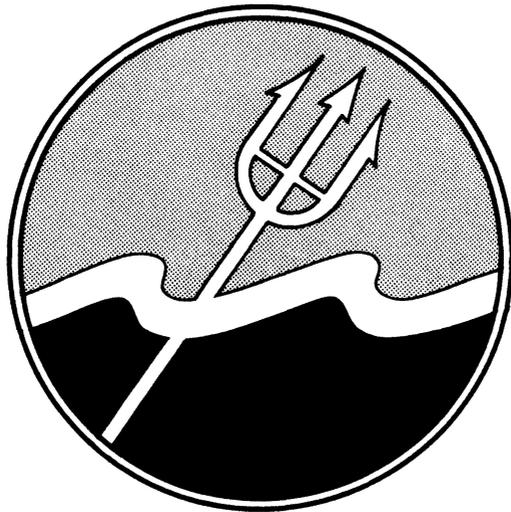

Walking About Scripps

A Tour of UCSD's
Scripps Institution of Oceanography
(and a bit of history)



by
Elizabeth N. Shor

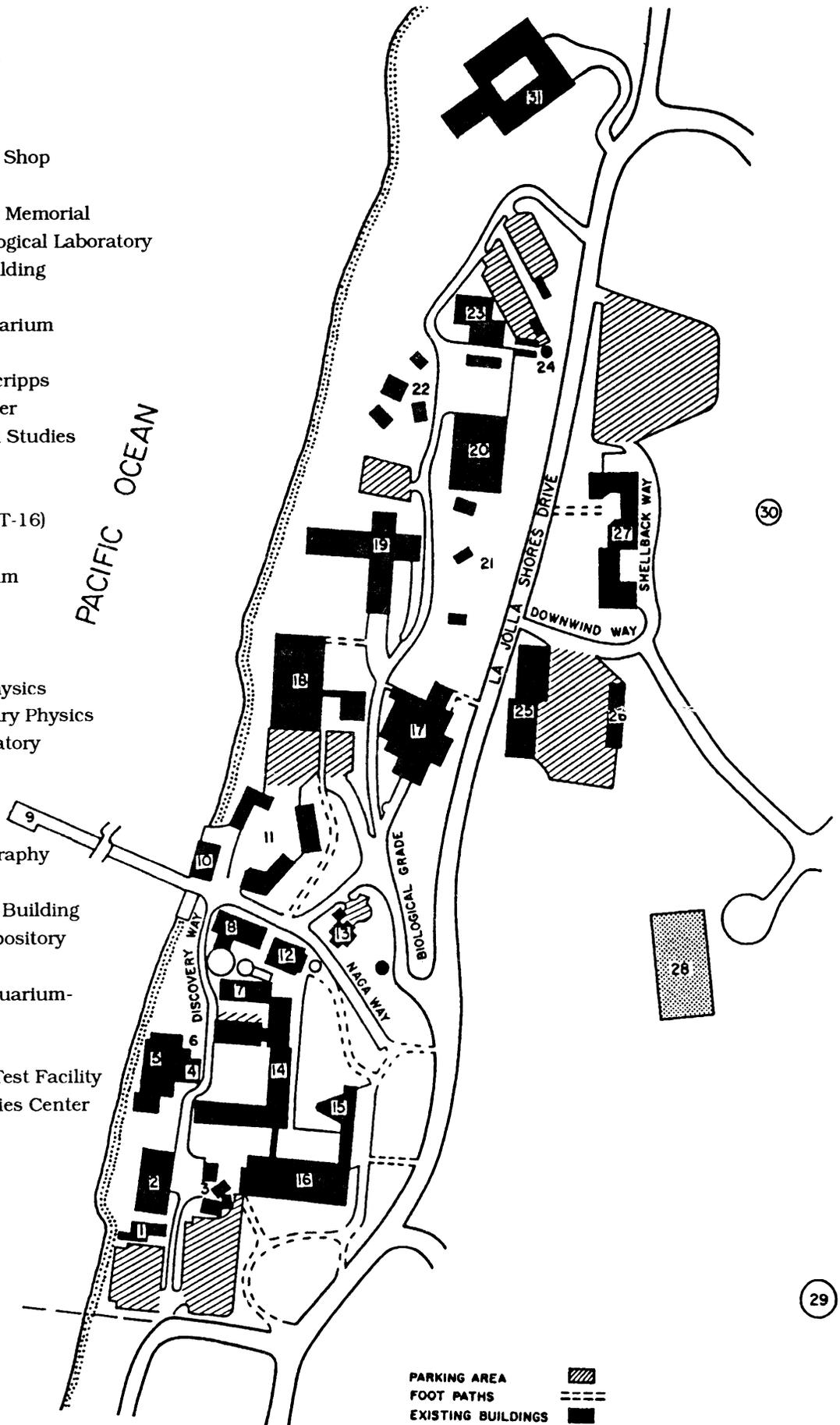
All rights reserved. Publication was supported by a gift in memory of Margaret Scripps Hawkins, here gratefully acknowledged.

Georgia Greaves provided technical expertise on publishing and René Wagemakers created the map; I thank you both.

February 1990

MAP CAPTIONS

1. Surfside (T-8)
2. Research Support Shop
3. Cottages
4. George H. Scripps Memorial
Marine Biological Laboratory
5. "New" Scripps Building
6. Lunch Stand
7. Experimental Aquarium
8. Scholander Hall
9. Ellen Browning Scripps
Memorial Pier
10. Center for Coastal Studies
11. Service Yard
12. Vaughan Hall
13. Director's House (T-16)
14. Ritter Hall
15. Sumner Auditorium
16. Sverdrup Hall
17. Eckart Building
18. Hubbs Hall
19. Institute of Geophysics
and Planetary Physics
20. Hydraulics Laboratory
21. Cottages
22. Cottages
23. Norpax Building
24. Satellite-Oceanography
Facility
25. Deep Sea Drilling Building
26. D.S.D.P. Core Repository
27. Nierenberg Hall
28. Stephen Birch Aquarium-
Museum
29. Seaweed Canyon
30. Electromagnetic Test Facility
31. Southwest Fisheries Center



INTRODUCTION

Scripps Institution of Oceanography (SIO) is the oldest and largest research center devoted to oceanography in the United States. It was formally established in 1903 as the Marine Biological Association of San Diego. When the University of California accepted the research facility in 1912, it was given the name Scripps Institution for Biological Research in recognition of the two major donors: Ellen Browning Scripps and her half-brother E. W. Scripps. The name was changed to Scripps Institution of Oceanography in 1925. It has been a teaching and research unit of the University of California, San Diego (UCSD) since that campus was established in the late 1950s. The land that was originally purchased by the Marine Biological Association and is now occupied by Scripps Institution was acquired in 1907, from the city of San Diego (at public auction for \$1,000). It comprises about 170 acres.

Oceanography as a broad subject spans many scientific disciplines. It has existed as a recognized field only from about the 1940s. It is involved with major and minor concepts in which the oceans—which cover almost three-quarters of the Earth's surface—are a factor.

Within oceanography: Biologists find and describe new species of animals and plants, define the distinctive habitats in which they live, pursue the drift of creatures within currents and throughout oceanic depths. Geologists and geophysicists gather rocks from the sea floor, cores from within it, and recordings beyond that to determine the history of planet Earth. Chemists analyze the elements of seawater, their distribution in the currents and sediments, and the nature of unique chemical compounds of ocean creatures. Physical oceanographers define the currents at the surface and within the ocean, the features of waves in the water and in the Earth, the interaction of the atmosphere and the ocean and its effect upon weather and climate. Engineers design and build the complex equipment necessary to find out what is within and beneath the ocean waters.

These researchers must have offices, laboratories, classrooms, administrators, support staff, ships and equipment. SIO employs about 1,200 people. They prefer working undisturbed, so please don't walk through the buildings.

From the southwestern end of Scripps Institution, starting at the corner of El Paseo Grande and Discovery Way, the buildings are about in this sequence (see map):

SURFSIDE (T-8) — MAP #1

Name: The name was given by Scripps graduate students.

This one-story house was acquired in 1961, when Scripps Institution bought land at the south end of its original property; the purchased land was used for the south parking lot and the landscaped entry area. The only structure on that land was this house, which was moved from its original site along La Jolla Shores Drive; in its present location, it was first used as an office building for campus architects who were planning the UCSD campus. After a few years, it came under the jurisdiction of the SIO Director's Office, and it became a center for the Scripps graduate students. It has recreation facilities, student offices, storage for surfboards, and is used at the end of most Friday afternoons for a (TGIF) get-together by students and staff of SIO.

Some years ago a number of SIO buildings were designated "temporary" and numbered in a T series to distinguish them from permanent buildings.

RESEARCH SUPPORT SHOP — MAP #2

Year built: 1960.

This Butler building houses the personnel and facilities for the design and production of equipment for Scripps researchers at sea and ashore. It is formally known as the Marine Science Development and Outfitting Shop, and is equipped with precision tools and machinery.

Adjacent to it on the north is T-3, now used by a shipboard geophysical facility; the wooden structure is the only survivor of three buildings that were moved to SIO in 1946 from Camp Callan, a World War II Army camp on Torrey Pines mesa.

COTTAGES T-4, T-5, T-6, T-7 — MAP #3

Year built: 1913.

Because of the isolation of the early research station that became Scripps Institution, many of the employees and visitors wanted to live on the campus. Funds provided by Ellen Browning Scripps made it possible to build 12 houses in 1913: simple one-story, redwood cottages (much like the beach cottages of La Jolla at that time). Those who lived in them paid nominal rent to the institution. When SIO needed the space for larger buildings, some of the cottages were destroyed, and others were moved from their original sites. These four of the 12 have continued in use since 1960, two as research and administrative offices and two as offices for graduate students.

Scripps Building consists of two units: "Old Scripps" and "New Scripps," each significant in its own way:

**THE GEORGE H. SCRIPPS MEMORIAL MARINE BIOLOGICAL LABORATORY
MAP #4**

Year built: 1909-1910.

Architect: Irving Gill, a noted architect in San Diego at that time.

Named for: George Henry Scripps, an older brother of Ellen Browning Scripps; she wanted the facility named in his memory.

This plain, solid, two-story structure, affectionately referred to as "Old Scripps," was the first building constructed on the present SIO campus. It was completed in 1910, as the first in a series of intended buildings for the Marine Biological Association of San Diego. For several years it housed all of the institution, including a public aquarium, research laboratories and offices, and served as the home for founder and first director of Scripps William E. Ritter and his wife.

The building was slated for demolition in 1976, but a small determined group of Scripps people decided that it should be saved, for its oceanographic and architectural history. They received university permission to seek outside funds to restore it to its original appearance; they gathered the necessary funds, and carried out a great deal of the interior demolition themselves. Old Scripps was designated San Diego Historic Site #119 in 1977, was listed in the National Register of Historic Places on November 10, 1977, and became a National Landmark in 1982. Its restoration, including conformance with earthquake resistance criteria, was designed by the architectural firm of Macy, Henderson & Cole in 1983, and the building was restored to use that year.

Now occupying it are the facilities of the Shipboard Computer Group, a classroom, offices for visiting personnel, and the offices of the Graduate Department of Scripps Institution. Information on admission to SIO is available on weekdays from the Graduate Department office on the second floor.

Scripps directors had an office in this building from 1910 until 1950. The second-floor southeast room has been restored to represent chiefly the 1930s period, and is used as a conference room. One first-floor office has been restored with original 1910 furnishings, and there are historical exhibits in the building. The building is open to the public for tours on UCSD's Open House in the spring.

"NEW" SCRIPPS BUILDING — MAP #5

Year built: 1959; a small addition on the south end was built in 1977.

This is the one-story wooden structure on the western and southern sides of "Old Scripps." It was intended originally as a cafeteria and lunch room for the institution. However, space needs of the late 1950s set aside the original purpose, and the building has always been occupied by administrative personnel. It contained the office of the first chancellor of UCSD, Herbert F. York, in 1959. The office of the director of Scripps Institution is in the southernmost wing of "New Scripps," and the rest of the building holds other administrative offices, including Public Affairs, which serves as the general information and media office for SIO.

Across the roadway to the east from the Director's Office is one wing of Ritter Hall, which will be described later. Eastward of Old Scripps Building is an open space that was occupied by a high-ceilinged, two-story building from 1916 to 1977; it originally held the institution's library, as well as the museum, and an auditorium. The building was the social center of the institution for many years, where lectures and other events were held. The two stories were converted into four as the library grew, and in its later years the building housed chiefly that facility. Considered unsafe in the event of a major earthquake, it was removed in 1977 after a new library building was built.

LUNCH STAND — MAP #6

Year built: 1961.

This small addition to the side of Scripps Building was built to provide a nominal food facility on the Scripps campus. Operated by the UCSD campus food services, it is open weekdays from 8:00 AM to mid-afternoon and may be used by the public.

EXPERIMENTAL AQUARIUM — MAP #7

Year built: 1958; addition 1965.

In this building are research aquarium facilities, with seawater lines and rooms for controlled experiments. These may be used by SIO students and researchers. On the second floor are two wet-lab classrooms, used by the Graduate Department and by the Aquarium-Museum.

SCHOLANDER HALL — MAP #8

Year built: 1965.

Architect: Aetron.

Named for: Per Fredrik Torkelsson Scholander (1905-1980), professor at Scripps Institution from 1963 to 1980. Scholander, who was born in Sweden and educated in Norway, was primarily a physiologist but also had a broad interest in plants, animals, and people—especially their ability to survive at the limits of their environment.

Known from its construction days until 1988 as Physiological Research Laboratory (PRL), this three-story building was funded by the National Science Foundation, in a broad grant to Professor Per F. Scholander for studies in physiology, with some of the emphasis on marine mammals. The grant also included funds for a research ship, and the National Institute of Health provided support for operating the laboratory for its first seven years. Some financial support was also provided by the Brain Research Institute at UCLA, which made it possible to construct the third story of the building. East of Scholander Hall are two holding pools for marine mammals and fishes and a doughnut-shaped pool with a laboratory in the center. A variable-speed trolley can travel the perimeter of the pool for testing hydrodynamic behavior of animals in motion.

ELLEN BROWNING SCRIPPS MEMORIAL PIER — MAP #9

Year built: 1987-1988.

Architect: Ferver Engineering.

Construction firm: Kiewit Pacific Company.

Named for: the most significant donor to the institution in its formative years, Ellen Browning Scripps (1836-1932). Born in London, Ellen emigrated to the United States with her father in 1844, and grew up on a farm in Illinois. She attended Knox College in Illinois. In 1866 she joined her brother James in his newspaper business, and later she worked with her younger half-brother E. W. Scripps in his newspaper business. E. W. settled in the San Diego area about 1890, and Ellen built a house in La Jolla soon after that. Never married, and wealthy from funds derived from the family newspaper businesses and from inheritance from another brother George, she became a major benefactor in La Jolla and elsewhere. In its formative years, Ellen provided generous funds for the Marine Biological Association, served on its board, and gave it a large endowment. An unassuming person, she preferred that the institution be named for her brother George, but the University of California chose the overall surname in 1912. Finally, in 1988, at least the pier could be named for this remarkable woman.

The original Scripps Pier, built in 1915-1916, was a 1,000-foot long facility for acquiring clean seawater for the campus laboratories and aquarium. Ellen Browning Scripps provided all of the money (\$36,000) for its construction. That structure—well built for its day, of reinforced concrete pilings and a wooden deck—survived many years and storms, but extensive repairs were made to it in 1926 and in 1946. Major concerns about the soundness of the old pier finally led to its total replacement. The new one, which is 1,090 feet long, was built of reinforced concrete alongside the original pier, which was then removed.

Measurements of surface and bottom seawater temperatures have been taken from the (old and new) Scripps Pier since 1915, as have tide measurements, salinity determinations, and weather records. Analyses of plankton samples have been carried out many times from the pier, for long and short intervals; studies of fouling organisms have been done from it; projects concerned with breaking waves and with the movement of sand have used the pier; in the 1940s the aquarium curator fished from it for specimens for his displays and food for them. Small boats can be launched from the far end of the pier, for projects in the kelp beds and the Scripps Submarine Canyon.

Halfway down the ramp north of the pier is the Diving Facility, used since 1958 by Scripps divers to house their compressors and equipment for recharging scuba tanks and as a site for inspection and maintenance of diving equipment. The training program for scientists using underwater breathing apparatus began at SIO in 1951; it is the oldest program in the country, and has established many of the rules for safe diving with underwater equipment. The structure that houses the Diving Facility was built in the late 1940s as a garage for two Army "Dukws" (amphibious vehicles) that were used for studies of inshore waters and the surf zone.

CENTER FOR COASTAL STUDIES — MAP #10

Year built: 1962, as a Seawater Test Facility and Core Storage building; the top floor added in 1973.

Architect: Risley & Gould.

The original structure was for a test facility to convert seawater to fresh water, under a project funded by the Engineering School of the University of California, Berkeley. The north half of the lower part of the building was for storage of seafloor cores, gathered on Scripps expeditions.

The upper level was added in 1973 for SIO researchers in what was first called Shore Processes, then was more formally defined as the Center for Coastal Studies. Scientists at the center focus on the coastal environment, including projects concerned with sediment transport, waves, currents and tides in nearshore waters, fluid-sediment interactions, and the effects of the ocean on coastal structures. They have developed instruments and sophisticated computer technology in these fields.

SERVICE YARD — MAP #11

This area was created in 1950 by grading an eroded "badlands" area; it houses maintenance facilities for campus equipment and landscaping, a storehouse for office and laboratory supplies, a shower facility and locker room for divers, a back-up generator for the seawater pumps in case of power failure, and a staff machine shop. The buildings are numbered T-40, T-41, T-42, and T-43.

The Benthic Lab occupies one corner; in 1965 it served as headquarters for Sealab II — a U.S. Navy-sponsored project in which teams of divers lived on the seafloor at a depth of 210 feet for two-week sessions. The laboratory now houses facilities for the Remote Underwater Manipulator (RUM), an unmanned vehicle that can be directed by remote control to crawl along the seafloor to considerable depths to take photographs and samples.

From the area of the pier, this guide leads away from the ocean (eastward) and doubles back to describe buildings farther inland. Turn right on the roadway (watch out for traffic!), Discovery Way.

VAUGHAN HALL — MAP #12

This building presently houses the world-famous Scripps Aquarium.

Year built: 1950.

Architect: Frank L. Hope.

Named for: Thomas Wayland Vaughan (1870-1952), who served as the second director of Scripps Institution from 1924-1936. Primarily a geologist, Vaughan was an expert on fossil coral formations, and was also interested in living coral communities. As director, he expanded the institution's programs from nearshore studies into broader aspects of oceanography.

The first public aquarium building on this campus was built in 1915, just north of Old Scripps Building; it was a small wooden

structure (24 x 48 feet), and was intended as a temporary building. At that time, the oceanographic museum was housed in the Library Building constructed in 1916 (removed in 1977). The building of a permanent aquarium was long delayed. Percy S. Barnhart, who served as curator of the Aquarium and Museum from 1914 to 1946, envisioned a structure that contained a central museum, surrounded by a circle of well-lighted aquarium tanks. That concept prevailed in the new structure, completed in 1950, after Sam Hinton had become the aquarium curator.

Probably because of always-needed space demands, the top (third) floor of the Aquarium-Museum building was pre-empted by the director's office. From 1950 until 1959 that office and related administrative offices were located on the third floor, which now contains a classroom and offices for drafting work. The basement, or first floor, of the building was originally intended for specimen storage, and in fact contained a major portion of the collection of fishes until 1960. All of the offices of the Aquarium-Museum staff are now crowded into that basement area. A new facility—the Stephen Birch Aquarium-Museum—will be completed in 1991 across La Jolla Shores Drive toward the top of the hill.

DIRECTOR'S HOUSE (T-16) — MAP #13

Year built: 1913.

Because of the isolation of the original research institution from the village of La Jolla (about 4 miles on a dirt road), most of the employees lived at the institution in its earliest years. The first director, William E. Ritter, and his wife moved into the second floor of Old Scripps Building when it was completed in 1910. Funds provided by Ellen B. Scripps were used for building this two-story structure for the director. The Ritters moved into it in December 1913, and made it their home until his retirement in 1923. Dr. and Mrs. T. Wayland Vaughan lived in it from 1924 until his retirement in 1936. Dr. and Mrs. Harald U. Sverdrup lived in it from 1936 until their departure for Norway in 1948. The next director, Carl Eckart, preferred to live in his own house in La Jolla, so Scripps Professor and Mrs. Carl L. Hubbs were allowed to rent the Director's House. When they moved into their own new off-campus house in 1954, T-16 became an office building for a research unit of the U.S. Fish and Wildlife Service, closely associated with a fisheries program at Scripps, until the Southwest Fisheries Center was completed in 1964. Then it was used by the offices of the Deep Sea Drilling Program until their building was built in 1969. It has been occupied by the administrative offices of the California Sea Grant College Program since 1973. This well-constructed redwood house has not been

extensively modified during its years of use, and it is a good candidate for saving as a historic building.

The large date palm on the south side of the Director's House appears, in younger versions, in early photos. It was probably planted by Director Ritter. The second director, T. Wayland Vaughan, was an enthusiastic gardener, who was responsible for the introduction of many exotic plants to the nearly desert climate of the Scripps campus.

In the garden east of the Director's House is a fine bronze sculpture, of a farmer sitting on his plow, looking pensive; at his feet is a small dog. Called "The Ploughman," it was created in 1910 by Arthur Putnam, as part of a series commissioned by E. W. Scripps to represent the history of California. However, members of the Scripps family say that the sculpture is also a representation of Illinois farmer George Henry Scripps, an older brother of Ellen Browning Scripps who helped E. W. Scripps get into the newspaper business. Originally located at the home of E. W. Scripps, then called Miramar Ranch (now a real-estate development), the sculpture was given to Scripps Institution of Oceanography by the E. W. Scripps Trust, which had it placed at this site in 1976.

RITTER HALL — MAP #14

Original building:

Year built: 1931.

Architect: Louis J. Gill (nephew of Irving Gill) and W. P. Stevenson.

Named for: the first director of Scripps Institution, William E. Ritter (1856-1944). Widely recognized in his day as a philosophical biologist, Ritter became chairman of the Zoology Department at the University of California, Berkeley in 1891, and promptly began searching for a site for a summer program to study ocean animals. This became a permanent station in 1903 in San Diego, thanks to support from prominent San Diego citizens. Ritter's major heritage is Scripps Institution of Oceanography.

When William E. Ritter retired in 1923, the University of California had agreed that its southernmost branch, Scripps Institution for Biological Research, would become an ocean research center, and its name was changed in 1925 to Scripps Institution of Oceanography. The university granted considerable leeway to the new director, T. Wayland Vaughan, to enlarge the fields of research into oceanic studies. A limiting factor was shortage of space for new investigators. Vaughan was able to acquire a new building by combining three sources, each of which contributed \$40,000: Ellen Browning Scripps,

the University of California itself, and a new fund established by the Rockefeller Foundation to support studies in oceanography. Vaughan, who was on the National Academy of Sciences committee that arranged the major Rockefeller fund, was chagrined that his own institution received such a small amount from that source. Most of the fund went to establishing an east-coast equivalent of Scripps Institution in 1930: the Woods Hole Oceanographic Institution.

With \$120,000 from three sources, a three-story building was constructed at Scripps Institution, and was named Ritter Hall. It houses laboratories and offices in a variety of disciplines.

RITTER HALL
first addition

Year built: 1956.

Architect: Frank L. Hope.

Oceanography had been growing at a great rate from the late 1940s, and again a need for more office and laboratory space was evident. The four-story structure that was built in 1956 was larger than the original Ritter Hall, to which it was attached (so it was not named separately). Because it extended along the east side of the older building, it blocked the original entrance on La Jolla Shores Drive, which is now represented only by Naga Way (the parking strip) and the rose garden on the east side of the present Aquarium-Museum.

RITTER HALL
second addition

Year built: 1960.

Architect: Frank L. Hope.

The first addition to Ritter Hall was not adequate for the continuing growth of SIO, so a large addition was designed at the southernmost end. Ritter Hall, in its three parts, became a long F-shaped building. Like Sverdrup Hall, this structure contains offices and laboratories that span the many disciplines of Scripps Institution, instead of being dedicated to a particular branch of oceanography. Its construction came at another growth stage for the entire University of California, which in the latter 1950s decided to add three new full university campuses to its system: at San Diego (UCSD), Irvine, and Santa Cruz. The UCSD campus was to begin from Scripps Institution. This resulted in two major additions at Scripps: Sumner Auditorium and Sverdrup Hall.

SUMNER AUDITORIUM — MAP #15

Year built: 1960.

Architect: Risley & Gould.

Named for: long-time professor of zoology at Scripps Institution, Francis Bertody Sumner (1874-1945), who was also acting director from 1923-1924. A noted biologist, Sumner was at Scripps from 1913 until his death. At this institution his researches were primarily in genetics, including a 12-year project on inheritance in deermice. When SIO turned specifically to marine subjects in 1925, Sumner gave up his mice and carried out studies on the pigments of fishes until his retirement.

This facility, which seats 250 people, is in frequent use for symposia and general lectures about oceanography sponsored by Scripps Institution, especially by Scripps Aquarium-Museum. Before Sumner Auditorium was built, the largest space for public lectures at Scripps was an all-purpose room in the old Library Building.

SVERDRUP HALL — MAP #16

Year built: 1960.

Architect: Risley & Gould.

Named for: the third director of Scripps, Harald U. Sverdrup (1888-1957). A native of Norway, and a distinguished physical oceanographer, Sverdrup arrived at Scripps to be its director in 1936, and he oversaw significant programs during World War II. He led the institution into its postwar growth, then returned to Norway in 1948 to be the first director of the Norwegian Polar Institute.

As noted above under the second addition to Ritter Hall, this four-story building was constructed in a growth period at Scripps Institution and UCSD. It is a multi-purpose office and laboratory building that contains many different disciplines within the broad field of oceanography. Distinctive in this structure is its practical arrangement: the center is a core that provides all utilities; around them are the (windowless) laboratories, and on the outside are the offices, with windows and a view.

This guide now moves northward to describe the buildings up the hill from the former Director's House (T-16). The roadway north of the intersection is Biological Grade, originally built by E. W. Scripps about 1910-12 as part of the main highway from San Diego to Los Angeles. The name at this place recognized the existence of the biological laboratory that became SIO, and the name survives as an internal campus road.

The first building up the road contains a major resource: the Scripps Library, which is in:

ECKART BUILDING — MAP #17

Year built: 1975.

Architect: Liebhardt, Weston & Goldman.

Named for: Carl Henry Eckart (1902-1973), who was director of Scripps from 1948 to 1950. Eckart was a distinguished physicist and expert on underwater sound. In 1948, he was director of the Marine Physical Laboratory in San Diego, which was a research unit of the University of California. When Sverdrup returned to Norway, Eckart accepted the position as director of Scripps as an interim appointment, and he always said he was thankful to yield the post to Roger Revelle in 1950. In later years Eckart played a large role in the establishment of UCSD and served as a vice-chancellor.

This three-story building houses more than 200,000 books and a great many technical journals and reports on oceanography and its related sciences. It is a unit of the University of California library system, under the auspices of the UCSD branch of that system. Current journals, maps, and reference works are on the first floor, which also has the administrative offices. Bound journals are on the second floor. Books are on the third floor; also on the third floor are the historical archives of SIO, and the Helen Raitt Room—a comfortable conference room in South Pacific decor. Reading areas are placed conveniently near the windows on each level. The Scripps Library may be used by the general public, with restrictions on checking out items.

HUBBS HALL — MAP #18

Year built: 1977.

Architect: Liebhardt, Weston & Forester.

Named for: Carl Leavitt Hubbs (1894-1979), who was a professor of marine biology at Scripps Institution from 1944 until his death in 1979 (he reached emeritus status in 1969). Hubbs was a world-recognized

authority on fishes, and an outstanding all-round naturalist, who wrote extensively on marine mammals, birds, and paleo-archeology as well as on his primary field.

This four-story building was designated Marine Biology Building from its early planning stage, and was renamed for Hubbs in 1989. Unlike the buildings of the 1950s, it was intended for a single discipline, and it is used primarily by biologists, although a number of biological oceanographers are also located elsewhere at SIO. On the east side of the building is a moderate-sized conference room. In addition to laboratory and office space for many scientists, Hubbs Hall provides space for 65 graduate students. As in Sverdrup Hall, the offices are on the outside walls, with a view, while the laboratories and utilities are in the center core.

INSTITUTE OF GEOPHYSICS AND PLANETARY PHYSICS — MAP #19

Year built: 1963.

Architect: Lloyd Ruocco.

This unusually well-designed research building was the first to be placed on an uphill location on the Scripps Institution campus. It contains a major branch of the University of California Institute of Geophysics and Planetary Physics (IGPP), which has research facilities on other campuses as well. The branch at Scripps was established in 1962 by Walter H. Munk, who also obtained a considerable part of the funds for the building from outside sources. His wife, Judith, who is a trained architect, participated in the design of this redwood structure. It has convenient office and laboratory space, as well as an area for building research equipment. Scientists in the Scripps branch of IGPP are concerned with studies of earthquakes, seismic-wave propagation, the earth's inner core, ocean acoustics, and other broad planetary subjects.

HYDRAULICS LABORATORY — MAP #20

Year built: 1964.

Architect: Frank L. Hope.

The building with the wave-form roof is a facility for studying the motion and physical properties of water, operated by the Center for Coastal Studies. It contains wind-wave channels, a two-layer flow channel, a wave-and-tidal basin with an adjustable simulated beach, a fluid mechanics test facility, and other facilities for measuring water flow and pressure and their variations.

COTTAGES T-22, T-23, T-24, T-25, T-29, T-30, T-31

MAP #21 AND #22

The second group of cottages at Scripps, nine in all, were paid for by E. W. Scripps and built in 1915-16, for the use of employees and visitors to the biological station. Mr. Scripps reserved the right to select some of the people to be housed in those cottages, who were not necessarily scientists (such as the sculptor of "The Ploughman"). These cottages, fairly sturdy, were well up the hill from the main campus at that time. They were considered more desirable living quarters than the ones at the south end of the campus, especially after they were improved in 1938 with interior panelling, exterior shingle siding, and enclosed porches. The last renting family moved out in 1969. Seven of the nine cottages remain; they are used as offices, except for T-29.

MARTIN JOHNSON HOUSE (T-29)

This cottage has been extensively remodeled twice in recent years, and is used as a conference center. Martin Wiggo Johnson (1893-1984) was a professor of biology at Scripps Institution from 1934 until his death (he became emeritus in 1962). He was an expert on various invertebrate organisms, especially the many species of lobsters and their complex stages of development; during World War II he identified the nature of the deep scattering layer that was confounding sonar operators. He and his wife lived in this cottage for a number of years.

NORPAX BUILDING — MAP #23

Year built: 1974.

Architect: Robert A. Thorburn, of the UCSD Architects Office.

This three-level building was constructed originally for the program called North Pacific Experiment, or NORPAX, which was established in 1972 to study the interaction between the upper waters of the North Pacific and the overlying atmosphere. That program has ended, and the building is now used chiefly by technical support groups.

SATELLITE-OCEANOGRAPHY FACILITY — MAP #24

Year built: 1974.

Architect: UCSD architects.

This facility and its remote-sensing dish are designed for receiving and processing images from certain orbiting satellites. This includes such uses as tracking of drifting buoys, remote measurement of chlorophyll concentrations in the ocean, and determinations of sea-surface temperatures.

This guide now doubles back to the south and across the city street, La Jolla Shores Drive, to the buildings on the eastward side of SIO. At the corner of La Jolla Shores Drive and Downwind Way is:

DEEP SEA DRILLING BUILDING — MAP #25

Year built: 1969; addition for core storage, 1973 (Map #26).

Architect: Vincent J. Proby.

The major program, called Deep Sea Drilling Project (DSDP), to drill a number of cored holes in the deep-ocean floor was headquartered at Scripps Institution from 1966 until 1984. Funded by the National Science Foundation, DSDP provided invaluable information to geologists on the past history of the ocean sediments and on sea-floor spreading. The project required office space for a large staff and an ancillary building for storage of cores. These structures were the first significant ones at SIO on the east side of La Jolla Shores Drive. When the drilling program was transferred to Texas A&M in 1984, Scripps retained use of the buildings, which have not been renamed. The core storage repository houses cores collected by the Deep Sea Drilling Project in the Pacific and Indian oceans.

NIERENBERG HALL — MAP #27

Year built: 1984.

Architect: Neptune & Thomas.

Named for: William Aaron Nierenberg (born 1919), director of Scripps Institution from 1965-1987. Now retired as director and vice-chancellor for marine sciences, Nierenberg has offices in the building that was named for him. He was originally a nuclear physicist, who had participated in the Manhattan Project during World War II. As director of Scripps he urged the use of high-powered computers and found ways to fund new buildings and various programs, especially in physical oceanography.

This four-story building was built and designated for studies in physical oceanography and space sciences (and was called by those initials POSS until 1988). It contains offices, laboratories and computer facilities for those broad disciplines, including the statewide offices of the California Space Institute.

Expansion of Scripps Institution will certainly be up the hill toward the east, as the SIO land extends a considerable distance in that direction. The new Stephen Birch Aquarium-Museum (Map #28) is scheduled for completion in 1991. Already located in this vicinity are storage buildings in Seaweed Canyon (Map #29) and the Electromagnetic Facility (Map #30), which was constructed without steel and with large electric coils to set up a controllable magnetic field.

At the northwestern corner of the Scripps Institution land is:

SOUTHWEST FISHERIES CENTER — MAP #31

Architect: Frank L. Hope & Associates.

Year built: 1963-64.

This complex, consisting of four pre-stressed concrete, multi-story buildings grouped around a central courtyard, was constructed by the federal government. Its 2.4 acres of land was conveyed from Scripps Institution originally to the Bureau of Commercial Fisheries of the U.S. Fish and Wildlife Service, which was then closely involved in researches with SIO. By agreement, the center is to be used "for a marine biological research laboratory compatible with [purposes] of . . . Scripps Institution of Oceanography." In 1970, the Bureau was renamed National Marine Fisheries Service, an agency of the National Oceanic and Atmospheric Administration (NOAA). Research programs at the Fisheries Center continue to overlap with biological research programs at Scripps Institution.

"WHERE ARE YOUR RESEARCH SHIPS?"

It is not possible to anchor ocean-going ships along the open coast, and the Scripps Pier was never intended for support of large ships. From 1907 until 1947 the institution owned one ship at a time, which was berthed at the San Diego Yacht Club or in San Diego harbor. When the institution acquired several ships after World War II, they were moored at Navy facilities at Point Loma. In 1965, SIO leased six acres of land from the Navy at that location, and, with funds provided by the Office of Naval Research and the National Science Foundation, it built a pier and shop facility, which it named Nimitz Marine Facilities (for retired Admiral Chester W. Nimitz, who had also served as a Regent of the University of California). In 1975 the Navy gave the land to Scripps. At this time, Scripps Institution operates four oceanographic vessels and two platforms. The ships are at sea a great deal of the time. Nimitz Marine Facilities is not open to visits by the general public.