiment provided crucial data on the chemistry and other properties of water and rocks forming at young ocean crust – one of Mottl's primary research interests.







Mike Mottl (oceanography department chair: 1996-99) in his office circa 1997 (with beard) and in the field with two of his commonly used research vehicles, (top) the submersible ALVIN – shown here with mother ship Atlantis – and (bottom) the JOIDES Resolution drill ship.

CHRISTOPHER MEASURES was trained in oceanography at the University of Southampton in England and worked at MIT before joining the UH oceanography faculty as an associate professor in 1989; Chris served a partial term as department chair from August 2001 until his resignation in June 2003. While at MIT Chris worked with John Edmond on deep sea hydrothermal vent fluid chemistry and co-authored several landmark papers on the balance of major and minor elements in the ocean based on a comprehensive data set collected at a variety of deep-sea vents. Since joining the UH faculty, Chris and his students have participated in a diverse spectrum of field projects including the Joint Global Ocean Flux (JGOFS) Southern Ocean campaign. He is one of the department's most active field researchers, mounting expeditions from the North Atlantic to Drake Passage.



Three ocean department chairs (from left: M. Mottl, M. Landry, C. Measures) at the 2002 Christmas party



Three ocean department chairs (from left: M. Mottl, E. Laws, C. Measures) at Chris' aloha party in June 2003

4.8. Pioneering Oceanography Faculty



"Those who go to college and never get out are called professors."

Jay Leno
(1950-)

The Department of Oceanography was initially staffed by faculty who were reassigned from HIG and departments of geoscience and zoology and, later, by new hires. From the beginning, faculty in the oceanography graduate field of study combined graduate education and research to provide young apprentice-level scientists with a broad transdisciplinary exposure to contemporary concepts in oceanography. Modern well-equipped laboratories, deep-ocean-capable research vessels and other specialized facilities (libraries, shops, computers) provided excellent logistical support.

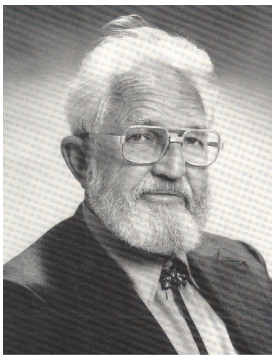
Students enrolled in oceanography as a graduate field of study benefited from this inextricable link between front-line research and graduate instruction. In return, the significant research obligation of oceanography faculty all but guaranteed federal research support for many of our students. A teaching-intensive undergraduate degree program in oceanography or related disciplines was neither logical nor desirable, and for these reasons was never established at UH at Manoa. (note: In recent years, UH at Hilo created a BS degree program in marine science, but their faculty are neither heavily invested in research nor engaged in graduate education. In 1997, an undergraduate degree program in Global Environmental Science – with emphases in marine, earth and atmospheric sciences (see *Box 10.1*) – was established within SOEST and is currently administered by the oceanography department, and in 2002 an undergraduate degree program in Marine Biology was established within the UH at Manoa College of Natural Sciences.)

The earliest list of oceanography departmental faculty that the author was able to locate, circa 1964, included: Richard Bader, Vernon Brock, Walter Düing, Gordon Groves, Garth Murphy, Edward Stroup, and Klaus Wyrtki. As usual, it is sometimes difficult to identify primary academic affiliation for many UH faculty given the tradition of joint/split appointments, shared resources and the like, so this list may be either incomplete or inflated. However, during the first five years of its existence (1964 to 1969), the following individuals were affiliated with either the Department of Oceanography or the graduate field of oceanography as members of the academic faculty (note: B = biological, C = chemical, G = geological, and P = physical oceanography emphasis):

James Andrews (G)
Richard Bader (C)
Vernon Brock (B)
S. Allen Cattell (B)
John Caperon (B)
Theodore Chamberlain (G)
Keith Chave (C)
Thomas Clarke (B)
William Clayton (G)
Robert Clutter (B)
Walter Düing (P)
Brent Gallagher (P)
Malvern Gilmartin (B)
Donald Gordon (C)
Volker Graeve (P)
Gordon Groves (P)
Alex Malahoff (G)
Garth Murphy (B)
Brian Pasby (C)
Kenneth Roy (G)
Edward Stroup (P)
Erwin Suess (G)
George Woollard (G)
Klaus Wyrtki (P)
Richard Young (B)

In 1964, when the Department of Oceanography was established, Zool 201 – Science of the Sea became Ocean 201 – Science of the Sea. Robert Hiatt's course would eventually become one of the most popular survey courses at the university. However, the Department of Oceanography did not have a "corner" on marine sciences by any measure. In 1972, the botany department listed Bot 631 – Marine Phytoplankton; the microbiology department listed Micro 642 – Marine Microbiology; the zoology department listed Zool 620 – Marine Ecology and Zool 716 – Topics in Fisheries Biology; the geology and geophysics department listed G&G 623 – Marine Geology and G&G 662 – Marine Geophysics; and the meteorology department listed Met 639 – Meteorology of the Tropical Oceans and Met 641 – Monsoon Meteorology. Both geology-geophysics and meteorology achieved departmental status in 1971. This was important for oceanography because these were two of the closest disciplines to the graduate field of oceanography.

4.9. Charting a Course Towards Excellence: The PhD Program in Oceanography



"I'm not smart enough to get anywhere without a PhD"

John Dove Isaacs III
(1913-1980)

(from D. Behrman and J. D. Isaacs, 1992)

Initially the Department of Oceanography offered only a MS degree while the PhD degree was restricted to the Department of Geosciences (the predecessor of the Department of Geology and Geophysics) within HIG. The addition of the PhD degree was a key benchmark in the academic maturation of the Department of Oceanography.

According to a letter from Professor Klaus Wyrtki, dated 18 January 1965, to prospective graduate student William Patzert, "…I can inform you that the Department of Geosciences of this University has at present a PhD program and that the Department of Oceanography will probably offer such a program within one year. In both Departments

you can study Oceanography." Klaus' timetable turned out to be a bit optimistic, but the eventual outcome was exactly as he had predicted.

On 30 August 1967 the UH Council of Deans recommended the establishment of a program leading to the PhD in Oceanography effective September 1967; the UH-BOR soon thereafter gave their approval. This culminated a nearly one-year long, give-and-take between the program committee of the graduate council and Richard Bader – then chairman of the oceanography department – that included a 1966 Christmas-season rejection of the initial formal PhD proposal.

In a memo dated 23 December 1966 from Associate Graduate Dean Howard McKaughan to Chairman Bader, the department was asked to seek support for this new interdisciplinary PhD program from the potentially "competing" fields of chemistry, zoology, botany, geosciences, and ocean engineering. Later, additional questions arose regarding expected time for completion of the new interdisciplinary PhD degree, a discussion that continues today.

The final version of the "Proposal for a program in Oceanography leading to the PhD" was submitted to the College of Arts and Sciences, the Graduate Council, the University Faculty Senate, and the Council of Deans by Department of Oceanography Chairman Bader on 3 April 1967, with a Fall 1967 start date for the new PhD degree program. The justifications included the following:

1. The increased federal interest in and financial support of education and academic research in oceanography.
2. The logical progression from formation of the graduate field of oceanography in 1962, the Department of Oceanography in 1964 and the success of its MS program to date. Furthermore, according to a national study published in 1962, on "University Curricula in Oceanography," UH was the only university out of 12 nationwide at that time that granted a MS degree, but not a PhD degree in oceanography.
3. The geographical location of Hawaii makes oceanography an obvious program for state leadership on a national and international level. As stated in Bader's proposal, "We do not have to travel to the middle of the ocean to study it – we are there!"

The PhD program, as described in the 1967 proposal, listed the usual required courses and research requirements, oral/written examinations (qualifying, comprehensive and final PhD defense), foreign language (French, German, Russian, Asian/Pacific including but not limited to Japanese; the previous mention of a Scandinavian language was nowhere to be seen!), in addition to one special requirement: "Oceanography usually involves field work; thus, the candidate should anticipate such field work which usually includes spending time at sea. He (sic) should be able to work effectively on a small ship; in fact, it is desirable that he enjoy doing so as an appreciable fraction of his professional life may well be spent on the oceans."

While this latter point may no longer be true for certain specialized subdisciplines of oceanography, the department has retained a formal requirement of 30 days at sea for the successful completion of the PhD program. Regarding the somewhat contentious issue of time required for the successful completion of a PhD in oceanography, the proposal stated that in view of the wide range of academic backgrounds it is impossible to set down any specific timetable. It went on to qualify this somewhat vague statement: "However it can be stated that a student should be able to receive the MS in one to two years according to the completeness of his undergraduate education. Only the exceptionally well prepared student may expect to complete the PhD in an additional two years beyond the MS." No mention was made of the prospective timetable for an "average" student!

At the time of the submission of this PhD degree proposal, the oceanography faculty included Richard Bader (chemical, also chairman of the department), Vernon Brock (biological), Theodore Chamberlain (geological), Keith Chave (chemical), Robert Clutter (biological), Walter Düing (physical), Brent Gallagher (physical), Gordon Groves (physical), Volker Graeve (physical), Alexander Malahoff (geological), Garth Murphy (biological), Edward Stroup (physical), Klaus Wyrtki (physical), George Woollard (geophysical) and three affiliate faculty members from the Honolulu Bureau of Commercial Fisheries Laboratory (Richard Barkley, John Marr, Gunter Seckel). There were also 33 classified graduate students; 8 more had unclassified status.

On 28 August 1967, the faculty senate executive committee recommended the establishment of the program leading to the PhD degree in oceanography and two days later, 30 August 1967, it was approved by the council of deans. The new degree program took effect in Fall 1967 and the first PhD degrees were awarded in spring 1970 (see Table 4.1).

The first two PhD degrees in oceanography were awarded to Karl H. Bathen and Stephen V. Smith in Spring 1970 for their research on "Heat storage and advection in the North Pacific Ocean" and "Calcium carbonate budget of the southern California continental borderland," respectively. Bathen, who had been admitted into the department in Fall 1965, also completed a MS degree in oceanography (Spring 1968) en route to his doctorate (Table 4.1). Smith entered the department in 1966 with a MS degree in geology from Northwestern University. David C. Hurd, a member of the inaugural class of 1964, and William C. Patzert who was admitted in Fall 1965 also received both MS and PhD degrees in oceanography in 1969 and 1972, respectively. Many of these young PhD-level scientists would go on to achieve academic stature and recognition in their respective subdisciplines, several of them in the State of Hawaii and at least three of them at UH. At one point in time the department had three generations of researchers working in the department; Keith Chave, academic grandfather, Steve Smith, academic son (UH oceanography PhD in 1970, Chave was his advisor), and Marlin Atkinson, academic grandson (UH oceanography PhD in 1981, Smith was his advisor).

According to Ralph Moberly's "Early history of the department of geology and geophysics" a department is ultimately judged by two factors. First are the students it has

attracted, trained, and graduated. Second is the quality of its faculty. Since the first MS degree in oceanography was granted in 1966 until the end of 2002, 220 MS and 107 PhD degrees have been awarded in the graduate field of oceanography at UH, an average of nine advanced degrees per annum. However, there has been a rather variable graduation rate, from a low of approximately five degrees per year for a sustained 5-yr period between 1987 and 1991, followed by a sustained high rate of approximately thirteen degrees per year for the 7-yr period from 1992 to 1998 (see Figure 4.12). These graduation rates reflect changes in workplace supply vs. demand for specialists with advanced training in oceanography, as well as other economic variables. For example, because most of our graduate students have been supported by competitive federal research grants awarded to individual faculty members, the size of the incoming class over the years has tracked funding availability and the overall success of the faculty in competing for the limited research funds.

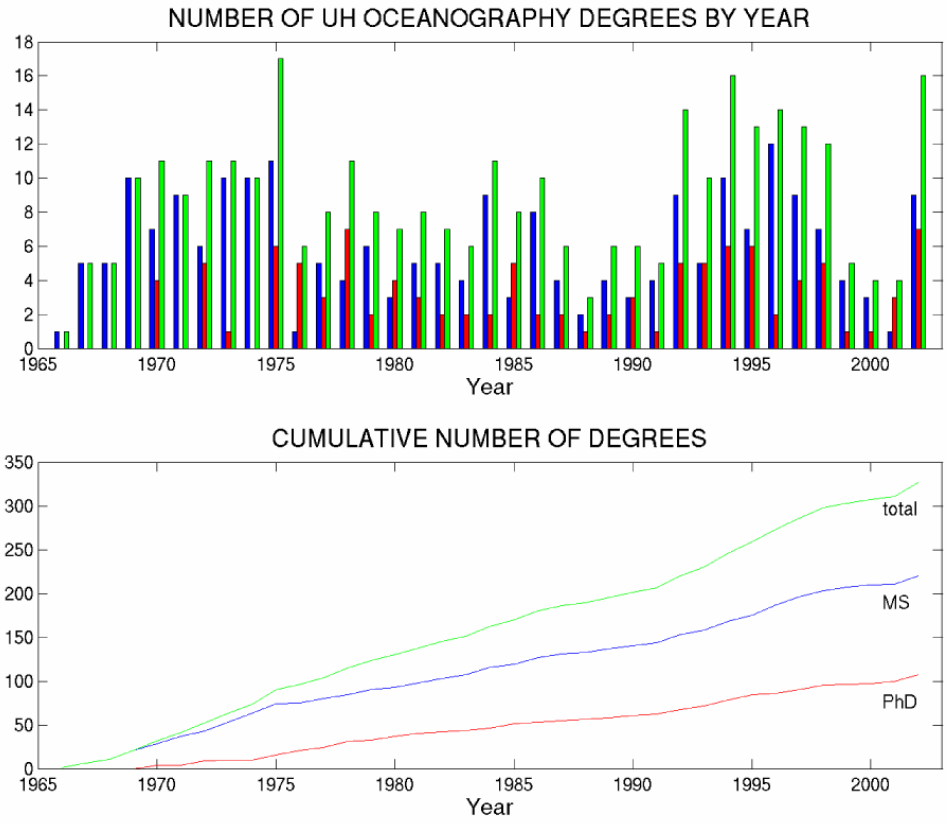


Figure 4.12: UH Department of Oceanography degrees (MS, PhD, and total) awarded per annum from 1965 to 2002. Shown at top are degrees granted (MS, PhD, and total). At bottom, these same data are presented as cumulative degrees granted.

In 1970, the Hawaii Cooperative Fisheries Unit was established to promote graduate training and research in fisheries biology. This program, supported jointly by UH, the state of Hawaii, and the US federal government provided a new position to facilitate

collaborative efforts in marine fisheries research. The academic home of this program, however, was the Department of Zoology – not the Department of Oceanography – and this would have a long-lasting impact on the discipline of fisheries oceanography which had been an important, even pioneering, subdiscipline of the Department of Oceanography since its inception in 1964 (see section 4.5).

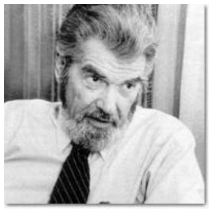
In June 1970, David Contois – a marine microbiologist trained at Scripps – was appointed dean of the College of Arts and Sciences at UH at Manoa. His immediate task, according to a *Honolulu Star-Bulletin* article that appeared on 11 June 1970, was to "abolish his own position" through a complete reorganization of the college. The plan was to create new, smaller academic divisions that would replace the single, large college structure. This all took time, but by the early 1980s the College of Arts and Sciences was separated into several units; oceanography became part of the Faculty of Natural Sciences with Robert Pecsok, a chemist, as their new dean. The Department of Oceanography remained part of Natural Sciences until the new School of Ocean and Earth Science and Technology was created in 1988 (see section 9.3).

In May 1985, graduate division conducted their periodic review of the graduate degree program in oceanography. This review was preceded by the department's "self-evaluation." The general consensus was that overall the program is very good, if not close to excellent. The biggest problem that the committee identified was the length of time to graduation for our MS and PhD students, and the unevenness in teaching ability among the department faculty. A list of recommendations for improvement was also included in their report.

The oceanography program was reviewed again in spring 2001. While quite a lot had changed, including the creation of SOEST, some of the same issues remained – especially length of time required for students to graduate.

In 2003, a draft report by the NRC panel on academic taxonomy proposed a new accounting system for US doctoral degree programs. Under the new plan, the graduate discipline of "oceanography" would be grouped under "geosciences" and would cease to be listed separately. As such, it would be the only field to lose its unique identity as there would be an overall expansion, not reduction, of taxonomic groups from 41 to 57. One reason given was the drop in number of PhD degrees awarded in oceanography in the US: 85 in 2001 compared to 99 in 2000. While reasonable people may disagree, this proposal could be the beginning of the end for the discipline as it is currently defined. Comments on the draft report are invited (resdoc@nas.edu); the final report is scheduled to be completed in 2005.

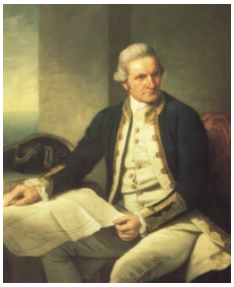
4.10. The Mostly Empty Captain James Cook Chair: A Lost Marine Opportunity



"Not to decide, is to decide"
Laurence Peter
(1919-1990)

Academic chairs, usually supported by generous private or corporate donations to a specific university or program, are prestigious appointments reserved for world-class scientists. Named professorships bring attention to the target discipline, and elevate the overall quality of the particular field of study.

The idea to create a chair in oceanography may have first been suggested in a letter to Thurston Twigg-Smith – then president and publisher of *The Honolulu Advertiser* – by Tom Hamilton – then president of UH. In his 19 March 1965 letter to Twigg-Smith, Hamilton wrote, "Dear Twigg: Persuant to our recent discussion, let me put to paper some of the ways in which an annual gift of $25,000 would be of greatest value to the University." He went on to state that "The establishment of a named chair may well suit your purposes best….." The field of oceanography has much to recommend it, as does marine biology. George Woollard is strong for having the chair in oceanography." Later on in his 3-page letter Hamilton states that "I think you would want to name the chair if it were established. Woollard has some interesting suggestions for a name if the chair were in oceanography. One would be justified in naming the chair for Benjamin Franklin, for he first mapped the Gulf Stream. Matthew Fontaine Maury generally is recognized as the father of oceanography. He was in the navy during the Civil War, but the record should show that he defected to the south. James Cook might not be a bad name to commemorate in Hawaii."



"I had ambition not only to go farther than anyone had been before, but as far as it was possible for man to go"
James Cook
(1728-1779)

Portrait of Captain James Cook, circa 1776, just prior to his third – and final – voyage of discovery.

On 22 March 1965, Twigg-Smith reported to Hamilton that "the Board of Directors – that morning – had approved the establishment of a $25,000 chair at the university; the proposal will be taken to the stockholders at their annual meeting." (note: At that time the Board membership represented over 90% of the stock – so the "stockholders final approval" was all but guaranteed.) Twigg-Smith also indicated in his 22 March 1965 letter to Hamilton that "We have in mind a Captain James Cook chair in oceanography." The initial grant will be for a period of three years with annual renewal thereafter. Twigg-Smith said that oceanography is a "worthwhile investment in Hawaii's future."

President Hamilton was thrilled by this great news. In a 1 April 1965 return letter to Twigg-Smith he indicated that "we are beginning immediately to search for a man to fill this chair, as we would like to get him started as soon as possible. However, I would rather wait and get a man of high quality rather than proceed too quickly and settle for something less than the best." The establishment of the Captain James Cook chair was also precedent-setting; it was the first full-time professional chair at the university. The oceanography department and the university were about to make a big international "splash" – or were they?

According to available records, Henry Stommel – then professor of meteorology at MIT – was the university's first choice for the chair. In a 28 April 1965 letter from President Hamilton to Henry Stommel of the department of meteorology at MIT, "We have had discussions among our own staff in oceanography, and with oceanographers at the National Science Foundation and the Office of Naval Research, and I am pleased to tell you that your name has been the first on everyone's list. I take great pleasure in offering you the Captain James Cook Chair in Oceanography." In closing his letter, Hamilton stated – "I would be very pleased to learn of your possible interest in this distinguished post at your earliest convenience."

To everyone's delight, and to nearly everyone's surprise, Stommel accepted Hamilton's offer to join the UH faculty. In his 8 July 1965 reply to Hamilton, Stommel indicated that his department head and dean have both approved a leave for academic year 1966-1967 and that he would be able to accept the James Cook professorship for that period. Stommel went on to state "An extension of leave beyond that period has not been ruled out, but if it seems desirable to me I must renegotiate the matter with them at a later date." So in August 1965 it was announced that Henry M. Stommel, the nation's leading authority in physical oceanography, would join the UH faculty as the Captain James Cook professor of oceanography. Among other honors, Stommel was an elected member of the US NAS (see *Box 3.1*) and would join UH botany Professor A. C. Smith as the only other UH faculty member to hold that distinction at that time.

Unfortunately for the prestige of the emergent UH oceanography program, Stommel later resigned from the job before he had ever arrived. Apparently on 2 February 1966 Richard Bader – then chairman of the Department of Oceanography – received a letter from Stommel announcing his change of plans for "personal reasons." He apparently also made reference to "an intellectual vacuum" with regard to UH's departments of mathematics and physics. While Stommel's "resignation" letter was unavailable, George Woollard's letter to Stommel, dated 3 February 1966, effectively demanded a better explanation why he had decided not to come to UH. Woollard wrote, "I think we are entitled to know the real reason behind your decision….." He went on to say "The severance of your commitment therefore has got to have real substance and also be one that will reflect no discredit on either you or us."

The author is unaware of any subsequent correspondence between Stommel and Woollard on this matter. Suffice it to say, a great opportunity had been lost and this was

a major setback for the new oceanography program at UH. In 1966, Stommel received the "coveted" Albatross Award (note: This award is not to be confused with either the fisheries vessel, the famous oceanographic expedition, or the distinguished award of the same name; see *Box 4.12*) for "having abandoned oceanography's most cherished chairs." The author has been unable to confirm whether receipt of this honor was tied back to the UH Captain James Cook chair in oceanography or to some other chair that Stommel may have declined. Later – in 1979 – Stommel was awarded the prestigious Alexander Agassiz medal of the NAS for his pioneering research on ocean circulation. He joined a select group of ocean pioneers including Prince Albert I of Monaco, Henry Bigelow, T. Wayland Vaughan, Harald Sverdrup, Frank Lillie, Anton Bruun, and Roger Revelle. It is truly unfortunate for the visibility of our marine programs that Stommel was not a UH faculty member at that time.

Following the "Stommel incident" there was a flurry of activity, led by Bader, to establish a list of prospective candidates for the chair. Among the world-class marine scientists under consideration were biologists Joel Hedgpeth, Peter Larkin, Ramon Margalef, and John Steele; physical oceanographers Walter Munk, Gunter Dietrich, Michael Longuet-Higgins, Willard Pierson, and John Swallow; and chemical/geological oceanographers Peter Wyle, Maurice Ewing, J. P. Riley, and Max Bloomer, among others. It was even proposed that the position be used to support a "lecture series" by experts in the field and that the lectures be bound and published as an annual series "Captain Cook Lectures in Oceanography."

Box 4.12: **The Albatross Award of the American Miscellaneous Society**



Do oceanographers have more fun? This was the title of a *Science* magazine cover-story editorial (7 September 1973) announcing that Roger Revelle, then president-elect of the American Association for the Advancement of Science (AAAS, publisher of *Science*) had won the "Albatross Award."

The American Miscellaneous Society (AMSOC) – described in the article as a mildly loony, invisible college of otherwise mature academics – was founded in 1952 by Gordon Lill, John Knauss, and Arthur Maxwell who were all working at the Office of Naval Research at that time. The award itself consists of a stuffed albatross (*Diomedea immutabilis*), mounted in a cage to which is affixed a modest bronze plate listing all previous winners.

Among other accomplishments, AMSOC created Project Mohole (see *Box 4.3*) and, for a brief period, was an official committee of the NAS. Since 1959, the society has existed primarily to hand out the Albatross Award, described as "the mariners substitute for the Nobel Prize!"

It would be more than two years after the chair was created before it was announced that Michael Selwyn Longuet-Higgins, a theoretical oceanographer and deputy chief

scientific officer at the National Institute of Oceanography in Wormley, England would be brought on board as the Captain James Cook professor of oceanography. One problem that emerged during the prolonged recruitment process was the relatively low salary; at $25,000 per annum most qualified candidates would have to take a pay cut to move to Honolulu. Acknowledging the high cost of living, the university agreed to supplement *The Honolulu Advertiser* annual salary of $25,000 with an additional $5,000. The chair was finally filled – or was it?

In a 20 May 1967 *The Honolulu Advertiser* article it was announced by Robert Hiatt, then UH vice president for academic affairs, that Longuet-Higgins had decided to decline the Captain James Cook chair in oceanography after a recent visit to UH. So, like Stommel before him, he never did join the UH faculty. Later in 1979, Longuet-Higgins was elected to the US NAS as a foreign associate (he was a citizen of the UK); another "big fish" had gotten away!

With two strikes against us in our attempt to fill this still vacant prestigious chair, the UH administration was understandably cautious about taking the next step or about making any more public announcements until it was certain that the chair would be filled. In May 1967 a departmental committee recommended three ranked finalists: Ed Goldberg (Scripps), Jules Charney (MIT), and Roger Revelle (Harvard), and on 20 October 1967 the list was submitted by Garth Murphy – then chairman of oceanography – to UH Vice President for Academic Affairs Hiatt for his approval. Hiatt approved of the list but apparently re-ordered the departmental rankings; on 24 October 1967 a formal offer was extended to Roger Revelle. He declined the chair on 20 November 1967, and on 28 November 1967 a formal offer went out to Jules Charney, who also declined. On 2 February 1968, a third letter was sent to Ed Goldberg who declined the offer 2 weeks later. The department was back to square one!

On 14 February 1968, Murphy wrote again to Hiatt, this time with three new names: Gordon Riley (then director of the Institute of Oceanography at Dalhousie University), Bruce Heezen (Lamont Geological Observatory, Columbia University), and Willard Pierson (New York University). Formal letters of offer went out from President Hamilton, but the outcome was the same as before.

On 18 September 1969, the UH-BOR approved the one-year appointment of Gunter O. Dietrich, a prominent German scientist, to fill the Captain James Cook chair in oceanography effective 15 October 1969. UH President Harland Cleveland said that "the faculty and administrators who participated in the selection process judged Dr. Dietrich, the world's best known living physical oceanographer, ideally qualified to join our growing program in the marine sciences." At the time of his appointment, Dietrich was director of the Institute of Marine Sciences at the University of Kiel in what was then West Germany.

Dietrich occupied the chair for the pre-arranged term but made no lasting mark on the oceanography program. The original intent of establishing this high-profile chair was to

hire a permanent superstar – someone who would build new curricula and establish new research foci. All this was about to change – or was it?

In October 1969, as Dietrich was about to arrive as the inaugural Captain James Cook Professor, UH President Harlan Cleveland wrote to George Carrier – then professor of applied physics at Harvard University – to offer him the Captain James Cook Chair of Oceanography to begin after Dietrich's pre-arranged 1-year term had expired; but Carrier declined. The *ad hoc* departmental selection committee met again and listed Owen Phillips (Johns Hopkins University), John Isaacs (Scripps), and Francis A. Richards (University of Washington) as possible candidates; this list was forwarded by Chairman Murphy to the president's office. It is not clear what happened next, but on 30 November 1970 a memo was sent by Keith Chave – then chairman of the Department of Oceanography – to David Contois – then dean of the College of Arts and Sciences – listing Owen Phillips and Robert Garrels (Scripps) as "two people to be qualified to hold the Chair."

One can only imagine the excitement, and the relief, when in July 1971, it was announced that Robert M. Garrels would be appointed the second recipient of the Captain James Cook chair in oceanography. According to a 28 June 1971 letter from David Contois to Garrels, the appointment would be effective 1 January 1972 at a salary of $13 K per annum (9-month basis), with an annual UH Foundation stipend of $19 K. In addition to the salary plus stipend, a fund of $12.5 K would be made available to "facilitate your research."

Garrels arrived in Honolulu in January 1972, anxious to begin his new career at UH (Figure 4.13). He had previously been a faculty member at Northwestern, Harvard and, more recently, Scripps Institution of Oceanography. At the time of his appointment to the Captain James Cook chair, Garrels was an elected member of the US NAS which added prestige to the expanding oceanography program at UH. John P. Craven, then UH dean of marine programs and state of Hawaii marine affairs coordinator (see section 6) said "we feel we've got a real fine scientist and educator." Craven called Garrels a "renaissance man." UH and the oceanography field of study were clearly back on the even keel – or were they?

On 1 September 1974, Garrels resigned from the prestigious Captain James Cook chair that he had accepted only three years prior "with every intention of permanency." The official reason given was his unhappiness over the administration's handling of state budget cuts, in particular the announced termination of 168 full-time, non-tenured UH at Manoa tenure-track faculty, including several Department of Oceanography faculty members (see *Box 4.10*). Garrels lamented, "basically I would feel I was sort of walking over dead bodies if I stayed here," referring to the firing of his colleagues. "Even if all 168 persons were to be rehired tomorrow," Garrels said, "I wouldn't stay because of the fact that this could have been done in the first place." A man of principles by any standard – so he left UH, undoubtedly with a very poor opinion of the university, or at least of the UH administration. In the end the faculty were never fired, but by this time Garrels was long gone.



Figure 4.13: Robert Garrels (center) – the Captain James Cook professor of oceanography – receiving congratulations from Keith Chave (left) – then chair of the Department of Oceanography – and John Bardach (right) – then director of HIMB, shortly after his arrival in the islands. (from UH at Manoa Masao Miyamoto collection; negative C72-00026)

With Garrels' departure and with the loss of financial support from *The Honolulu Advertiser* – the sponsor of the Captain James Cook Chair in Oceanography – this prestigious chair appeared to be gone for good. However, James Andrews – then chairman of the Department of Oceanography – appealed to UH President Matsuda to ask the state of Hawaii legislature for help. With Matsuda's support, Andrews drafted a bill to establish the chair and President Matsuda forwarded it – on 20 December 1974 – to then Governor George Ariyoshi. This led to HB #456 and SB #339: "Making an appropriation for the establishment of a chair in oceanography at the University of Hawaii." According to the 28 January 1975 version of the bill, a sum in the amount of $50 K would be appropriated out of the general revenues of the state of Hawaii to (re)establish the Captain James Cook Chair in Oceanography. In his written testimony, Andrews provided background information on the department and *The Honolulu Advertiser*'s previous 3-year gift to fund the chair. He also stated that the chair should be funded "as a professorial chair providing focus for innovative programs in oceanographic research and teaching." Andrews went on to propose that if, and when, the chair is re-established, that George Woollard – then the retiring, founding director of HIG – should be selected to occupy it so that Woollard can "continue to be the intellectual and spiritual motivating force of the university's ocean science effort." Woollard seemed ready to accept if such an offer was made.

John Craven – then UH dean of marine programs – also provided written testimony on the Andrews-led bill. In speaking about the Captain James Cook Chair, Craven said "It was – and is – both symbolically and substantively the post held by the academic and intellectual leader of the ocean sciences community. The re-establishment of this chair as a university-funded element of the area of excellence would be more than symbolic of the state's and university's intention to build and maintain a constantly improving marine program." Craven also supported Andrews' suggestion that George Woollard be appointed to the new chair.

The bill was not enacted. Woollard went on to retire as director and was never so honored by the planned appointment to this prestigious chair. With no funds to support

this initiative, this brought to a close the historic, disappointing chapter of the rise and fall of the Captain James Cook Chair in Oceanography. In the nearly ten years of its existence, this prestigious chair was occupied only twice for a total period of less than four years. To this date, there have been no other academic chairs, major endowments or named professorships in oceanography at UH, and the legacy of the Captain James Cook Chair in Oceanography remains as a major blemish and lost opportunity in the history of our academic programs.

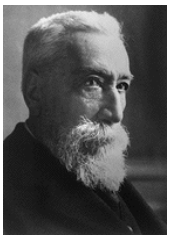
In 1991, Ed Laws – then chairman of the Department of Oceanography – wrote to Twigg-Smith with an update on the progress that had been made at UH in the field of oceanography over the past two decades. The real purpose of Laws' letter, however, was to propose the re-establishment of the Captain James Cook Chair that had disappeared in 1974. He further suggested that the new chair be connected to the Global Environmental Change Center that Laws indicated would soon be established within SOEST (note: To the author's knowledge this Center never materialized, at least not in that name); "I am talking about visitors who would come here for probably no longer than a semester or six months," Laws wrote. In Twigg-Smith's brief, hand-written response dated 7 August 1991, he said your good letter "struck a nostalgic chord and it's a good idea you've put forth." Unfortunately – *The Honolulu Advertiser* was cash-strapped and unable to re-establish the chair at that time.





4.11. Hawaii Institute of Marine Biology: 1965-present

"To accomplish great things, we must dream as well as act."
Anatole France
(1844-1924)



In July 1965, a few years after fire gutted the main research facility, the HML director and past chairman of the Department of Oceanography, Vernon Brock, asked the UH-BOR to grant permission to rename the laboratory, the Hawaii Institute of Marine Biology (HIMB); his request was granted. Like HIG, selected faculty – including several Department of Oceanography professors – would eventually have split academic appointments with HIMB.

The official ground-breaking for the new HIMB laboratory building took place on 2 August 1965 when Robert Hiatt, then UH vice president for academic affairs, placed the cornerstone for the $273 K building that would be constructed on the site where fire had destroyed the old HML (Figure 4.14; see also section 3.6). The new HIMB building was completed in 1966 and served as the principal laboratory for staff scientists and students (Figure 4.15). Funds for the construction came from the State of Hawaii and in the form of a generous gift from Edwin W. Pauley (Figure 4.16). A 60-foot motor craft was also purchased to facilitate sample collections and to serve as a floating classroom. This vessel was named the R/V *Salpa* (II).



Figure 4.14: Placement of the cornerstone of the new HIMB laboratory building on 2 August 1965. Shown here are (from left) representative of Black Construction Company, Phil Helfrich, Vernon Brock – then director of the newly renamed laboratory, and Robert Hiatt with trowel. (photo courtesy of Richard Brock, Sea Grant/SOEST and son of Vernon)

In February 1987, UH officials asked the BOR to approve a plan to purchase the 25-acre Coconut Island site (note: technically, only 12.5 acres was still privately owned; the so-called "high ground" as the remainder of the island – the shoreline created by dredge spoils – was already claimed by the state). According to UH President Albert Simone, the island would be used for expanded marine research and as an academic "retreat" – without any further qualification. At that time, Coconut Island had been on the market for more than a year with an asking price of $8.75 M (Figure 4.17).





Figure 4.15: The new HIMB laboratory facility built to replace the original lab that was destroyed by fire in December 1961. Summer students, circa 1966, including Chris Brown (far right) who later worked as a researcher at HIMB. These photos, by Warren Roll, first appeared in a Helen Altonn article published in the *Honolulu Star-Bulletin* on 24 August 1966. (reproduced with permission from *The Honolulu Advertiser*)





Figure 4.16: Dedication ceremonies for the new HIMB research laboratory in 1966. Shown at left is Edwin W. Pauley and his wife Barbara in front of the plaque on the new laboratory facility. At right, Pauley (far right) talks to Robert Hiatt (center), then UH vice president of academic affairs, and Vernon Brock (left), then director of HIMB. (from UH at Manoa Masao Miyamoto collection; negative packet C66-00033)



Figure 4.17: Coconut Island circa 1959 (top) as presented in the cover story of the October 1959 *National Geographic* magazine (vol. CXVI, No. 4) and circa 2000 (bottom) with the expanded laboratory facilities. The orientation of the bottom photo is rotated approximately 90° clockwise, relative to the 1959 portrait. (photo: top – National Geographic Society; bottom – SOEST archives).

According to a 20 February 1987 *The Honolulu Advertiser* article, the UH-BOR gave Simone's plan a "chilly reception." The matter was unanimously deferred and sent back to the budget committee. HIMB Director Phil Helfrich emphasized that the current owners, the family of the late Edwin W. Pauley, had been very supportive of the marine research activities and had donated land and money to support the facility. If the remainder of the land fell into "unfriendly" hands, it could jeopardize the marine research mission.

Following the BOR rejection, State Representative Terrance Tom introduced a bill in the legislature that would have the state, rather than the university, purchase the property – this proposed action had full UH support. But just a few months later, while the state officials were contemplating action on the bill, Japanese developer Katsuhiro Kawaguchi of Tokyo purchased the property for $8.5 M. Helen Altonn in a *Honolulu Star-Bulletin* article published on 6 June 1987 quoted director Helfrich, "We're just waiting with some anxious expectation for the next move here…" The planned development of the island did not occur and, according to a 8 October 1989 *The Honolulu Advertiser* article by Jim

Borg, “the billionaire developer was deported in 1988 for failing to report his criminal record in Japan on his US visa application.”

The family of the late Edwin Pauley, especially his son Steven Pauley – a medical doctor – remained committed to the success of HIMB (Figure 4.18). So in 1992, the trustees of the Pauley Foundation donated $7.6 M to the university to construct a new, state-of-the-art marine research facility next to the main laboratory that they had also partially funded in 1965; the new facility would be named the Pauley-Pagen Laboratory. A few years later they provided an additional $2 M to purchase the disputed “higher ground” of the island from Kawaguchi. Steven Pauley’s vision and generosity have provided invaluable research opportunities for UH students and faculty since his father, Edwin Pauley, established the HML on Coconut Island in 1951.

Since the founding of HIMB, and even before that time, there had been close collaboration with the Department of Oceanography. However, Vernon Brock was the only person to have served as both the chairman of the Department of Oceanography and the director of HIMB (Figure 4.19). Besides Brock, John Caperon (Figure 4.19) was the only HIMB director who also had a formal Department of Oceanography faculty appointment (Table 4.3 and Figure 4.20). This only served to exacerbate the separation of marine biological and marine physical-chemical sciences at UH (also see section 4.12).



Figure 4.18: Dr. Steve Pauley (right) with Tom Schroeder at Barry Raleigh’s aloha luncheon (see section 10.6) in August 2003. (photo by D. Karl)



Figure 4.19: Vernon Brock (in center of photo at left) with colleagues including Max Doty (second from left). Brock served as HML/HIMB director from 1963-1969 (photo courtesy of Richard Brock, Sea Grant/SOEST and son of Vernon), and John Caperon (right), HIMB director 1978-1980, conducting research at the lab circa 1971. (from UH at Manoa Masao Miyamoto collection; negative C71-00073).



Figure 4.20: Portrait gallery of selected past and present HML/HIMB directors. Shown clockwise from top left: Robert Hiatt (1948-1955), Hank Banner (1955-1963), Phil Helfrich (1970-1971 and 1980-1993), John Bardach, with pipe (1971-1977), Gordon Grau (1993-2000), and the current director Jo-Ann Leong (2001-present). (photos: Hiatt [Masao Miyamoto collection, unnumbered print, circa 1954], Banner [Masao Miyamoto collection, negative A59-00012], Helfrich [from 22 October 1958 Tomi Kaizawa *Honolulu Star-Bulletin* article; reproduced with permission from *The Honolulu Advertiser*], Bardach [Masao Miyamoto collection, negative C71-00073], Grau [E. Gordon Grau], Leong [*Honolulu Star-Bulletin*, http://starbulletin.com/2001/05/17/ news/story12.html])

Table 4.3: Hawaii Marine Laboratory - Hawaii Institute of Marine Biology Leadership: 1948-present		
Robert W. Hiatt	Director	1948-1955
Albert H. Banner	Director	1955-1963
Vernon E. Brock	Director	1963-1969
Philip Helfrich	Interim Director	1970-1971
John E. Bardach	Director	1971-1977
William Coops	Interim Director	1978
John Caperon	Director	1978-1980
Philip Helfrich	Director	1980-1993
E. Gordon Grau	Interim Director	1993-2000
Paul E. Nachtigall	Interim Director	2000-2001
Jo-Ann Leong	Director	2001-present

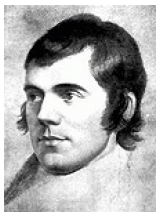




Coastal research vessel Mao Mao *shown at left at its HIMB berth and above visiting the UH Marine Expeditionary Center (pier 45) in the shadow of the R/V* Kaimikai O Kanaloa *(from SOEST archives; also see Chapter 13).*

4.12. The Kewalo Basin Oceanography Facility: A Proposed Split of Subdisciplines





"The best laid schemes o' mice an' men gang aft a-gley"

Robert Burns
(1759-1796)

Initially, the organizational structure of HIG was more or less aligned with that of the AGU with specialized research divisions such as seismology, geochemistry, meteorology, astronomy, marine geology, and oceanography (see section 4.4 and *Box 4.5*). HIG Director Woollard was also president of AGU the year he joined UH so that organizational structure was very familiar and acceptable to him. At that time, neither AGU nor HIG had any explicit mention of, or interest in, biology except perhaps for selected organisms such as corals, foraminifera, coccolithophorids, and diatoms that had unique mineralized skeletons or carried potential information about past climates. This created an uncomfortable situation as the Department of Oceanography hired new biology faculty who needed access to laboratories, ships, and other research facilities. Even among the biologists there was a growing rift between the scientific interests and facility needs of the marine biologists vs. biological oceanographers (see *Box 4.5*).

The Academic Development Plan (ADP)-II, commissioned by then UH President Thomas Hamilton and published on 23 January 1969 during the watch of acting UH President Robert Hiatt, was a significant benchmark in the history of UH. Hiatt called ADP-II a "strong guide, but not a roadmap." However, once again the university's geographical location was cited as a reason to concentrate resources on programs in oceanography and marine biology. In this case the acting UH president was a trained marine biologist and oceanographer, so he understood this subtle distinction in terminology.

A major vision for marine sciences that was articulated in the 1969 ADP-II was the plan for a new Kewalo Basin building that would house the graduate program in oceanography. It was projected that more than 200 people would work at this facility as their primary office/laboratory space. The Kewalo oceanography facility was envisioned primarily for research in biological oceanography, and there was expectation for close collaborations with HIMB and PBRC. At this time, 1969, the PBRC's laboratory for experimental marine biology was housed at the Waikiki Aquarium but it would relocate to the Kewalo Basin laboratory once the new facility was constructed (see *Box 4.13*).

If the ADP-II plan to split the young, growing Department of Oceanography into biological sciences (with PBRC/HIMB) and physical sciences (with HIG) had been fully implemented, marine sciences at UH may not have developed at the same rate, or with the same success that it did. Of course, no one will ever know what opportunities were

gained, or lost, by keeping the biological oceanographers fully integrated with physical and geochemical marine sciences in a single academic unit.

Box 4.13: **Kewalo Marine Laboratory**



(from 15 November 1971 Helen Altonn Honolulu Star-Bulletin article; reproduced with permission from The Honolulu Advertiser)

In the early 1960's a new organized research unit was formed at UH, the Pacific Biomedical Research Center (PBRC). Robert Hiatt, then UH Vice President for Academic Affairs, was the dynamic force behind the development of the center, just as he had been for HIG, HML, and the Department of Oceanography. Initially created in 1960 as the Institute of Health Research, prior to the existence of the John A. Burns School of Medicine, this new UH organized research unit conducted research in biochemistry, biophysics, microbiology and parasitology, physiology, and genetics using marine organisms as model systems.

In October 1963, the UH-BOR merged the Institute of Health Research with Life Sciences and created PBRC. Laurence Snyder, a world renown geneticist and former UH President, became a PBRC researcher following his retirement from the top UH administration position. In 1964 it was announced that Windsor C. Catting, former dean of Stanford University's medical school, would be the inaugural director of PBRC, beginning 1 July 1964. Other prestigious appointments including Georg von Bekesy, a Nobel laureate, were to follow (see *Box 4.14*)

As with most successful UH organized research units, there were space limitations that seriously impacted further growth and success. In 1965, the Hawaii State Legislature approved $300 K to match an NSF facilities grant of $550 K to construct a much needed marine laboratory facility. In April 1967 it was announced that the new laboratory would be constructed at a Kewalo Basin site for PBRC faculty. The target completion date, according to a 14 April 1967 *The Honolulu Advertiser* article, was March 1969.

The Kewalo Basin development was originally planned to accommodate two buildings. The 3-story PBRC laboratory was phase I. Phase II was to have been a new (biological) oceanography building but this project was never completed (see section 4.12). However, a freeze on NSF facilities grants precluded a favorable construction and occupancy timetable. According to a *Honolulu Star-Bulletin* article published on 30 September 1969, Governor John Burns made the construction of the Kewalo Marine Laboratory his "top priority." NSF Biological Oceanography Program Manager Edward Chin agreed; "The NSF considers the development of marine sciences at UH an important step in the growth of marine sciences in the US."

Eventually Phase I (only) of the new marine laboratory was completed. Robert E. Kane, founding director of the UH Kewalo Marine Laboratory, would serve in that capacity for 25 years.

Box 4.14: **Georg von Bekesy: The First and, to Date, Only Nobel Laureate Faculty Member at UH**



A very big boost for basic research at UH was the announcement – in July 1965 – that Georg von Bekesy, the 1961 Nobel Prize winner in physiology and medicine, would join the UH faculty in spring 1966. He was to be the inaugural recipient of a new academic chair financed by Hawaiian Telephone.

While not a marine scientist *per se*, von Bekesy proposed to shift his experimental animal models from humans and guinea pigs to marine fishes, and thus planned to work closely with marine biologists at PBRC and Sea Life Park. His addition to the faculty at that time brought to three the number of UH professors holding elected membership in the prestigious US NAS (see *Box 3.1*), another one of his many honors. UH President Thomas Hamilton considered von Bekesy's appointment to be a significant development in the maturation of basic scientific research at UH.

A few years later, at the 1969 UH at Manoa commencement, von Bekesy was awarded an honorary UH Doctor of Science degree along with Japanese novelist Yasunari Kawabata, the 1969 Nobel Prize winner in literature, who was a visiting professor during 1969 spring semester.

4.13. The Research Corporation of the University of Hawaii (RCUH)

The Research Corporation of the University of Hawaii

In January 1965, Governor John Burns asked the legislature to authorize the establishment of a "research foundation" at UH – an organization that could directly receive grants from, and enter into contracts with, private sector partners. Initially, the governor did not empower this new organization to deal directly with the federal government on grants and contracts as Robert Hiatt, then UH vice president for academic affairs and past UH director of research, had requested. According to a 30 January 1965 *The Honolulu Advertiser* article, Governor Burns believed that since federal monies obtained by UH faculty derived from the taxpayers, they should be "received and distributed by the State." He went on to say that some folks at UH – without naming anyone – "would like to be little gods within their sphere and get blank checks to spend public funds as they wish, without proper controls."

The proposed Research Corporation would be a private entity operated solely for the benefit of UH. In his urging of its creation, Hiatt said that one major benefit would be that by enabling joint UH private sector ventures it might help to induce science-related, high technology industries to relocate to Hawaii. This is still a largely unrealized goal of state and university administrators. Today, the fundamental mission of RCUH is to support the research and training programs of UH and to enhance research, development, and training generally in Hawaii.