BILL AND BOB

WHERE DID YOU COME FROM?

(LaFond, Gehring, Imes and Greenfield Histories)

EUGENE C. LAFOND

Eugene and Katherine LaFond

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Eugene and Katherine LaFond

INTRODUCTION

Where did you come from? And where did you get the characteristics that you have? Your intrinsic qualities trace from many people, not only from your parents but their parents, and their ancestors. Thus, to answer the question we have compiled what we remember and what we have found out about the four family branches: LaFond and Imes on your paternal side and Gehring and Greenfield on your maternal side. Since there seems to be no other close relative preparing a written record of these people, if we do not pass our meager information on to you it may be lost to those who may want to know it some day in the future.

Who cares? Many people could not care less about who their forefathers were nor what they did, but a few do. Most of your relatives who we contacted were not interested in genealogy, but maybe your children's children may like to know where they came from so we are trying to compile a permanent record of as much information as we can find. Some has come from relatives, some from printed documents and the genealogical library in Salt Lake City. Unfortunately, neither of us asked pertinent questions of the older generation before it was too late.

Of course, we know most about ourselves. Thus this document begins with this generation, specifically your father and mother, and we have recorded and illustrated our lives in more detail than is generally found in a genealogical record. We hope you both will enjoy and appreciate our efforts.

BILL AND BOB WHERE DID YOU COME FROM ?

LAFOND, GEHRING, IMES AND GREENFIELD FAMILY HISTORIES

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ANCESTORS

LAFOND
- Noel
- Godfrey
- Mary (Sanville)
- William
- Eugene
- William
- Robert
- Lois
- Mercedes

GEHRING
- Background
- August
- Edwin
- Norman
- Katherine
- Others

IMES
- Background
- Harmon
- William Bateman
- Oliver
- Eva Bateman
- Bessie

GREENFIELD
- Background
- Thomas
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- Others

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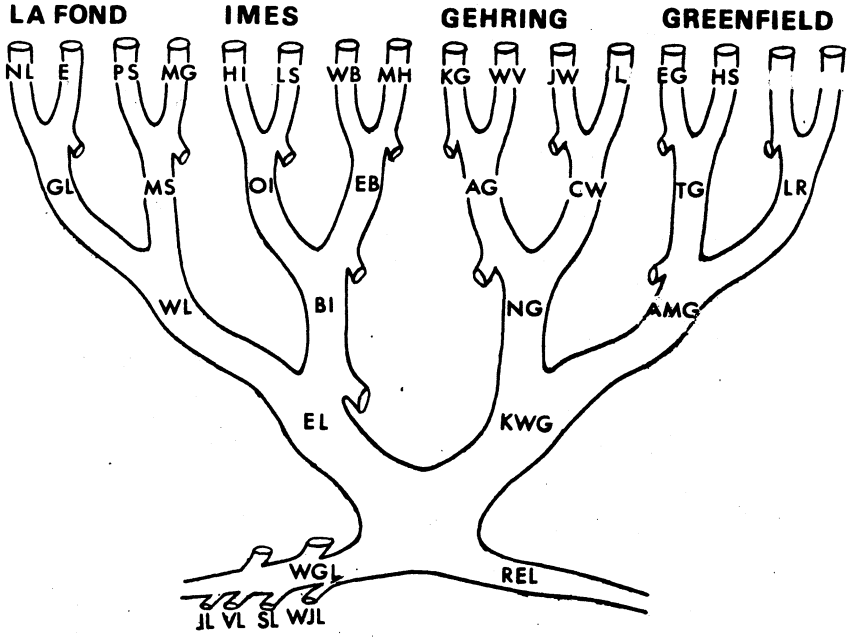


Pruned family tree

LaFond

NL-Noel LaFond
E -Esther Boisvert
PS-Peter Sanville
MG-Mary Greenwood
GL-Godfred LaFond
MS-Mary Sanville
WL-William Nathan LaFond
EL- Eugene Cecil LaFond
WGL-William Gehring LaFond
REL-Robert Eugene LaFond
WJL-William James LaFond
SL-Steven Alvin LaFond
VL-Victor Amado LaFond
JL-Juanita Lorenza LaFond

Imes

HI-Harmon Imes
LS-Lydia Shade
WB- William Bateman
MH-Margaret Hunt
OI-Oliver Denis Imes
EB-Eva Viola Bateman
BI-Bessie Olive Imes

Gehring

KG-Karl (Carl) August Gehring
WV-Wilhelmina Vetter
JW-John Wagner
L-Lang
AG-August Herbert Gehring
CW-Catherine Wagner
NG-Norman John Gehring
KWG-Katherine Wagner Gehring

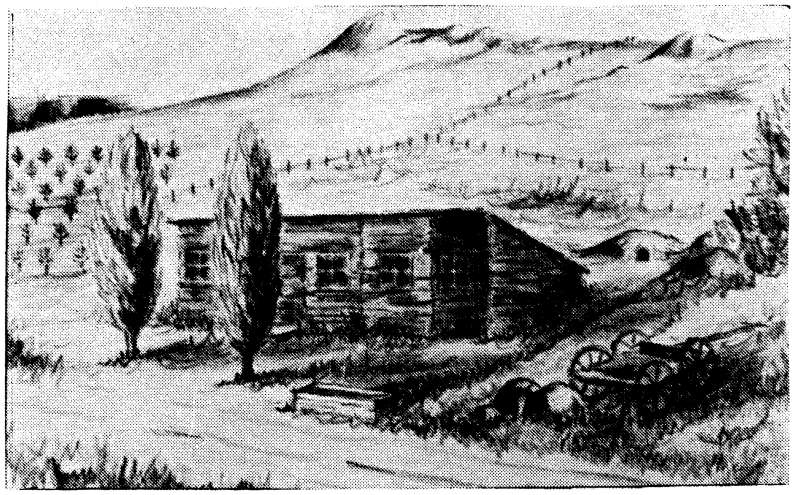
Greenfield

EG-Elijah Greenfield
HS-Hanna Sharpe (Sutcliffe)
TG-Thomas Greenfield
LR-Lucy Jane Robinson
AMG-Amelia Mary Greenfield

Eugene Cecil LaFond

Bridgeport

I first saw the light of day on 4 December 1909 in a small farmhouse about 5 miles east of a tiny town of Bridgeport, in the remote wheat land of eastern Washington State. It was more like a shed, perched on bench land about 500 feet above and overlooking the Columbia River. The house had originally been built by a Civil War veteran who homesteaded the land. It was built on sloping terrain and the eves at the back of the house were only about 30 inches from the ground. Inside, across the front, was a livingroom-kitchen. It was necessary to step down one step to enter the kitchen since the 2 rooms were on different levels; apparently the house had been built at different times.



Sketch of house where Eugene was born in 1909

Off each room was a bedroom, in one of which I was born. Also off the kitchen was a shed where firewood, cut from logs dragged from the river, was kept to be easily available for the kitchen stove. Water was available from a continuously running spring. It was piped to the end of the porch which extended across the open front of the house, and to a horse watering trough. An outside toilet was nearby. The sweeping view from the porch was spectacular, with the great Columbia

River below and the town of Bridgeport in the distance. I lived there fron 1909 to 1913 or 1914.

Early recollections, though trivial in retrospect, must have been of major importance at the time, to have been imprinted in my memory for so long. Probably the emotions of excitement, danger or disappointment etched the incidents so permanently.

Eugene as a baby, 1910

My earliest recollections were associated with adventure. My ball, made from a cloth-stuffed stocking, was purposly thrown on the roof so I could, at 3 or 4 years of age, go to the rear of the house and climb on the roof to retrieve it, and walk around on the roof. Another recollection was of a snow storm. My parents had gone by covered wagon to a distant neighbor. On our return a severe snow storm came up, obliterating the road. An Indian couple we met in the storm were of help. The man walked ahead of the team to break a trail for the horses, while the squaw got in the covered wagon where we all huddled up from the cold. Another recollection was that of my baby sister throwing one of my wooden blocks in an open fire, and I angerly watched it burn.

Wheat, corn, vegetables and horses were raised, and an apple orchard was planted. Farm crops, especially wheat, grew well when it rained, but some years were dry, and disasterous to eastern Washington farmers. As a first child in this remote area, I was pampered by parents and grandparents. I was not a strong child and was subject to "croup". My schooling was a consideration in moving from an open country, where the nearest neighbor was about half a mile away, to a more densely populated area with a school.

Eugene and Lois about 1913

Eugene

We moved to a ranch near Eugene, Oregon, probably by horse and wagon, and I remember my first time on a boat, crossing the Columbia River by ferry at the Dalles. My father, too, enjoyed being on the water again. We lived shortly on Baily Hill, a suburb of Eugene, before buying a dairy ranch with rambling ranch house a few miles out of town. (In 1978 the area was so built up that we could not find the site.) There was a one room school house about a mile distant where I

entered the first grade at age 5 in 1915. Behind the ranch house was a windmill with a large water tank. Below the tank a tent room was constructed where a young female teacher lived. There was a large barn with stalls for 16 milking cows and stalls for calves, which I enjoyed. The barn had a hay loft. Hay was brought to the loft by a sharp, pronged, inverted, U-shaped fork, first forced into the wagon load of hay, pulled up to an outside projecting ceiling beam, then rolled along a track through a high door opening into the barn and lowered to the hay loft. I recall the excitement of grabbing the empty fork at the open door and riding it along the track into the barn and then dropping through the air onto the soft hay. One time the sharp pronged fork left the track dropped and struck the hay barely missing me.

Eugene's first school, Eugene in center front, 1914

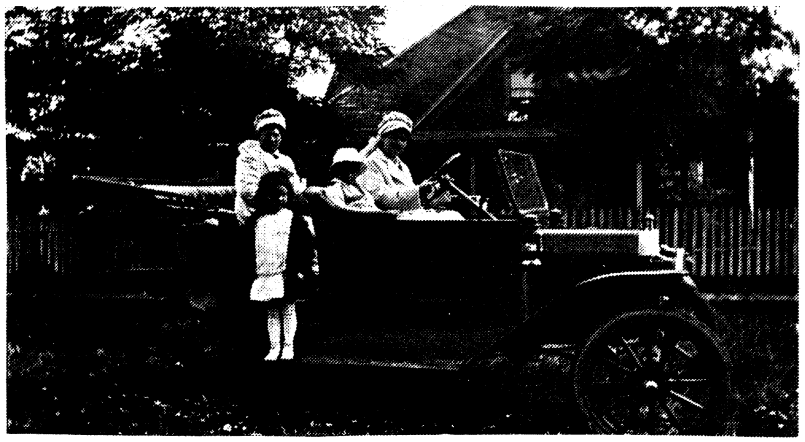
Hired help lived in small houses along the road. One family was named Corn and another Cobb, a combination which amused me. There was a silo which we filled with sour smelling ground-up green corn stocks which were grown on the ranch to feed the cattle in winter. There were pigs and sheep as well. Once when a pig was slautered, the bladder was blown up and given to me for use as a football. The ranch extended back into the wooded hills. I recall going along when blocks of salt were being taken to the hills for cattle and sheep to lick. The ranch was within

easy driving distance of the city of Eugene. I recall going to town with my granfather in a bugy, buying firecrackers which frightened the horses when we lighted them on the way home. The teacher and I supposedly rode a horse to school but I do not remember this. The school had only one room accommodating eight grades. I was the youngest "student". I recall a school program, with my parents present, in which I was scheduled to recite a poem, but when my turn came I chickened out and told the teacher that I did not want to recite the poem. This was a pleasant period of my life, for I enjoyed the farm animals.

Sweet Home

After a year, the LaFond equity in the ranch was traded for a store and a 2-story house in Sweet Home, Oregon. The trip from Eugene to Sweet Home was not far and easily negotiated by wagon. The store was on the main street in the center of town, and stocked a variety of grains for livestock and hardware. Its name, indicated some kind of a farm cooperative. My parents ground corn to make cornmeal but the uniformity of the product left something to be desired.

My recollection of the cooperative's other major merchandise consisted of a brand new 1914 Ford touring car and a buggy complete with a long, mounted horse-whip and a long-haired bear skin lap robe, all in one



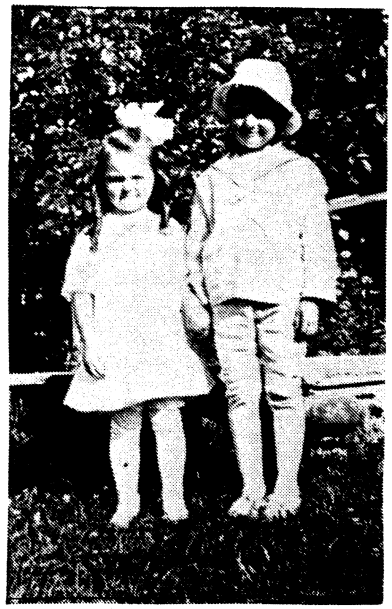
Our 1914 Ford car in Sweethome, 1915

large showroom. The car was soon taken off the showroom and we would dress up in our best clothes to ride the winding dirt, and frequently muddy, roads around Sweet Home. My father would sound the hand activated bulb air horn which scared the horses as we "speeded" along roads. We also stopped to fix flat tires. On one occasion a man on horseback raced with the car. It was an exciting race but the horse eventually lost when it became tired, and the rider became angry when my father sounded the horn.

Our house in Sweethome, 1915

The large 2-story house, located about a block away from the store, had a vegetable garden in back where we raised, among other things, a healthy patch of horseradish near the outhouse. When my sister, Lois, was asked what we should plant in the garden she replied, "potatoes and gravy. I attended second grade in the local school and fished for "crawdads" in the creek, endeavoring to avoid their snapping claws.

When my parents ran the store, from 1915 to 1916, they installed the first gasoline pump in the area. (In 1967 when we visited Sweet Home we found that the house had burned soon after we had left. The store had become an auto parts outlet with apparently some additions to the building, and the main street had moved one block to the north.) In 1916 the equity in the store was traded for an interest in furniture, and management of, an apartment house, then called a "rooming house", in Oakland, California.



Eugene and Lois about 1915

El Cajon

Our camping journey from Sweet Home to Oakland, and on to El Cajon to visit my mother's family, was adventurous, with continuous new sights. Tent poles were shaved from freshly cut trees by my grangfather and strapped to the nearly new 1914 Ford. The running-boards were piled high with tent, bedding, erstwhile belongings, and most important, spare tires. The roads were poor and the need to repair leather tires with patches and boots continually presented itself. Each night the tent was set up and all 6 members crawled in. We were all impressed by the big city, Oakland, but only stayed there briefly to leave my grandparents to mind the rooming house, while we went on to El Cajon. When we reached Los Gatos, our first proximity to the ocean, my mother asked if I could smell the ocean, I replied, "it stinks". Now with city traffic odors and smog, the fresh salt air is considered refreshing.

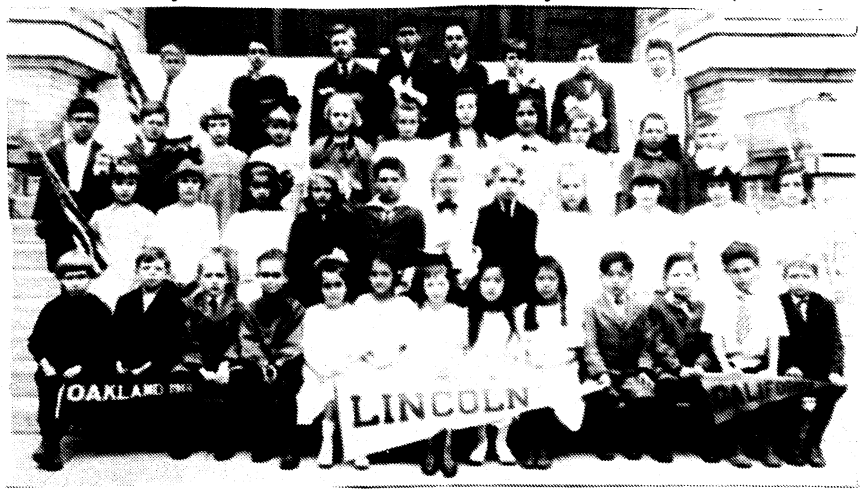
In El Cajon I became acquainted with my mother's relatives. We stayed with the Imes, or adjacent to the family. Their house was near the W. D. Hall lumber yard. (In 1985 it was the site of the El Cajon Cultural Center). I played with the Imes and Hall children, all

of whom were older than I . We played a game in the lumber yard, called "beckons wanted", similar to "hide and seek", and attended the third grade in the grammer school located on Magnolia avenue.

My uncle, Cecil, took a group of us kids on a hike to a lake which was the storage for the water supply for El Cajon, located near the present (1985) Grossmont High School. From there we followed a wooden flume which skirted the southern rim of the valley passed Mount Helix. It crossed canyons and tressels where the accompanying foot bridge was only 6 inches wide. It was an exciting, exhausting adventure for a 7 year old.

Oakland

We returned to Oakland and lived in the center of the city. All traffic going around Lake Meritt had to pass by our rooming house located on the corner of 19th and Harrison (1879 Harrison Avenue). Parades also passed in front of the house. When one military parade marched by during World War I in 1917, a child of German descent, living in the rooming house, shouted, "Hoch der Kaiser", which was inapropriate, since the Germans were the enemy. The house had a large basement which I enjoyed exploring. I attended the Washington school several blocks away and it was necessary to walk past the



Eugene's third grade class in Oakland, 1918, Eugene in lower right

big Oakland Hotel en route. This was the time of World War I and everyone was inspired to do something for the cause. My project was to knit a washrag. Although I made some progress, fortunately for the troops it was lost as I climbed over the iron grated fence when I happened to be late for school.

Our yard had a large persimmon tree in which I climbed. Once near the top of the tree my feet slipped off a limb, and the upper limb which I was holding, broke with my weight. By some quick trapeze maneuver my hands were able to grasp the lower limb where my feet had been, thus preventing a serious fall.

San Leandro

When we bought a house and moved to 2242 82nd Avenue in San Leandro, the school was some distance from our home. Through the PTA, to which my mother belonged, I was loaned a clarinet. It was my first introduction to music. Although it was fun, I did not exhibit much talent. One trouble was that the thin bamboo reeds would break and they were expensive (35¢). Some of the higher notes were beyond my ability.

In the back yard we had a see-saw on which Lois and I played. Once when I was in the up position Lois moved sideways causing me to fall off, landing on the palm of my hand and breaking my left wrist. The bones were completely severed and my hand hung at right angles to my arm just above the wrist. I immediately grasped my arm, straightened it out and in so doing, reset it. My parents placed a splint around my arm and it eventually healed beautifully but the setting was not a professional job and the bones retained a 20° offset.

Imperial Beach

In 1921 we moved to Imperial Beach for a six month period and bought a 10 acre ranch to set up my grandparents in the chicken business. I was enthralled with the ranch -- the numerous wild squirrels and birds, and especially the nearby beach. The sand, shells, seaweed and breaking waves were new and interesting.

Imperial Beach house in 1922

I attended the 6th grade in the South Bay Union School, located half way between Imperial Beach and Palm City, and was reluctant to return to the Bay region.

Berkeley

This time we settled in Berkeley and lived on a tar-paved street (1620 Bancroft Way) which provided an excellent place to roller skate when there was no traffic and the tar was not softened by warm weather. I also put skate wheels on a 2 x 4 with a lug box mounted long-side-up at one end -- a forerunner of the skate board.

I enjoyed school and on one occasion I joined the 6th grade class for a long hike over the University of California hills to the other side to explore the groves of natural oak. As a result, I contracted poison oak. In a manual training class I made a bread board and taboret, both of which were still in use in 1986. The school was about 4 blocks east of our house on Bancroft Way. I was a substitute on the schools baseball team and played in a couple of inter-school games.

Since my father worked for the Southern Pacific Company (SP), he was able to get reduced fare tickets. On one occasion we took the train to Sacramento. On my sister's tenth birthday (16 July 1922) we all went to Alameda to a swimming beach. I enjoyed the

water and repeatedly went in the water and rested on the sandy beech. I became exhausted. The next day I was sick and could not move my right arm. The local doctors could not diagnose the problem and finally sent me to the U.C. Hospital in San Francisco. Here my ailment was diagnosed as poliomyelitis and they prescibed electrical treatments and massage three times per week. It was a long trip to San Francisco for my mother and me. My right arm was also put in a metal and canvas brace which held it out horizontally from the shoulder. It was an awkward contraption, with my elbow jutting partly forward and bent so my hand was in front. These treatments were continued as long as we were in Berkeley but when we moved to Imperial Beach the second time (1923) there were no medical facilities and besides there was little sign of improvement. The brace, too, was soon outgrown and discarded. The permanent weakness to my arm persisted but made little difference in most of my activities and future life, although it prevented me from participating in school athletics and other physical activities requiring the use of my right arm.

Imperial Beach

My grandfather was having trouble with the chicken ranch and thus my father quit his job and we all moved to Imperial Beach. I throughly enjoyed my boyhood growing up on the farm. I ran barefoot during the summers in bibbed overalls. I did have some light chores but it was mostly play. I sometime helped with the chickens, feeding them a mixture of grains (corn, wheat and milomaize) and a mash of ground grains. Other chores included cutting up alfalfa and kale, grinding shells, cleaning the chicken houses, gathering eggs, cleaning those that needed it with steelwool, candling them and packing them in 30-dozen crates. I helped shock barley hay which grew well during rainy years, but poorly in other years. When we raised celery, I folded newspapers, sewed them in loops and wrapped the growing plants to bleach the stocks, for only bleached celery was acceptable at that time. We had a manual washing machine which agitated the clothes by a push-pull handle. It was my chore once a week to help operate the washer and hand wringer. But most of my boyhood was devoted to playing -- climbing the

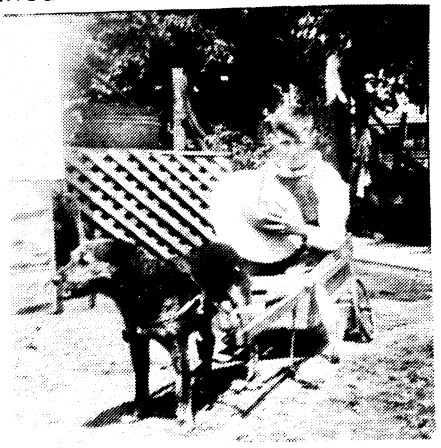
very large cypress hedge around the house, making 3-stick kites, swimming, trapping squirrels and dozens of other things, including harassing my sister.

My parents were very social and would often take Lois and myself to beach parties, to Tent City recreational area just south of the Coronado Hotel, and even all the way to Mission Beach where we roller-skated in the indoor rink.

Lois, Helen Imes and Eugene at Tent City, 1923

Farm animals

I had an Airedale dog called "Mutt" who was a con-



Eugene and his dog "Mutt", 1923

stant companion. I built him a harness which he did not enjoy. We also had a horse named "Spider" which I mounted by grabbing her mane and throwing a leg over her back. We never had a saddle but rode bareback extensively around the unfenced countryside. Spider was

Lois on "Spider", 1927

also used to pull a wagon and plow. I would occasionally harness Spider and use the wagon, and even help with the plowing. We also had a cow called "Daisy" but the milking was left to others. Both Lois and I acquired bicycles which we rode to the South Bay Union School, but more often we walked the mile each way.

Boy Scouts

When a Boy Scout troop was formed in Palm City I joined and was appointed patrol leader, with my close friend, Raymond Johnson, as the other patrol leader. We held meetings in a church in Palm City and went on hikes around the area -- in addition to the 2 miles to Palm City from Imperial Beach. A memorable outing was an overnight camp-out at Scout Headquarters in Balboa Park, (later to become the zoo's parking lot), in San Diego. It proved adventurous in that it rained all night. The newspaper account which reported, "since the scouts knew how to make drainage ditches around their tents, neither boy nor bedding became wet", was far from accurate.

Raymond and I occasionally attended scout meetings in San Diego to receive merit badges. We eventually became eagle scouts and I became a member of a San Diego eagle scout troop which represented the city at a jamboree in Pasadena. Later when a Boy Scout troop was formed in Chula Vista, I became the senior patrol leader. Still later when a troop was formed in San Ysidro, I became its first scoutmaster.

Eugene and Raymond Johnson as boy scouts, 1924

Hunting

One Christmas I received a BB gun and became proficient in killing birds, an activity now frowned upon. However, at that time birds were considered undesirable since they ate planted seeds, young plants, chicken feed, and possibly brought disease to the chickens.

My father had a 22 Winchester rifle which he had brought from Washington. I used it to shoot ground squirrels, another undesirable animal. My hunting activity was further enhanced when I was 19 years old and acquired a 12 gauge shotgun as a Christmas present from the Beyer family. In winter, ducks frequented

the south end of San Diego Bay, Tia Juana Slough and even in a pond adjacent to our 10 acres. The gun was also used to kill rabbits, especially in the Tia Juana and Otay Valleys. My uncle's wife, Nora Imes, would drive their big Buick. My uncle Harold would sit on one fender and I would be on the other, and as rabbits scampered across the road one of us would pick them off.

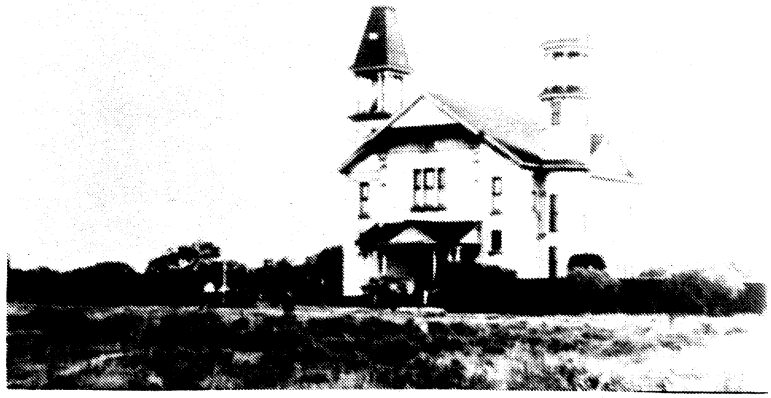
Exploring

What I enjoyed most was exploring the waters and salt ponds in the southern part of San Diego Bay, the Tia Juana Sloughs and especially the beach. I learned to swim in the muddy salt ponds near a railroad trestle where the muddy water was deeper. My grandfather built me a shallow draft boat only 6 inches high and 12 feet long. This was used, with Raymond, in meandering the channels of the salt ponds to explore and catch mud suckers with bent pin hooks and line. Later I acquired an old rowboat and duck boat, both of which required considerable refurbishing. Although my mother made me a sail from unbleached muslin, given to me by Mrs. Babcock, it did not provide more mobility since the the boat lacked a keel and adequate rudder, and the channels were so winding. We did venture out in the southern end of the Bay and as far as the hog ranch (now Coronado Cays) where garbage and trash from Coronado were dumped.. Here we acquired discarded baby buggy wheels which we used to construct a cart to transport the boats to and from the water.

The Tia Juana Slough, then uninhabited, was even more interesting. We discovered the location of cockle beds, sanddollar concentrations, nests of sea birds, shark eggs, and dozens of interesting phenomena. On the open beach were an abundance of sea shells. Large conch shells were gathered for decorations to line flower beds. The small donax shells would accumulate on the beach in patches 1 to 2 inches thick. These would be raked up in piles and shoveled into the wagon. Some were ground up for chicken grit and others were used to make a white but noisy covering for the driveway to our house.

A most exciting activity was catching grunion.Raymond and I would run the dark deserted beach from Imperial Beach to the Tia Juana River confluence in the middle of the night and catch grunion by hand. It was nearly always easy to fill 2 gunny sacks, all we could carry, at high tide on every 2nd, 3rd and 4th night after full and new moon. In later years, when others discovered grunion, sieves were used to strain the backwash of the waves, but this removed the "thrill" from the sport. This method was subsiquently outlawed. Another exciting activity was surfing the breakers with a small 1-inch thick and 16 inches wide redwood board, and swimming long distances out into the ocean in summer.

Grammar School



South Bay Union School about 1923

The South Bay Union School where I attended the 7th and 8th grades consisted of 3 rooms. First, 2nd and 3rd grades were in one room, with the 4th, 5th and 6th in an other ground floor room. The 7th and 8th were on the second floor. The students,some of whom were of Mexican descent, were bussed from Palm City, Nestor and Momument. My teachers were Mrs. Pingree and later Mr. Browning. The latter had several children, a criterion for selection, since the school district needed more pupils in order to obtain more school funds. Teaching ability was secondary. The main objective of the students was to have fun rather than learn. Mr. Browning was far from pleased when I changed one letter in the large

South Bay Union School studentbody, Eugene in upper right, 1924

school sign, by painting the U in Union to O, making it Onion. But eventually we graduated from the 8th grade in 1924. Raymond was valedictorian and I was salutatorian, and we each gave a short speech. In later years one of our classmates wrote a poem about her recollections of the school.

PRECIOUS MEMORIES OF SOUTH BAY UNION by Roberta Boyden Strotkamp

Those of you
Who went through
South Bay Union
Are graying now--
But do you remember?
Do you remember with delight,
As I do, in the bright sunlight,
That wonderful bygone school?

It was between Nestor
And Imperial Beach, sort of,
And the pupils were the kids
Who lived scattered around
That splendid corner of our country.

Remember? It was a white, square building
Of wood, two stories high
With bell-tower piercing the sky.
A shrill whistle summoned us to play
Each day, to a double line.
One lucky, (and good) child
Was selected to pull the huge, bristling rope
That rang the bell.
I don't recall that I was ever chosen.
Let's think, maybe, I was too small?
(Or was that all?)
Were you ever chosen?

And the bell tolled magnificently
All the while we marched, pair by pair,
Up the broad steps and

Through the double white doors flung open,
Up narrow stairs to one large room
Where we walked, with no talk, to seats and desks
Large enough for the seventh and eight grades.
(These were for the big kids!)

The bell stopped ringing
And we all pledged Allegiance to the
Flag of the United States of America
And the Republic for Which it Stands.
Song books were passed; we were seated,
A teacher played the piano
And we sang. Oh, how we sang!
The room rang with
Steven Foster songs. And love songs.
Songs of Home and
Ringing, rousing patriotic songs.
(No children's songs, these,
If you please!)

Then we little kids in the first six grades
Stood, and marched down the stairs.
(Not tripping, not skipping, nor ran
But marched).
First, second and third grades to the room on the left.
Fourth, fifth and sixth grades to the room on the right.
We slid into seats
Combined with desk behind.
Each sloping lid raised to disclose books,
And wrought iron scrolls were the sides
Holding it together--
Making it all one.
Now the day had begun.

Oiled cedar floors had an off scent
That mingled with chalk dust and dry paper
A black stove in the back of the room
Consumed wood and added its own smell
Which would tell of a chilly rainy day.
Another odor, not nearly as subtle,
Assaulted you in one of the two white out-houses
Set discreetly apart on down a slight hill
Where air stood still
On the side of the school yard.
(No one ever lingered there!)

Money and dicipline were quite tight
In those days, in that region.
Upon the start of a new school year
You were given your text books
With a stern admonition:
"You will return these books in this condition."
(And you did, or tried to, or meant to.)

Yet outside the classroom we were free.
A few older boys played baseball
On a rough diamond out back.
And the rest of us swung on the rings
Or did acrobatics on the bars.
We jumped on the metal circle
That (kid-powered) went
Around and around and around.
We played hide-and-seek
In the huge, old hedge;
A wedge of wild imitation,
With caves in it created by those before us.
(No asphalt anywhere,
Just hardpacked, dusty, silty soil).

Once I missed the yellow school bus
And decided to run the two miles.
Cutting through dairy farms
And open fields, watching the bus
As it went its monotonous way,
Dependent upon roads and route,
Completely unaware of the
Excitement of the race it was in.
(I didn't beat the bus,
But the run was glorious!)

We studied hard. With so few of us
In a grade you never got lost.
You couldn't shrink.
Lots of memorizing, but no homework.
When children got home
They worked at chores galore.
(And maybe the teachers were concerned
For the precious books?)

It pleases me to imagine
That those of us who were children

In those days, in that school,
Have an unique heritage,
Possibly an advantage--
Plus the glorious memories,
The golden memories
Of an old-time school.
Do you remember?

High School

The only high school south of San Diego was the Sweetwater Union High School in National City. To get there it was necessary to walk the 2 miles to Palm City and catch the school bus that started in San Ysidro. Frequently my father would drive me to Palm City. The bus ride was fraught with rough play. Later the bus came part way and eventually to Imperial Beach in my senior year.

My high school career was not notable. The required courses were easily completed without taking any books home to study. There were a few optional courses. We could choose a language -- my choice was Spanish, and for science it was chemistry. All math courses offered were taken, which placed me in good standing for college. For one semester I operated the small school store, dispensing supplies such as paper and pencils. Although I did not participate in athletics, the enthusiastic competative games between county high schools were most enjoyable. I did act a small part in a school play. I made the honor role one year and finished in the upper 25th percentile of the 83 graduates.

In the Senior Edition of the SUHS News, dated May 29, 1928, the 83 senior class students are listed and the English teacher, Mrs. Barnes, who knew us all, predicted what each of us would do after graduation. She listed me as becoming a "chicken farmer". However, she gave me the responsibility of taking the manuscript to the printer in Raymond Johnson's car. Chicken farmer did not enthrall me, so I changed it enroute to the printer, without telling anyone, to "State College", which then appeared in the newspaper.

Sailboat

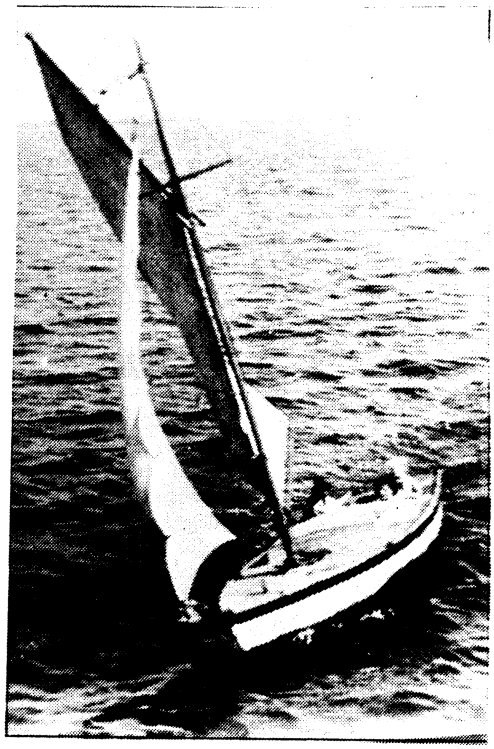
Both my father and grandfather, as well as the marine environment, instilled a love for boats, but the event that developed my familiarity with the sea was the purchase of a sailboat in 1926. It occured unexpectedly, like so many things in life. Towards the end of my sophmore year in high school, a graduating senior, Jack Johns, had an old sailboat which he had to dispose of before going away to college that summer. Raymond and I inspected the dilapidated craft cradled on the bay side at the foot of 14th Street in National City. It was love at first sight and we eagerly bought the 21-foot sloop for $26 (13 each). The sum nearly cleaned out our life-long savings but was the first "substantial" property that I had ever owned, or half owned.

Sailboat as purchased on shore in National City, in 1926

First, we needed to paint it and we "found" a 5-gallon can of what we thought was paint in an old freighter hull tied up to a dingy pier at the foot of 16th Street. The paint turned out to be red lead used to retard rust on the freighter, but it served the purpose.

We launched her at high tide, anchored her about 100 yards out in the Bay, and christened her "Baby Blue Eyes". We learned a great deal from the boat. Our first lesson was never buy an old boat on dry land. The planking had dried out and the water gushed in the seams. It filled with water in a few minutes, but by the next day the wood had swelled and it was possible to bail it out, if we bailed fast enough. My father showed us how to rig the nearly new canvas sails.

After a few minutes of basic seamanship, we were off.



"Baby Blue Eyes" on San Diego Bay, 1927

We were on our own, mobile and the world was our oyster. We decided to moor our "yacht" in Coronado's Glorietta Bay for the summer. Somehow we managed to sail from National City to Glorietta Bay but we did not know how to stop the boat. It had no brakes We did not want to run on the rocky shore of the Bay, so we decided the best solution was to steer at the smallest boat in the harbor, grab it and tie up to it. This turned out to be a rowboat which we hit squarely. Raymond grabbed the rowboat and I lowered the sails. Our first landing was a success but hardly a commendable example of seamanship. We swam to the swank Coronado Yacht Club and, dripping wet, announced we were yachtsmen from Imperial Beach and wanted to moor our yacht at the club. Reluctantly they agreed for a charge of $3. Though expensive, we signed up for one month, were assigned a buoy and tied up to it. However, the next day when we

returned, our yacht had sunk. The Coronado Yacht Club officials were irate and expelled us from the club, and said unkind words about out pride and joy. Our $3 was refunded.

All this did not dampen our spirits. We bailed and bailed and sailed back to National City near the foot of 14th Sreet where we established a permanent free anchorage in the Bay. From National City we bailed the boat and sailed all of San Diego Bay , from the ocean to the mud flats where we frequently ran aground, since the fixed keel extended $3\frac{1}{2}$ feet below the surface. We built a partial cover over the cockpit, forming a cabin. This made more protection when we slept aboard.

We needed a mattress. A friend, Myron Jones, who lived in Palm City, told us he knew where we could get a mattress free. The price was right so Raymond and I took his old Cheve touring car to Palm City for the mattress. It turned out that the mattress was in an unlocked motel room which Myron had nothing to do with. He just pointed it out. Since we had gone that far we decided to just take it. It was hard and thick and made of cotton. Although we got it out of the motel O.K. it would not fit in the car no matter how hard we tried. After an exhausting and frustrating few minutes we took the car top down and the mattress fit nicely over the front and back seats, but left no place for us. Finally we lifted the mattress up over our heads and drove to the boat. It fit nicely in the cockpit and served us well, but eventually it had an unglamourous demise. Once when the boat filled with water the mattress became soaked and chaffed against the cabin causing the cover to tear and the cabin to fill with tufts of cotton.

We acquired a free tide table from the Skinner hardware store in Chula Vista. It was very useful to know the tide height, for only at high tide could we sail the southern part of the Bay. On the back of the $2\frac{1}{2}$ by 5 inch tide table booklet was a chart of the Pacific Coast from Long Beach to Ensenada. Ensenada seemed so close to San Diego Bay, only about a half inch on our "reliable navigation chart". Why not take our yacht to Ensenada?

We gave our expedition a great deal of thought, just like Columbus did. First we carefully reasoned, and rightly so, that if we told our parents the expedition would be off, a problem that Columbus probably did not have. Secondly, we reasoned that the Mexican government also would not approve, thus we avoided both problems and told no one. We gave careful consideration to provisions and stowed one gallon of water in a glass jug, and some canned sardines and crackers. We were all set.

We spent the first night aboard anchored off National City, but at the crack of dawn we hoisted the sails to catch the weak east wind that usually blows in the early morning. After it subsided we waited out the calm which followed, until the daily westerlies started to blow. It was necessary to tack into the wind to pass the ferry area and out to Point Loma.

The wind was fairly strong when we headed south in the open ocean. One thing we did not reckon with was the roughness of the ocean, and both of us soon became deathly sea sick after we left Point Loma. Since we were running in a southerly direction and the swell was from the west, the boat rolled excessively. The boom and end of the sail dipped into the water with each wave. The sail needed reefing and we knew it but we were too sick, so we bore on in the stiff wind. Fortunately, we could see the Coronado Islands so we needed no navigational aids. Even the Islands were on our chart. As it was getting late in the day we headed for the nearest island and the partial cove at the north end. It was all we could do to drop the block of iron we called an anchor, bail and hit the sack.

We were apprehensive about being in Mexican waters without a permit of any kind, so when we were rudely awakened by a siren, we thought we were doomed. However, it turned out to be a friendly fisherman who suggested that we move our anchorage to the west side of the cove, a smoother location, but we were too tired and sick to heed his advice. The next morning we felt a little better, enough so to bail the boat, hoist sails to head for North Coronado Island and home to harried parents. On this aborted Ensenada

expedition we learned a great deal about ocean sailing, and developed a high respect for the ocean, which has remained with me throughout my life.

We continiued to use the boat in San Diego Bay and took Lois and girl friends for sails. Favorite sports were to tack into the wind by the San Diego to Coronado ferry boats and to sail around the fishing barges anchored off Point Loma in the kelp beds. It was a most educational and enjoyable year and a half. Later, Raymond went off to college in New Mexico and I was too busy at San Diego State to take care of the boat. Finally it broke its mooring and was later found by the Coronado ferry slip without a mast. Although we tried to retrive it, we were unsuccessful.

My more glowing account appeared in the school annual.

MY BOAT AND I

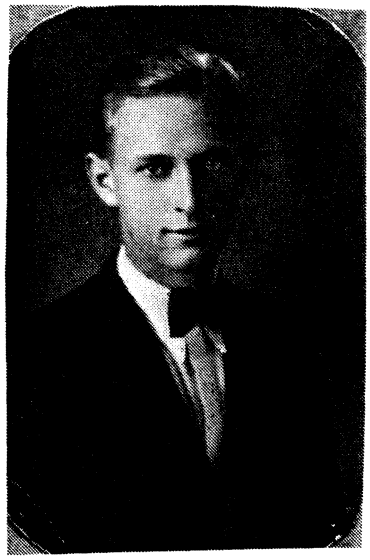
As I look out on the ocean
I can see
Many pleasant visions reflected
Before me
Of all the places I have been
In my boat.

A boat that has carried me far
O'er the foam
Built by the finest workmen
That are known,
Twenty-one feet mahogany
And white oak.

It's made to weather any storm
On any sea;
Made for pleasure, speed, and best
Company;
Ready to go at any time
I desire.

Glorietta is too quiet
And too still,
The wide blue ocean is the place
For a thrill!
So we'll always sail the ocean
Together.

High school days came to an end with graduation in the Sweetwater High School Auditorium on 15 June 1928. I made many lasting school friends, and at our 50th class reunion in 1978, which about 50 attended, I acted as master of ceremonies. Succeeding annual reunions, which I helped organize, kept me in touch with many members of the classes of 1928, 1927 and 1929.



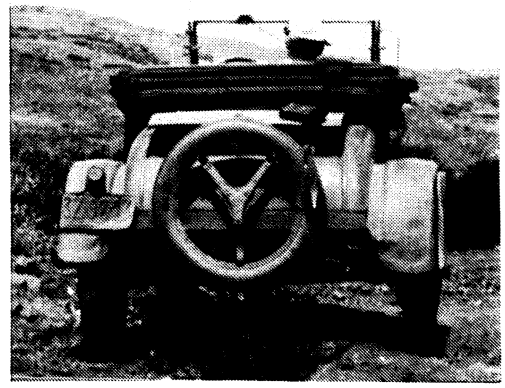
Eugene as a high school graduate, 1928

San Diego State College

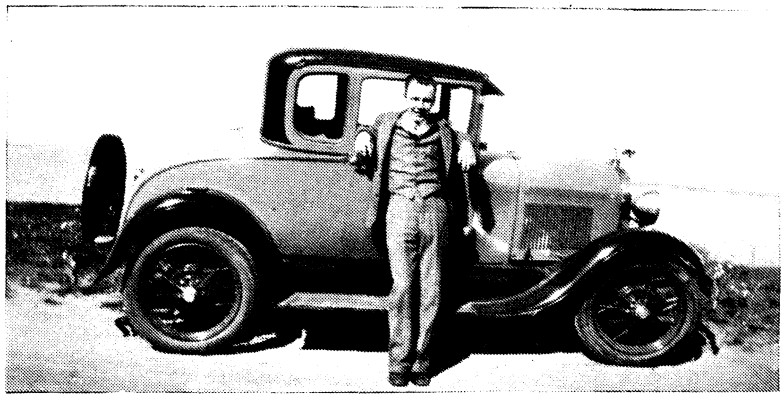
Of the 83 Sweetwater graduates only a few went to San Diego State College, the only college in the area, then located on Park Boulevard at El Cajon Boulevard. It was very expensive for my family to purchase a car for me to commute to State from Imperial Beach. They first bought a model T Ford, followed a couple years later by a 1925 model A Ford coupe with a rumble seat.

In college it was necessary to study, an activity in which I had had little previous experience. The first semister was almost disasterous. Then I concentrated and did fairly well, switching from mechanical engineering to electrical engineering and finally to chemistry, since at

that time it would be necessary to go to some out of town college to aquire a degree in engineering. I enjoyed chemistry, physics, mechanical drawing and surveying, but deferred the required English and educational coures to my senior year.



Eugene's first car, a 1920 Ford, 1929



Ed Mac Gregor by Eugene's second car,
a 1925 Ford, 1930

Dr. Leo Pierce taught many of my chemistry courses, and in one of his classes I met Katherine Gehring, fresh from the University of Berlin. It all started when I asked, "Miss Gehring would you please help me with my German". Other chemistry courses were taught by Dr. Dudley Robinson. I joined the chemistry fraternity Delta Kappa, later known as Lambda Delta Lambda. We held meetings every week to hear talks by distinguished chemists, and play poker. My previous exposure to

gambling stood me in good stead. A few cents won at poker was most welcome to my pinched finances. Delta Kappa had an occasional outing or dance. One Easter vacation two cars of my fraternity brothers went to the desert where we camped out, visited the Plaster City cement plant, and collected rattlesnakes for the San Diego Zoo.

Delta Kappa fraternity, Eugene in lower left, 1931

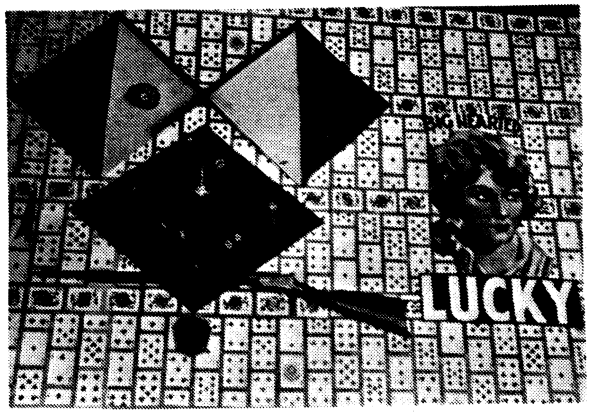
One of my chemistry experiments was to make gunpowder. I made a goodly amount in order to test it in a homemade cannon. My cannon consisted of a foot long piece of inch iron pipe clamped in a vice. To one end was threaded an elbow which tapered to $\frac{1}{4}$ inch. The gunpowder was poured in the $\frac{1}{4}$ opening. The barrel was loaded with nails and metal bolts. When ready the powder was lit and a pointed stick jammed in the $\frac{1}{4}$ inch opening. The explosion was great but instead of the charge shooting out of the barrel, the pipe threads were stripped away and the elbow shot back and struck me in the stomach. Thus ended my ballistics experiment, but my stomach remained sore for some time.

Frank Beyer Connection

During summer vacations I helped in the fruit stand and occasionally worked at a local Union Oil service station, but getting a real summer job was next to impossible. One summer I obtained employment watering and weeding the Frank (Booze) Beyer beach-house yard.

Beyer was a successful Tia Juana gambler and part owner of the Foreign Club casino. His large 2-story beach-house was formerly owned by Thomas Totten and the road intersection a few hundred yards toward the beach from our house was posted as "Totton 4-Corners". The Beyers had a lighted tennis court where I frequently played tennis in the evenings. The job did not last long because Beyer died and the place was sold. Beyer used the house as a summer home for his family, but in the winter as a gambling house, which intrigued me since I was privy to the hidden warning bell on the gate and secret hiding places. I knew a stairway panel that opened out when a cup hook was pulled on the other side of the wall, and a section of a wood pile in the basement had a false front which hinged outward by pulling a clothes hook on one of the pieces of wood. These hidden compartments were to hide poker chips, cards and other gambling materials in case of a police raid.

A dividend of the Tia Juana gambling connection was that I obtained many decks of discarded cards. I used many of the decks to paper 2 walls of my room. The face cards were arranged in vertical stripes and the other cards were arranged in black and red patterns between the face cards. The result was unique. This room had been converted from 2 adjacent wardrobe closets. I had previously slept on a sleeping porch in my parents room; and later, when the card covered room was converted into a bathroom, a chicken brooding



Eugene's room decoration, 1929

house a distance from the house became my pad.

Frank Beyer's wife, Blanch, and her brothers and sisters Bob. Jay, Eva and Helen Swinehart became friends with my family. On one occasion Bob, who was a pit boss in the gambling casino of Agua Caliente race track, arranged to get me into the racetrack by signing me in as a dealer. When inside he offered to let me help operate a gambling wheel and betting table but I declined in favor of watching the horse races. Occasionally, Katherine was able to get clubhouse passes to the race track, through a friend, Barbara Schilling, but we rarely bet because it required money.

Steamboat Springs

In the summer after my first year at SDSC, Wanda Swinehart and her 9-year old son were planning to drive to Steamboat Springs, Colorado, and invited me to go along, not so much to drive but more as a security and to help change tires, etc., if necessary. It was educational and enjoyable, driving and camping through Arizona, New Mexico and northward into Colorado. In Steamboat Springs we lived with Wanda's parents until her husband, Bob, came, and we then drove back to Imperial Beach. In Colorado, for a few weeks, I had the opportunity to fish the mountain streams. On one fishing trip in the Rabbit Ears pass we caught and cooked trout which prompted Bob to remark, "If a king rode by and offered to trade places with me, I would say 'ride on'," which also expressed my sentiments.

Graduation

College work became easier after I learned to study. Katherine helped me with English composition and German, in which she was very fluent. Eventually, in June 1932, I graduated with a chemistry major and a math minor, being the first LaFond or Imes to have an opportunity to graduate from college. The graduation ceremony was a cap and gown affair and I was persuaded to wear garters for the first time. Unfortunately one became unhooked and dragged along the stage as I received my diploma.

Eugene as a college graduate, 1932

Employment

Graduating was one thing but getting a job was another. In 1932, in the depth of the economic depression, it was especially difficult. I repeatedly tried to obtain employment in numerous organizations. My best bet seemed to be to seek work as a service station attendant so I applied in person to all the oil companies in the area. I went to the Standard Oil Company 18 times without success. I finally rented and operated a service station at Imperial Beach which had been closed for years. It was actually part of a restaurant complex which was not open. The rent was $15 per month. The station had only one gas pump, but no electricity, no water, no air pump and no restrooms. A fully operating gas station across the road had nearly all the local business. I did, nevertheless, get a few customers, and by buying Richfield gas at 14¢ per gallon and selling it at 18¢ paid the rent and made a slight profit.

The gas business was supplimented by selling mussels for fish bait. I would go to Mexico every second or third night after closing the station and bring back 2 or 3 sacks of mussels. Ed MacGregor would usually go with

Eugene getting mussels in Mexico, 1933

me and we would split the profit, if any. Initially, we would go to a rocky headland about 2 miles south of Rosarita Beach, sleep on the cliffs, then in the night when the tide was low, go down on the rocks with a flashlight and scrape off the large mussels with a sharpened automobile spring leaf. Later we found a closer

Mussel covered island north of Rosarita, Mexico

source for mussels a few miles north of Rosarita (now called Malibu Beach). It was a small island just beyond the surf and only accessible at low tide. The road to this latter site was over hills and through pastures, and the island was remote and isolated at that time. Prying mussels in the dark with cold waves breaking over them was not the most desired occupation, but I enjoyed the challenge and excitement, and we averaged a few cents per day profit. In 1985 I revisited the area but the island was devoid of mussels. However, during 1932-33 it was not only entirely covered with mussels but the surronding water abounded with a variety of fish. On fishing trips we could amply sustain ourselves with fish, lobsters and abalone.

Early one morning after getting mussels I saw two shiney new 5-gallon cans in the surf. They proved to be filled with some sort of booze. I retrived the cans and buried them in the sand to decide what to do with them. This was during prohibition and booze was illegal in the U.S. and expensive. Prospects of a financial gain loomed. An acquaintance in San Ysidro suggested that I take the booze to his friend's house in Tia Juana and he would sell it for me. Here the cans began to leak as a result of rusting while buried in the damp salty sand. The remaining booze was "utilized" by the storage attendant, thus the financial gains vanished.

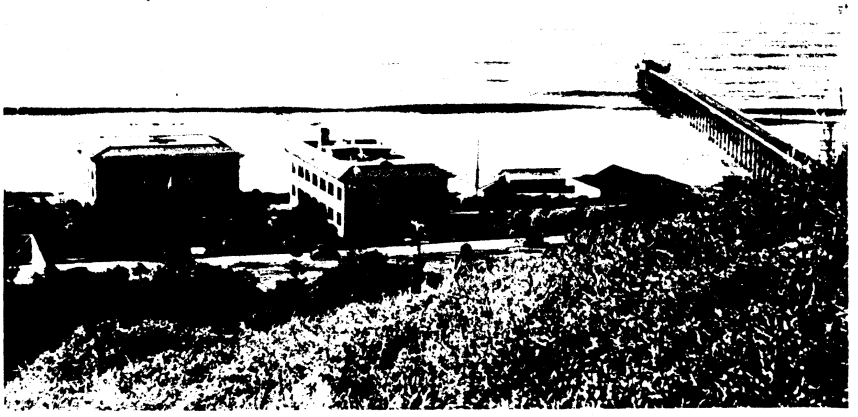
At the end of the summer the restaurant opened and incorporated the connecting service station that I had operated all summer. Thus concluded my business adventure. With part of the summer's profits Katherine and I went to Los Angeles to view some of the Olympic Games.

At this time, September 1933, Katherine suggested that I go to Scripps Institution of Oceanography in La Jolla and apply for employment. She had, in the previous May, obtained a job chemically analyzing sea water at the Institute. I went to Scripps on 13 September, which proved to be the turning point in my life.

SCRIPPS

First Contact

To me and my colleagues it was known as the **Scripps Institute** but its official name was the **Scripps Institution of Oceanography.** It had always held a fascination for me, partly because few, if any, knew what was going on there beyond the fact it had something to do with the mysterious ocean, and it was staffed with long-haired characters.



Scripps Institution of Oceanography, 1934

Katherine had been working for Dr. Moberg for a couple of months in the Scripps Chemistry Department and through her efforts I was able to obtain an interview with Dr. Moberg, who was Assistant Director of the Institute. I tried to impress him with my education and especially with my keen desire to be of service. As a result, he took me over to the Director's office and introduced me to Dr. T. Wayland Vaughan, an elderly paleontologist working on foraminifera when he could spare time from administration. Dr. Vaughan had recently completed an around-the-world trip, visiting oceanographic establishments for the National Academy of Sciences, and was preparing a report on the international oceanography for them. While in Washington, D. C., he had talked to Dr. H. U. Sverdrup who had proposed the idea of plotting temperature values versus salinity values (T-S) at each oceanographic station as a means of identifying water masses, and gave Dr. Vaughan a copy of the serial station data collected throughout the Pacific Oceean by the British ship R/V Carnegie.

In order to follow up on this new concept, Dr. Vaughan asked me to plot some T-S diagrams. This was my first introduction to oceanography.

So it was with a great deal of delight and excitement that I first went to work at Scripps on 14 September 1933. It wasn't a paying job initially, more like volunteer work, but it offered a chance to do something at an exciting academic institute, following my graduation from San Diego State College a year before.

A large drawing table was available in the open work area outside Dr. George McEwen's office on the second floor of Ritter Hall. Seated on a drafting

Dr. McEwen's Outer Office

stool and with a roll of millimeter cross-section paper I excitedly started plotting temperature versus salinity for about 100 deep oceanographic stations. It was fun, and since I had minored in math and taken mechanical drafting, the work offered no problem. I had chosen suitable scales, but the resultant T-S curves took on worm-like shapes, with data points clustered at one end of the curve. The lines connecting points were eventually inked and blueprint copies were made, cut up, arranged geographically and inspected. Dr. Vaughan said they were great, but it was not until a few years later that Dr. Sverdrup explained their real significance. I really believed Dr. Vaughan thought that they might be useful for his academy report, but they were not included.

Scripps Staff

I gradually became acquainted with the other Institute employees, about 35 in all, but this was a period of expansion and the numbers grew. **Dr. Vaughan,** the Director, maintained his office in the southeast corner of Scripps Hall, the original of the three Scripps buildings. The large second floor room contained a fireplace and had been the living quarters of Dr. William Ritter, the first Director. Dr. Vaughan had it pretty well stacked with his books and reports of all kinds, plus sample boxes of rocks and sediments which contained his forams. He was elderly, very distinguished looking, with a white moustache and goatee, and was fatherly and helpful in every way. I was greatly impressed when he called me to his office to lay out work or assign me material to study. He once gave me a new book by J. Johnstone entitled "An Introduction to Oceanography", and quizzed me on it afterwards. He frequently came to Dr. McEwen's office to see how I was coming with his drawings. He lived with his wife and daughter, Caroline, in the two-story Director's house on the Institute grounds. He took a personal interest in everyone's work at the Institute, and the buildings and grounds. One of his projects was to plant an acacia grove on the upper campus. When out walking, he always carried a cane and was accompanied by his large police dog, Spooks. The cane was used to point out things, as well as to persuade his dog.

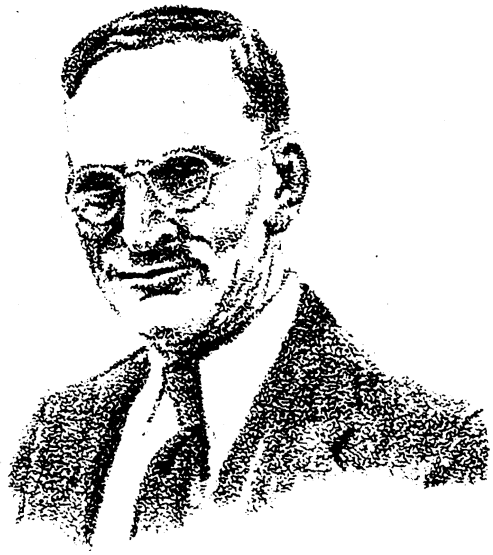
Dr. T. Wayland Vaughan

The Assistant Director, **Dr. Erik Moberg,** more than anyone else, was responsible for my first oceanographic employment and its continuation. Of Scandinavian descent and knowledgeable in marine chemistry, he had somewhat isolated himself and did not associate

with the rest of the Institute's staff as much as one would expect. With his own staff, which consisted of Katherine, a technical assistant (chemistry), Richard Fleming , a graduate student, and Ruth McKitrick, a half time secretary, he made a fair and congenial boss. He joined the Institute in 1920 but in 1933 he was not very productive tho he had just published some fundamental papers on pH and boron composition of sea water. He acted as master of infrequent cruises on the Institute's ship, a converted purse seiner called the **Scripps.** In fact, there was no one else capable of taking the ship to sea until Dick Fleming and Roger Revelle obtained ship operator's licenses. Dick was originally from Canada via Berkeley and had collected a network of station data in the Gulf of Panama and was analyzing the data.

Dr. Erik Moberg

Dr. George McEwen was the physical oceanographer and the most senior person as he had joined the staff in 1908. With Dr. Francis B. Sumner, a "fisheries" biologist, and W. E. Allen, a planktonologist, they comprised the senior members of the Institute. Dr. McEwen was fairly productive, but he had little or no sea data coming in with which he could make oceanographic analyses. However, some shore station data, i.e., temper-



Dr. George McEwen

ature and water samples, were taken weekly at several stations along the California coast, sent to the Institute and temporal plot compiled. Since I worked in Dr. McEwen's outer office, I became closely associated with him. He was somewhat shy and bashful, but kind and helpful. He introduced me to the drafting equipment containing a complete set of Wrico lettering guides which improved the quality of my drawings.

Dr. McEwen was well versed in physical oceanography. He also did a little theoretical work and made a statistical study of rainfall, for which the San Diego Gas and Electric Company gave him a little money, some of which later helped continue my employment, i.e., computing Fourier analyses from series of previous rainfalls. However, at that time predicting rainfall a year in advance was a long way from being 100% successful.

Ruth McKitrick was the only secretary in Ritter Hall. Half her time was spent for Dr. Moberg and half her time with Dr. McEwen. She was attractive and efficient. She lived in La Jolla and commuted with Tillie Genter in the Institute's touring car which served as a bus and called at the La Jolla post office for the mail in the morning and evening. There was no mail delivery.

Dr. McEwen had an assistant, **Stan Chambers,** who worked himself into a routine job of determining salinity of the water samples received from coastal stations, by the use of a clever arrangement of a hydrometer attached to one arm of an analytical balance. He was also responsible for maintaining records from a pyroheliometer, tide gauge and seismograph.

Dr. Francis Sumner, one of the earliest, 1913, members of the staff, was investigating protective coloration changes developed by fish in adapting to their immediate environment. I was sympathetic to the poor halibut, which, when placed on a black and white checkerboard background, tried to change its body colors to match the one-inch squares. Previously, Dr. Sumner had worked on the genetic traits of mice, carrying on his work in a then vacant "mouse house"

located on the hill just east of the Institute. When Dr. Vaughan became director, he decreed that mice were not oceanographic and had to go, so Dr. Sumner reluctantly shifted to fish. Dr. Sumner lived in his own house on the cliff just north of the campus with a sweeping view of the ocean. He and his family built a desert retreat out of rocks east of Julian in the desert where they spent many weekends.

A graduate student in marine biology was **Nelson Wells.** Nelson was a high strung individual. When playing tennis he would throw his racket whenever he made a bad shot. Once he violently closed the zipper of his shirt catching his chest hairs, which did not help his frustration.

Another graduate student in marine biology was, **Pete Doudoroff** who came in 1935 and worked on fish cultures with Dr. Sumner.

Mr. W. E. Allen, a staff member since 1917, was a planktonologist. Daily he would go out to the end of the pier and collect about three liters of water, pour it into a large glass graduate and add formaldehyde. The next day he would decant most of the water from the settled plankton, and again let them settle in a smaller graduate, eventually concentrating the plankton to about 10 ml. He would then identify and count them with a microscope in his tiny office located on the west side of Scripps Laboratory. He published time series of the abundance of different species, but it was not until Dr. Sverdrup arrived that he and Dr. Sverdrup tried to correlate the abundance with environmental factors.

Easter Cupp, a student of Mr. Allen's, was a reserved redhead who could look through a microscope, identify and make detailed drawings of micro-organisms, day in and day out. She compiled extensive volumes of description of plankton. She lived in cottage number 11 next to Katherine in number 12 and they became good friends. Soon after she received her doctorate, Dr. Sverdrup felt that broader research was needed in the field and she was replaced by Dr. Marston Sargent in 1936.

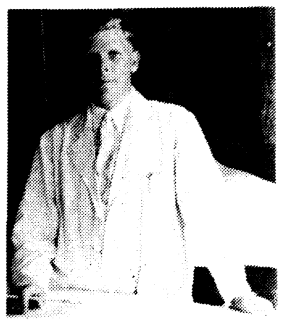
Dr. Denis Fox, a distinguished biologist, joined the staff from Stanford in 1931. His speciality was carotenoid pigments in marine organisms, a number of which exhibited the orange coloration indicative of the long chain formula of carotenoid pigments. When I took a graduate course from Dr. Fox my project was to determine the effect of mussels on sedimentation. I suspended 2 large bell jars adjacent to each other on the end of the pier. One contained mussels and the other contained rocks of equal size. The sediment collected in the bottom of each jar was analyzed for grain size and organic matter. The results were impressive enough to receive a good grade in marine biology.

Graham Wallace Marks, known as Wally, joined the staff about 1932 and worked as chemical physicist in Dr. Fox's group. In 1935 he married Alice Holland, the roommate of Katherine's. Shortly afterwards he joined the U.S. Bureau of Mines in Salt Lake City, and several years later joined me in the Marine Environment Division at the Navy Electronics Laboratory. He was a quiet, studious and very capable scientist.

Earl Myers worked on his thesis under Dr. Fox in the biology part of the Institute. Among other things he studied the life cycle of foraminifera and actually photographed the reproduction. His wife was a constant co-worker.

Dr. Claude ZoBell was a marine bacteriologist, a relatively new field. He joined the staff in 1932 from Utah. He pioneered the field and was a prolific writer. I took a course from him in bacteriology and learned a great deal about these tiny bacteria and the techniques of handling them in the laboratory.

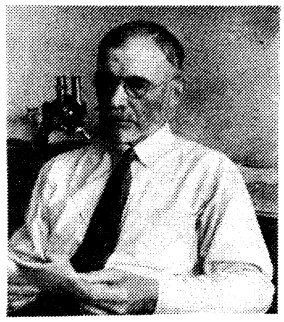
Quentin Anderson was Dr. ZoBell's assistant. A large, burly, heavy-set man but he could handle test tubes of bacteria cultures with ease. Since Dr. ZoBell rarely went to sea, Mr. Anderson conducted bacteriological sampling for him on cruises of the R/V Scripps. On one cruise Quentin became seasick and was confined to his bunk. At this time a large pelican landed on the ship, and it may have been ill as well, so a couple



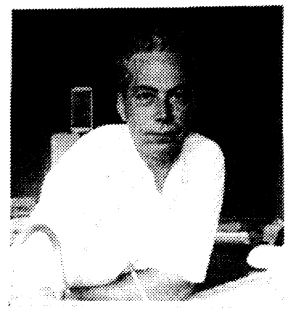
Dick Fleming

Ruth McKitrick

Stan Chambers

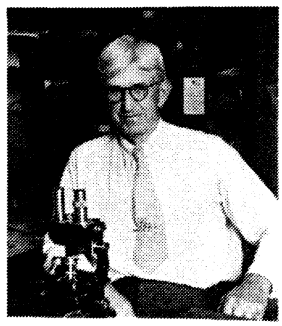


Francis Sumner



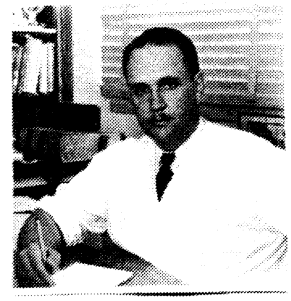
Nelson Wells

Peter Doudoroff



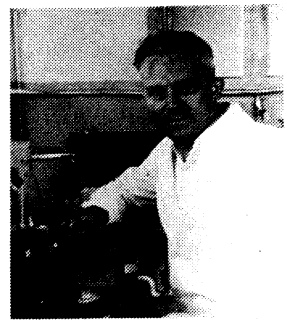
W. E. Allen

Easter Cupp



Denis L. Fox

Wally Marks



Earl Myers

Claude ZoBell

Scripps Employees 1933-1936

of us caught the pelican and put it in the bunk with Quentin. Neither the pelican nor Quentin appreciated the gesture.

Dr. ZoBell had a very capable laboratory technician by the name of **Catherine Feltham.** It was she, who Katherine came to see at the Institute to learn her technique in the preparation of thin paraffin sections. An accidental meeting with Dr. Moberg on one occasion resulted in Katherine's leaving her volunteer work at the zoo hospital to join the chemistry department at Scripps.

Dr. Martin Johnson was a newcomer in 1934, from the University of Washington's Friday Harbor Laboratory. He specialized in plankton and made many cruises to collect these organisms in nets drawn through the water. He eventually became one of the authors of "The Oceans", writing the biological aspects and preparing his own drawings of marine organisms. I took a graduate course from him, in one part of which I was required to collect and identify as many marine plants and animals as I could from the San Diego area.

Eldon Thorpe had been a graduate student under Dr. Vaughan for several years. Dr. Vaughan was able to get aliquot portions of the sea floor bottom sediment samples from the historical R/V Challenger collection. Among other things he sieved the sediment and drew histograms of the particle sizes. These he labeled BS1, BS2, BS3, etc., which designation meant bottom sample to him.

Roger Revelle, a tall geology student, came from Pomona in 1931. Dr. Vaughan was also able to obtain sea floor sediment samples for him to analyze in the Scripps laboratory.

The person who really kept the Institute running was **Tillie Genter** who came to work at the Institute directly from La Jolla high school. She lived in La Jolla and rode the Institute's bus to work. Her job was to manage nearly all the non-scientific operations. She typed all the business letters, helped visitors,

managed the cottages (gas, electricity, rent), computed and paid all salaries, took care of student registrations and dozens of other essential chores. Her office was just outside the director's office and controlled his infrequent visitors.

The director's secretary and librarian was **Ruth Ragan** whose office was located on the upper floor of the Library building. The two buildings, Scripps and Library, were connected by a covered bridge which made it convenient for Ruth to get to the director's office and vice versa. Later when Dr. Sverdrup and others were writing their book "The Oceans" and Ruth was typing and retyping it, the passage way proved most useful.

Grounds and Maintenance

The grounds force was headed by **Jim Ross** one of the original employees dating from 1908. He managed the maintenance and other chores, which were numerous. He also frequently drove the bus into La Jolla.

The jack of all trades was **Carl Johnson.** He could repair the furnace and make major installations and especially build instruments. He was clever in improvising when materials were lacking. For me, in later years, he built a depth sounder to measure the distance to the sand from the deck of the pier, a wave recorder, an arrangement for lowering a current meter at the end of the pier and a camera adaption whereby I could use cut film for detailed photography.

Claude Palmer took care of the aquarium and a number of salt water tanks located on the lower floor of Ritter Hall.

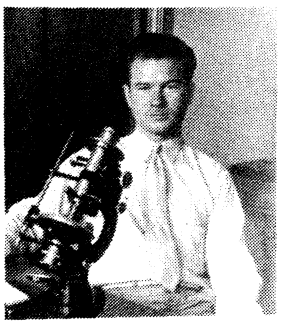
The person in charge of the museum located on the Library building's lower floor, was **Percy Barnhart.** He was expert at stuffing birds and fish, and displayed instruments, sea shells and hundreds of pickled marine organisms which impressed and educated the visitors about the mysteries of the ocean.

The only janitor was **Robert Wilson.** He was rather

Quentin Anderson

Catherine Feltham

Martin Johnson



Eldon Thorpe

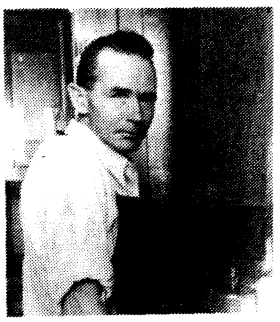
Roger Revelle

Tillie Genter

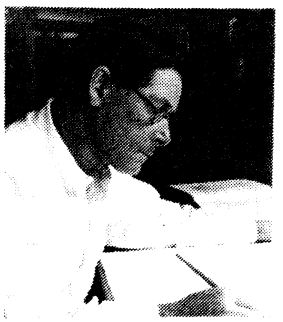
Ruth Ragan

Jim Ross

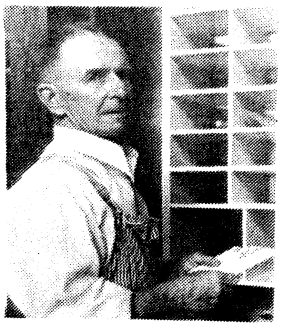
Carl Johnson



Claude Palmer



Percy Barnhart



Robert Wilson

Scripps Employees 1933-1936

small and elderly but very friendly to all. He was formerly a square-rigger sailor and could spin yarns of those days. He kept the place clean, delivered the mail and had tea every afternoon with Percy Barnhart in one of the rooms in the basement of the Library building.

The gardening staff was a congenial group headed by **Obie Maler.** The others were **Bill Simmons** and **Lawrence Fiorini.** They removed the natural growth, landscaped, planted, pruned, watered and greatly improved the extensive grounds of the Institute. They planted succulents which did not require much water over wide hillside areas as well as an acacia grove on the upper level of the campus. In addition to gardening, they repaired the road and pier, moved equipment and did a number of essential chores. They all lived on the campus. Mahler's cottage, No. 13, was next to Katherine's No. 12. Bill Simmons had a cow and for a while grazed her in front of Ritter Hall. This did not look oceanographic so the pasture became out of bounds for the poor cow.

Another member of the permanent work force was **Murdy Ross** (no relation to Jim Ross). Murdy was the engineer and caretaker of the R/V Scripps and operated the engine on all cruises. Once, in 1936, while changing the propane tank in the galley, an explosion occurred, badly burning him and damaging the ship.

Visiting Scientists

A number of notable, temporary employees and visiting scientists used the excellent facilities of the Institute during the period 1933-1936. One was **Woodrow Jacobs,** a hard working meteorologist. In 1935 he was employed at the Weather Bureau at Lindbergh Field during the night and worked at Scripps during the day. He conducted a variety of studies including the measurement of internal waves in the atmosphere, by directing a spot light upward on the clouds at the airfield. He placed petri dishes around the campus to determine the distribution of salt deposited from the atmosphere. Both Katherine

and I participated in this experiment.

LaPlace Bostwick was not an employee of the Institute but used the sea water tanks to raise abalones. He inserted ground shell in the abalones to create a facsimile of oyster pearls. The results were irregular greenish mounds. They were rather attractive and were mounted into jewelery pieces by his wife. The objective was to sell the abalone "pearls" but it was not too successful.

Loye Miller was an ornithologist from UCLA who studied the collection of birds in the museum and made several cruises on the R/V Scripps. One of his projects was to determine the distribution and population of sea birds. At each daylight station we would lower a row boat and he would get as close to the birds as possible, count them and try to squirt dye on their feathers for further identification. After a couple of cruises I plotted his data and drew countours of the geographic distribution of albatross, also known as "Goonie birds" and I labelled the contours "iso-goonies".

Bradley Scheer was another student who came in 1936 to work on his degree under Dr. Fox.

Ursel Armstrong temporarily worked for Dr. Vaughan on foraminifera. Dr. Vaughan was an authority on these marine fossils. One of my duties was to try to photograph thin sections of these tiny organisms through a microscope. Ursel would identify and describe the fossilized foraminifera. When Dr. Vaughan retired, Ursel went to the University of California in 1936 at the same time Katherine and I did.

Parker Trask was a geologist who visited the Institute occasionally and worked mainly with Dr. Sheppard. He was interested in marine geology and organized a symposium on the subject. I presented probably my first paper in his session and afterwards he told that my paper was the best in the session, which endeared him to me.

Francis Shepard, a teacher from the University

Obie Maler

Bill Simmons

Lawrence Fiorini

Murdy Ross

Woodrow Jacobs

L. Bostwick

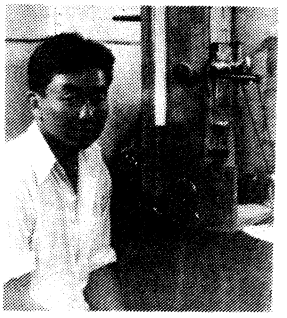
Loye Miller

Bradley Scheer

U. Armstrong

Parker Trask

Francis Shepard



H. Nakamura

of Illinois, spent every summer at the Institute. He was enthusiastic about all types of marine geology. My close association with Fran and his work had a lasting influence on my career.

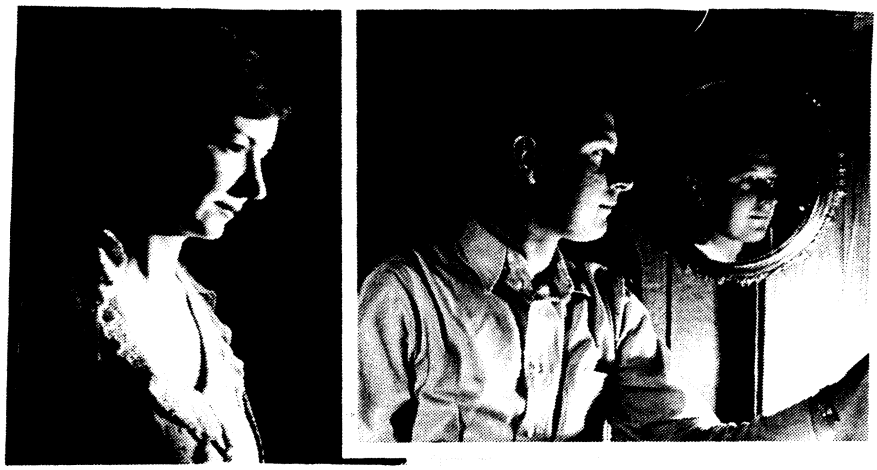
Among others who spent short times at the Institute during this period were **N. C. Cummings**, a meteorologist who originally worked there in 1919 with Dr. McEwen on radiation and rainfall; **Hiomi Nakamura** and **Gil Hofeller**, chemists; and **R. T. Young**, a tall, uninhibited, retired biology professor. All were devoted to their work and each was inspiring.

My First Programs at Scripps

For me it was a most interesting place to work and the conditions were ideal compared with my earlier experiences in raising chickens, running a gas station or selling produce at a roadside stand. The only problem was getting on the payroll. After a few days of plotting, which completed the T-S plots, Dr. Vaughan needed some figures drawn for his forthcoming book, "International Aspects of Oceanography", which he was writing. Fortunately, after a few weeks he was able to get a little money from the National Academy of Sciences. As a result, I plotted the positions of all known oceanographic stations, in all oceans, using different symbols to denote serial temperature and salinity, and maxium depth of the cast. He wanted to summarize existing serial stations throughout the world. For this it was necessary to seek out published data from the Scripp's library which was run by Ruth Ragan. These compilations of stations were plotted, inked and used in his book. This work afforded me some library experience in oceanographic literature, as well.

To become useful and part of the Institute, I readily took on drafting work for other scientists, especially for their publications. Eldon Thorpe introduced me to photography, mainly because he wanted to devote more time to his research and less to being the Institute's photographer. I practiced loading film into a cassette in the dark for a Leica camera so many times that I developed blisters on my fingers,

I experimented with lighting, film. paper, developers, and even portrait lighting. This eventually led to my assignment of being in charge of all of the Institute's



Portraits of Katherine and Gene

photography. I budgeted for, and mixed my own developers, bought film and glass plates. The latter were used in a larger camera for microphotography of Dr. Vaughan's foraminifera, and for slides. Whenever a distinguished scientist visited the Institute it was my responsibility to take his or her picture with the staff.

Drs. B. Lloyd and B. Helland-Hansen with Scripps' Staff

Dr. Shepard visited the Institute in 1933 and through him I was exposed to marine geology and beach erosion. He wanted help in sounding the submarine canyon just north and west of the Scripps pier. Being low man and willingly available for any type of work, I was selected, along with Dick Fleming, to help him make his survey. We lowered a row boat off the outer end of the pier with a hand winch. I rowed, Dick sounded with a metered lead line, and Fran took sextant angles on pier flags and patches of grass on the cliffs, to establish our positions. Rowing a straight line in the open ocean, usually seasick, and making closely spaced stops for soundings was not as precise as desirable in establishing the maximum depth of the canyon axis. Nevertheless, we completed a number of crossings over the canyon which Fran contoured and published. On his subsequent visits to Scripps in 1934 and 1935, these soundings were repeated to ascertain any depth changes, which undoubtedly existed, but from the earlier positions and techniques, they were hard to confirm.

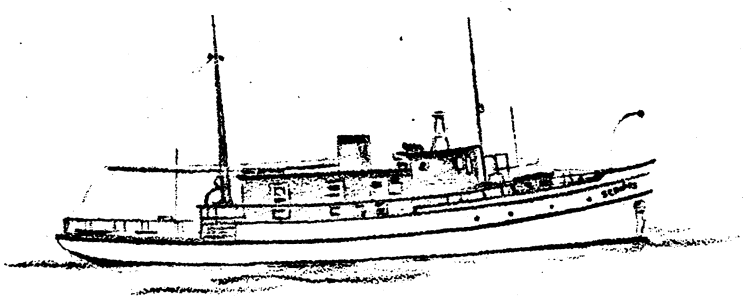
It was the beach erosion studies that I first became involved by myself. It started when I ate my lunch on the beach just north of the pier. While sitting on a large, flat-faced sandstone rock I noticed that my feet would rest on the sand one day and not reach the sand the next day. I went to the Kress store and bought a small, round, spring-activated measuring tape. Each day I would use this tape to measure the distance from the top of the rock to the sand. I kept

Rock on Beach North of Pier

a running plot of these data and found that they occurred in cycles related to the tide and waves. The data were worked up and published in Science as my first paper.

Scripps Vessel

About the time I was first employed at Scripps they purchased a used purse seiner and converted it into a research vessel, and appropriately named her Scripps. I was especially anxious to participate in



R/V Scripps

cruises. There was only one full-time ship operating employee, an engineer, Murdy Ross. The rest of the crew was made up of the Institute's staff, with Dr. Moberg as Captain. Because of limited funds, equipment and crew, the cruises were not systematic surveys, but were largely exploratory in nature. However, it was great fun to collect data at sea, and it was especially enjoyable to anchor, go ashore and explore remote sites on Catalina, San Clemente, Santa Cruz and Santa Rosa Islands.

On one cruise we took the R/V Scripps to Santa Monica, anchored inside the breakwater and attended scientific meetings at UCLA. We did, however, collect many water samples with Nansen bottles, plankton samples and even sea floor cores on these cruises. Both Katherine and I assisted with shipboard oxygen analyses. Underway we took turns steering the vessel.

On our return from such cruises, I helped process the data which was largely a pencil and paper operation,

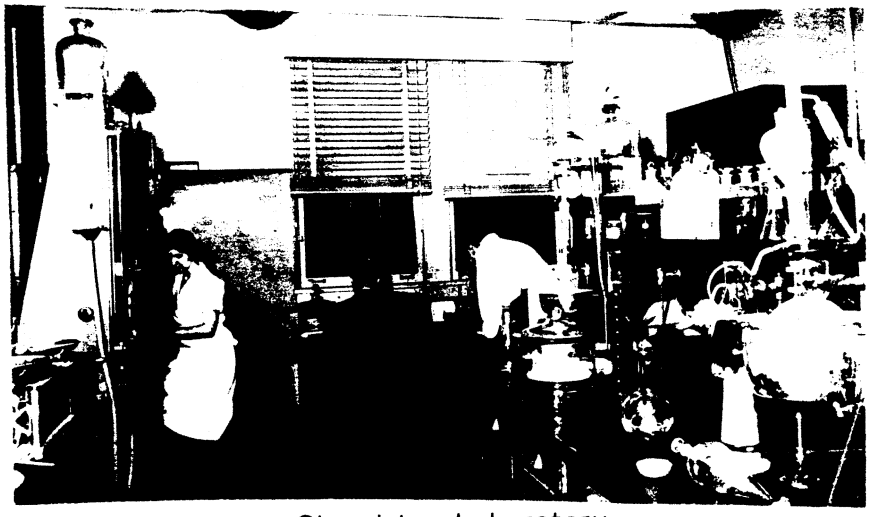
Activity on the R/V Scripps

although we did utilize a hand cranked calculator. All these many and varied experiences, and my gradual proficiency in a number of oceanographic operations, stimulated my desire to become an oceanographer.

Facilities

At this time, 1933, the Institute consisted of three main buildings. Scripps Laboratory, the original building, erected in 1910, contained the offices and laboratories for Dr. Vaughan, Dr. F. B. Sumner, W. E. Allen, Easter Cupp, Roger Revelle, Elton Thorpe and Nelson Wells. The Library building, with Ruth Ragan as librarian, housed a large reading room and stacks of books and periodicals on the upper floor. The lower floor was devoted to displays of shells, stuffed birds and other museum specimens. Percy Barnhart, the curator, had an office in the southwest corner room and there was working space in the basement. A seismograph mounted on large cement blocks was also in the basement. The third major building was the newly constructed (1931)

Ritter Hall, with Dr. McEwen, Stan Chambers and Eugene LaFond in the west side of the upper floor. The east half was for chemistry and included Dr.



Chemistry Laboratory

Moberg, Dick Fleming and Katherine Gehring. Ruth McKitrick spent half her time here and half with Dr. McEwen. The main floor contained offices and laboratories for Dr. Denis Fox, Dr. G. W. Marks, Earl Myers, Dr. Claude ZoBell, Kitty Feltham and Quentin Anderson. The lower floor contained a few small sea water tanks, a photographic dark room, service rooms and a furnace room. A few of the rooms were not assigned and used by visiting scientists, but this space soon filled up over the years.

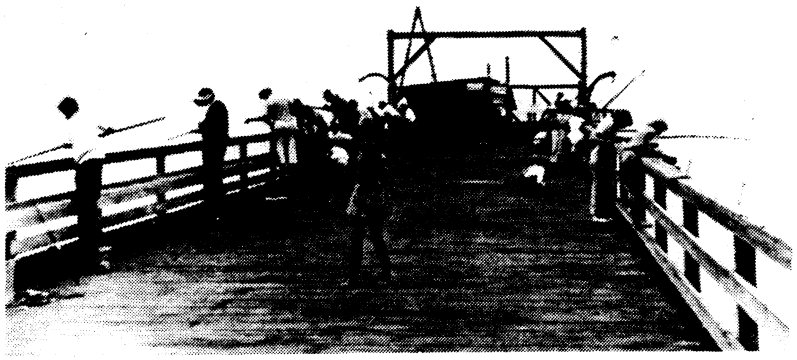
Aquarium

A small, dark, damp building housed the aquarium The tanks were serviced from a catwalk above and behind them and it behooved one to use caution and not rest a hand on the edge of the tank containing the Moray eels as they have sharp teeth and had been known to nip at protruding fingers.

Scripps Pier

For several years prior to 1933 the Institute had not had a sea going vessel, therefore a major asset and claim to

oceanography was its 1000 foot pier, with a 20 foot depth at its outer end. The pier provided a facility from which to collect water and plankton samples, record tide heights and later measurements of waves,



Scripps Pier

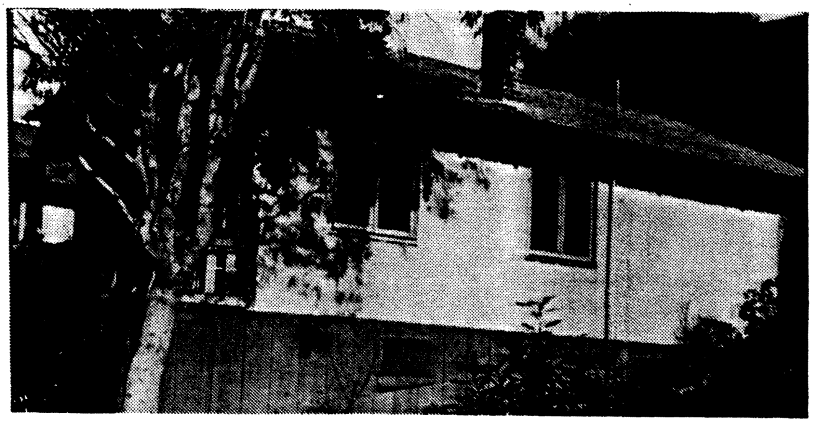
current, and sand level. A house on the end of the pier contained a pump which supplied water to a holding tank near the Director's house, from which it was then gravity-fed to the aquarium and laboratories. The broad, planked deck afforded free fishing to the public. A variety of fish were actually caught.

Living Accommodations

About 25 cottages were located throughout the campus. These redwood board and batton structures were intended to be temporary in 1916 but were never replaced by better ones. Daylight could be seen through cracks in the walls, and heating was supplied by a sheet metal stove in the living room. Most were occupied by staff and grounds personnel, only a few employees lived off campus. By 1936 all were fully occupied. The Director's house was a two story structure near the main buildings. A Community House, on a bluff with a sweeping view of the ocean, was initially used for parties, but later housed the overflow of visiting scientists.

When I initially went to work at Scripps as a volunteer, I lived at Imperial Beach. My main expense was driving the 30 miles each way. In a few weeks after

Dr. Vaughan was able to obtain funds for me from the National Academy of Sciences, I moved to San Diego and rented a room on First Avenue near Katherine's home, on the corner of First and Washington Streets. After a couple of months I moved closer to Scripps to a rented room in Pacific Beach on Hornblend Street. Moving at that time was no problem since my total assets were not much more than a couple of shirts, sox and razor. A short time later Katherine and Alice



Scripps Cottage No. 12

Holland rented cottage No. 12 on the Scripps campus, located just off the highway, which would now be just east of Sumner Auditorium. The rent was $12 per month I rented a less expensive cottage at $5 per month perched on the hill overlooking the Institute.

This was my first real independent home. Its location was remote and had not been occupied for years, so field mice had made it their abode. To restore it, a hose was turned on the walls and floor, but the center of the house sagged and left a lake of dirty water. The solution was to drill inch-sized holes in the floor and drain the lake.

Many skunks also resided nearby. One night I heard the cat's dish rattle and turned on the porch light. The skunk just came into the house. I quickly turned on the room light, switched off the porch light and to my immense relief he turned around and sauntered out.

Another problem was the adobe road which became impassable when it rained.

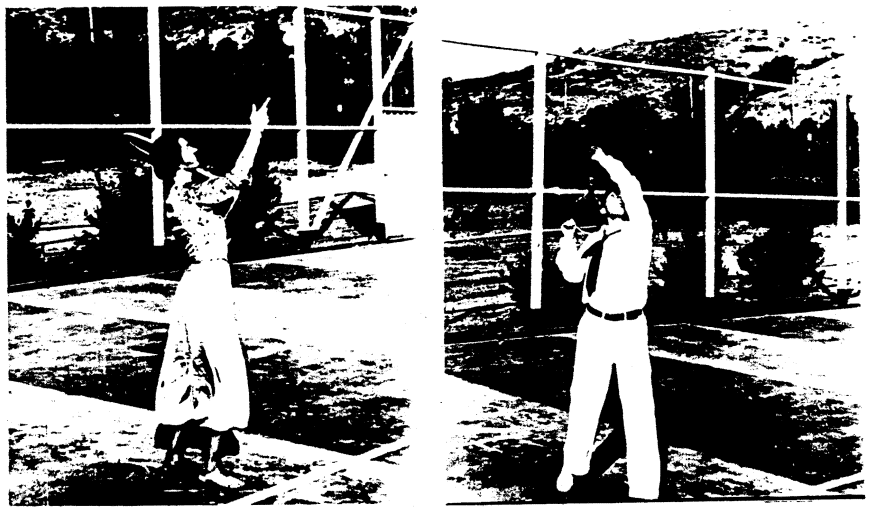
Dog House

My home was dubbed **The Dog House** because at an earlier time it had been the residence of the keeper of dogs which had been kenneled in an adjacent building and were used for clinical purposes by the Scripps Metabolic Clinic in La Jolla. John Lyman, Nello Pace and Gil Hofeller, when they were students, spent a summer with me in the Dog House which became posted as Casa Del Perro. In spite of its short-comings, the Dog House served me well and provided the venue of many enjoyable parties.

Activities

The Institute's employees frequently made their own entertainment, such as potluck dinners. Each family would bring a dish and dinnerware. No one had enough for the group, but since we had all bought from the same ten-cent store, it matched.

The Institute had a tennis court in front (east) of Ritter Hall and Library building. Katherine and I enjoyed playing tennis with the younger members of the staff and students.



Katherine and Gene on Tennis Court

I especially enjoyed swimming and fishing in the convenient, adjoining ocean. A rock ledge a little north of the pier was my favorite fishing spot. With pole and line, baited with mussels which covered the semi-submerged rock, it was easy to catch perch, opaleye, sheephead and garibaldi, as well as pry off abalones and catch an occasional lobster.

Food was supplemented by catching grunion during certain spring and summer nights. My rule for grunion runs was the 2nd, 3rd and 4th nights after full and new moons. Near the time of high tide on these nights, which occured between 10 PM and 1 AM, we would go down to the beach in front of the Institute and pick up with our hands all the grunion we could use, as I had done at Imperial Beach. We could usually fill half a garbage can. Once while negotiating a sharp turn on the winding Biological Grade going up to the Dog House, the garbage can and contents fell off the running board, spilling all over the road, after which the location was known as grunion curve.

Attempts were made to photograph the fish spawning in the dead of night. I had access to the Institute's Leica camera, but there was no flash. To create light, Earl Myers mixed up an explosive mixture of potassium permanganate and powdered magnesium. About a cubic

inch or two of the mixture was placed in a curled-up pocket fashioned in one end of a strip of 35 mm photographic film, the rest of the film roll acted as a fuse. This lethal flash mixture was placed on a split-open tin can which served as a reflector. When ready, the film fuse was lighted with a match. When it had burned to the chemicals, which took a few seconds, we had a flash which lighted the whole beach. The camera shutter was left open, making the flash the exposure time. The timing of the flash was not always synchronized with the waves but it worked, and surprisingly no one was hurt. We obtained some excellent grunion pictures which documented the extensive grunion runs during those nights.

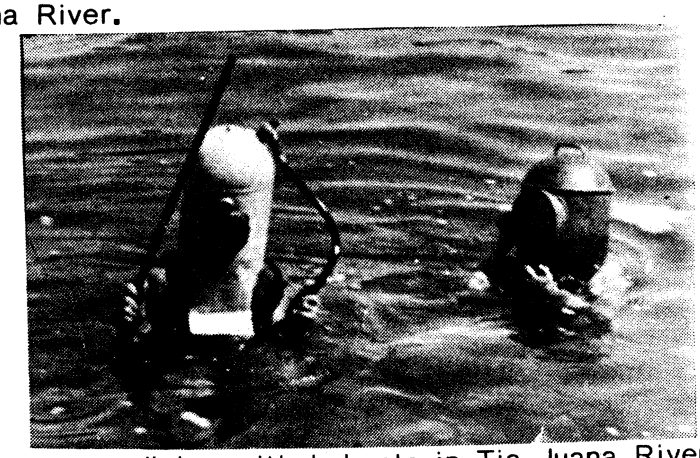
Grunion Run on Scripps Beach

Diving

Since its inception the Institute had accumulated a variety of obsolete oceanographic equipment. Some were displayed in the museum. One piece of equipment was an old diving helmet, hose and air pump. It was constructed of heavy brass and made still heavier by 4 lead weights which hooked on the chest and back plate. This gear intrigued me so I took it to the bluff near the La Jolla cove, finally got it on and entered the water. Ursel Armstrong operated the hand pump which supplied the air through a long sturdy hose. The surge in shallow water made it difficult to stand up with all

that weight on my shoulders, but in deep water it operated well. The myriad of colored fish and other sea life were overwhelming. I could not get enough viewing of these fascinating plants and animals.

The first dive was interrupted by the lack of air. Either the hose kinked or Ursel stopped pumping. The gear was slipped off and I swam to the surface. This pre-aqualung diving suit captivated me and I used it repeatedly off La Jolla and at the mouth of the Tia Juana River.

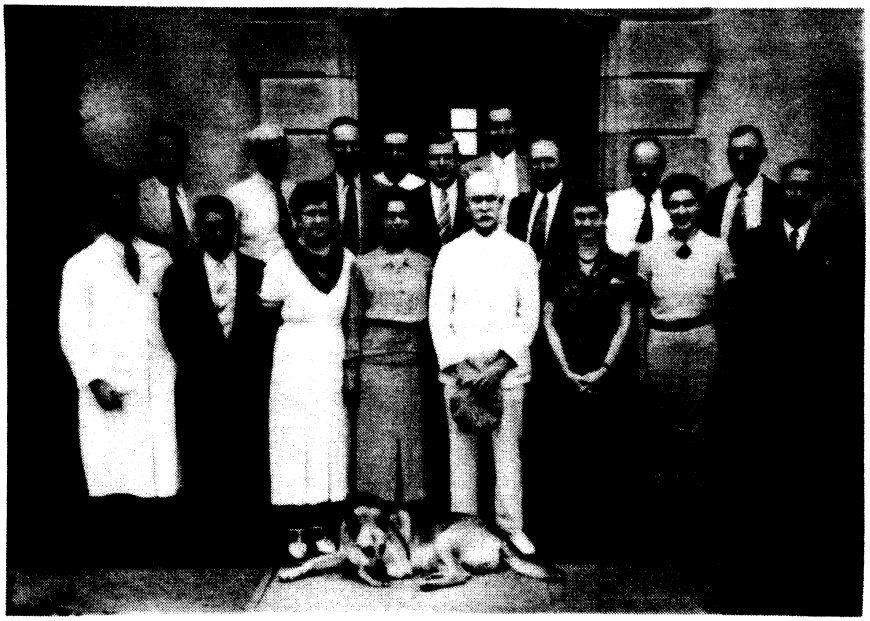


Eugene diving with helmets in Tia Juana River

Off to UC Berkeley

There was no doubt that my oceanographic activities were great fun. The Institute's facilities, programs and the association with the friendly staff were most conducive to a research career, but it became apparent that to advance in oceanography I would require more classwork. I did take several graduate courses at Scripps given by Dick Fleming in physical oceanography, Roger Revelle in marine geology, Martin Johnson in marine zoology, Claude ZoBell in bacteriology and Denis Fox in marine biology. I decided to go to UC Berkeley for further study.

Another reason for going back to school was that Dr. Vaughan planned to retire later in the year. On the occasion of his retirement a group picture of the staff was taken in front of Ritter Hall, but Katherine and I had already left in August 1936.

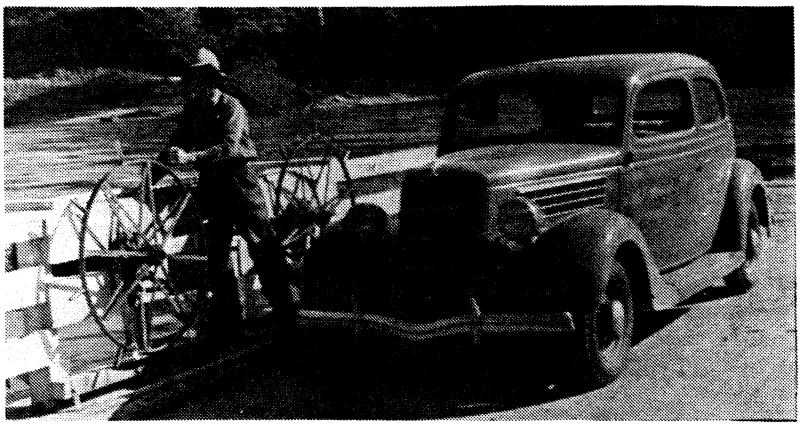


Scripps Staff in 1936. l. to r. Zobell, Fox, Barnhart, Allen, Cupp, McEwen, Ross, Genter, Fleming, Vaughan, Revelle, Johnson, Ragan, Moberg, McKitrick, Sumner, Chambers.

Katherine and I had secretly been married on 4 September 1935, in Steamboat Springs, Colorado, but did not announce it because university regulations prevented two people in the same family from working in the same department. As we departed for Berkeley, we dropped our wedding announcements in the Scripps mail box. All our earthly possessions were packed in our new 1935 Ford two-door car, and thus started our really married life on our own.

UC Berkeley

We purposely arrived in Berkeley two weeks before school started in order to find suitable housing and Katherine a job. After reserving our apartment, we went to Yosemite Park and rented a small tent and a single cot to wait out the two weeks while enjoying the beautiful scenery.



Our 1935 Ford

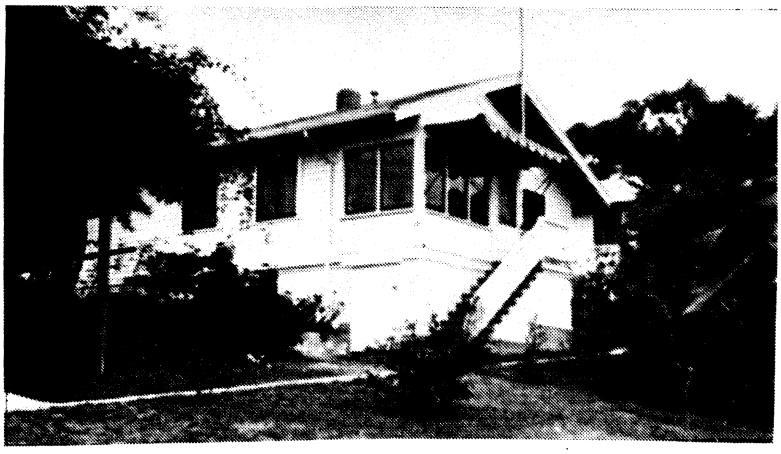
In Berkeley we rented an expensive apartment ($45 per month) on Hearst St., adjoining the campus. Fortunately, Katherine obtained a Works Progress Administration job in the Botany Department ($95 per month). I took several courses prerequisite for the Chemistry, Physics, Biology major, which was as close to oceanography as was available. I had already majored in chemistry and taken physics at San Diego State College, so at UC I took courses in biology, zoology, biochemistry and hydrology. These were not easy for me and our apartment was frequently a study hall for my classmates as well. We occasionally went to ball games and other school functions, but mostly I studied hard. Katherine attended some classes and helped me. It was a most educationally rewarding year.

Back to Scripps

After one year of intensive studies we returned to Scripps and I became a graduate student and a technical assistant in oceanography, as well as an assistant to Dr. Sverdrup and Dr. Fleming (who had just acquired his degree). I was assigned a room in the old Scripps building on the second floor next to the one used by Dick Fleming and just across the hall from Dr. Sverdrup. This was my own room (part of the time shared with Bonnie Groves) from May 1937 to August 1940.

On returning to Scripps in 1937, we rented an apartment on the lower level of cottage 24 on the Scripps

campus. However, in a few months we were able to move into cottage 26 where we remained for nine years, moving to Azure Vista, San Diego, in October 1946.



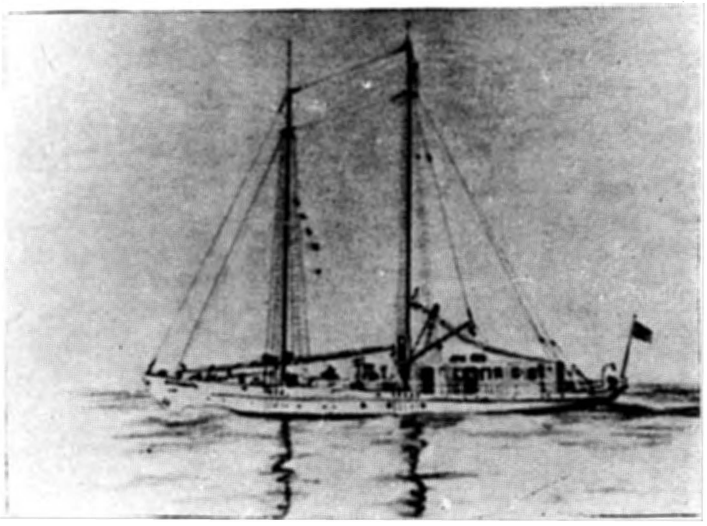
Our home from 1936 to 1946, cottage 26

New Programs

During my 1936-37 year at UC, Dr Vaughan retired and **Dr. Harald U. Sverdrup,** a physical oceanographer from Norway, became the Director. He proved an outstanding Director, extremely knowledgeable in oceanography and meteorology, and he set an example for

Dr. Harald U. Sverdrup

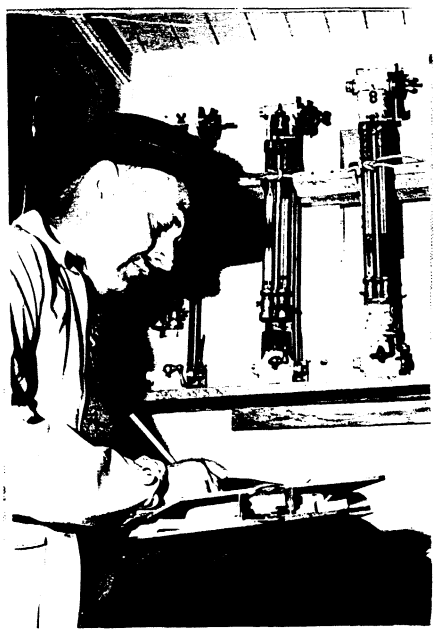
all of us, of just how much productive work could be accomplished by hard work. He was more than fair in his administration and effective in getting funds for the Institute, but never asked for a raise for himself. After the R/V Scripps had a gas explosion and fire, which severely burned Murdy Ross, Sverdrup was able to secure a two-masted vessel which he named the **R/V E. W. Scripps.** Dr. Sverdrup then instigated an oceanographic field program consisting of 4 lines of stations extending out from the Southern California coast. The most northerly line ran seaward from Point Conception and the most southerly one started a little south of San Diego and ran out about 180 miles from shore. These were repeated every two months and I participated in all cruises and collected the data.



R/V E. W. Scripps, 1938

Two casts of Nansen bottles were employed at each station, with the deepest normally to 600 meters. The ship operated 24 hours per day with two 6 hour shifts, 6 to 12 and 12 to 6. I usually had the 12 to 6 watch, while Dick Fleming or Dick Tibby was in charge of the other watch. One of my responsibilities was to stand on a small overside platform and attach the heavy brass Nansen bottles to the wire rope, along with a metal messenger whose function was to slide down the wire and trip and close the string of bottles. The bottles were clamped to the wire at predetermined distances,

Putting Nansen bottles on wire



Eugene recording temperature data, 1938

as it was paid out from the wallowing vessel. On retrieval the closed bottles with trapped water samples and attached reversing thermometers, from depths down to 600 meters, were mounted vertically on racks in the deck laboratory. The mercury columns of the thermometers were read to the nearest 0.01 °C, and two samples of water were drawn from each bottle. One sample was taken back to Scripps for salinity analyses and one sample was analyzed on shipboard, by titration, for its oxygen content. Titrations were slow and tedious on the rolling ship. On these repeated cruises, I became proficient at collecting oceanographic data, and at one time (1938-40), I had occupied more Nansen bottle stations in the Pacific Ocean than anyone else.

Two people from the Bureau of Commercial Fisheries, Jack Marr and Allie Ahlstrom, usually accompanied the cruises and made net hauls for plankton. On a couple of cruises, Dr. L. Miller of U.C.L.A. did some ornithological work. The distribution of petrel and albatross was noted.

During the daylight stations some birds resting on the water were marked with dye to identify individuals. This was not easy. He would row a small boat as near as possible and squirt them with the dye.

These cruises were the first systematic oceanographic cruises made in this area. All these collected data required processing and Dr. Sverdrup, who was an excellent teacher, soon taught me the various methods of handling oceanographic data. With the help of Bonnie Groves, a statistical clerk on the WPA Program, we processed and plotted all the data soon after it was taken. I soon was able to develop short cuts and tables for more rapid processing and computing of dynamic heights, thus I was able to keep up with the sea data as they were collected. My tables and procedures were later published in a book by the U.S. Hydrographic Office.

The dynamic topography at different levels was plotted and current charts constructed. One study that I made, at the suggestion of Dr. Sverdrup, was the relation of dynamic height to sea level. Data for sea level were available from the tide gauge on the Scripps pier and no previous analyses had been made with them. The dynamic height (0/500 meters) was obtained from data collected on the R/V E. W. Scripps cruises. The results of this study were written up and comprised my second paper.

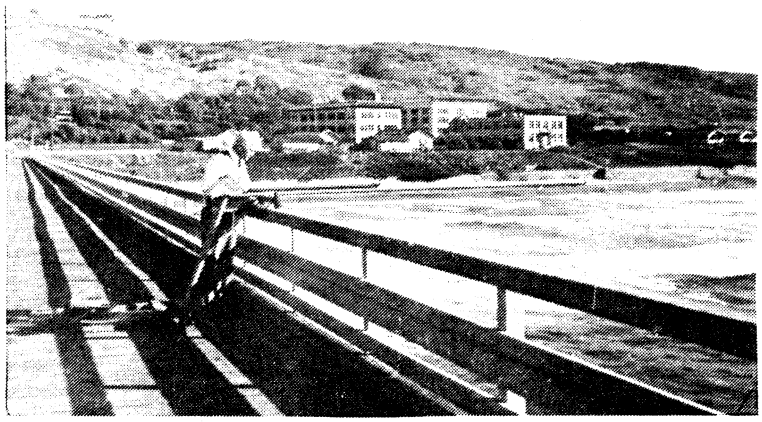
Beach Erosion Studies

In the summer of 1936, before going to Berkeley, Katherine and I drove to Vancouver, Canada, to attend a scientific meeting. We returned along the Pacific coast and collected sand samples in the surf zone every 20 miles or so from Canada to Mexico. Analyses of these samples was one of my projects.

I continued my beach erosion studies at the Scripps pier, Del Mar pier and Pacific Beach pier. The Institute had accepted a number of WPA employees. They were

people out of work who were hired according to their skills and paid by the government from $65 to $85 per month. Several of these workers were assigned to me. This was beneficial because it helped me with my programs and gave me experience as a supervisor. In addition to Bonnie Groves, a statistical clerk whose skill was useful in computing dynamic heights, and one worker who made beach erosion measurements, others were: an experienced photographer, a translator and a draftsman. They were put to good use.

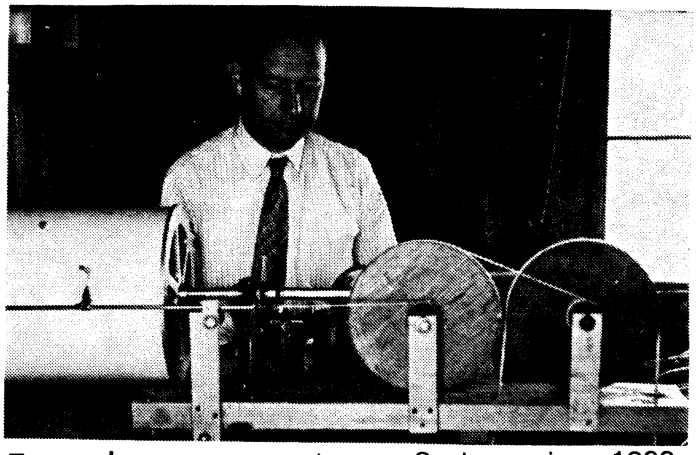
Each day we sounded from the deck of the south side of the Scripps pier to the sand. Carl Johnson, an expert handyman, constructed a sounding device for me with rollers which rested on both the rail and deck of the pier. A boom extended out about 10 feet from which the sounding wire was lowered. This avoided, to large extent, sounding in the depressions around the pilings. For more than a year the contraption was rolled the full length of the 1000 foot pier, taking soundings at 50 places, while avoiding the area around the pilings. This provided a daily near-shore profile of the sea floor from which semi-monthly cycles in sand fill and cut were discovered. These cycles corresponded to the grunion runs. The sand on the foreshore filled immediately after the grunion had spawned, burying the eggs deeper while they incubated. Then about 10 days later the sand eroded, exposing the incubated eggs ready for hatching. These data provided the basis for other papers.



Sounding apparatus on Scripps pier, 1938

Wave Studies

The beach erosion studies were supplemented with data from the tide gauge and a wave recorder. Dr. Hugo Benioff of the Caltech Seismological Laboratory, offered me a used seismological recorder drum with gears and clockwork, and Carl Johnson combined these with wooden reduction gears. Cables were installed at the end of the pier which guided a float vertically, and its motion, reduced by the wooden, reduction gears, was recorded on the seismological drum. This provided 8 minutes of continuous accurate wave heights daily.



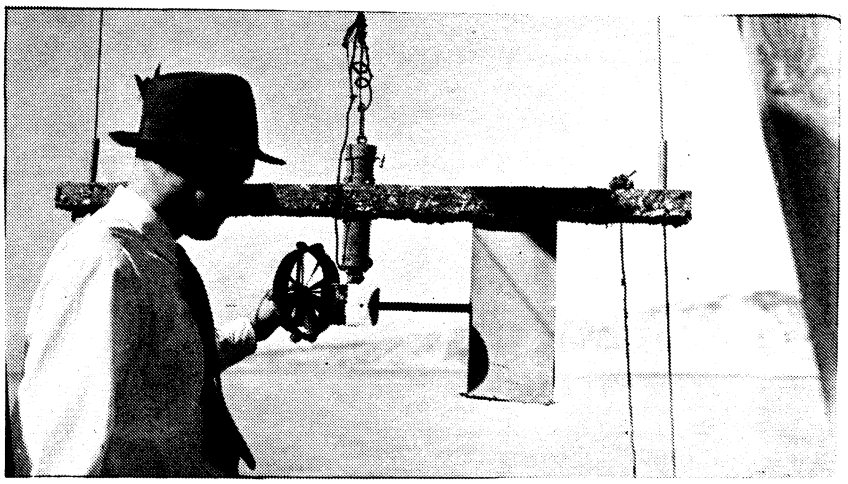
Eugene's wave recorder on Scripps pier, 1939

Current Studies

A current meter had been brought to Scripps from Norway by Dr. Sverdrup. The meter had been made by Odd Dahl for the R/V Maud, and had been designed for the arctic. This, too, was installed on the pier (north side) and it recorded continuously the speed and direction of current flow. The results showed significant north and south flows lasting several days each, which correlated with the spring and neap phases of the tide.

Mussel Studies

Another study, part of a research program under Dr. Denis Fox, was an investigation of the filtering function of mussels. I constructed a frame which held 2 five-gallon, open mouth jars, and suspended them just



Eugene with Dahl current meter on Scripps pier, 1938

below the surface, off the pier. One jar contained about 30 mussels, the other was similarly filled with rocks, as a control. I would haul the unwieldly contraption up out of the water every few days and find out what collected in each jar. The results clearly demonstrated that mussels effectively filter water and secrete a large quantity of sediment in the form of pellets which settle out from the water onto the sea floor.

Panama-San Diego Cruise

One of the ships operated by the U.S. Hydrographic Office was the **Bushnell** which in 1939 was coming from the east coast through the Panama Canal to San Diego and on to the Hawaiian Islands for survey work. The Hydrographic Office offered to collect vertical series of temperature and salinity (called hydrographic stations) for Scripps, between Panama and San Diego. I was invited by Dr. Sverdrup to join the ship and supervise the collection of data similar to that I had been doing on our Scripps cruises. I packed up reversing thermometers, water bottles, and chemicals for use in the determination of oxygen in the water samples.

The trip down to Panama on the cruise ship S.S. Washington was a new. enjoyable experience. I even had a few days exploring Balboa and Cristobal waiting

for the Bushnell. The ship had been delayed looking for a mysterious "shoal" it had recorded on its Fathometer while traversing the Caribbean at night. The "shoal" was undoubtedly the deep scattering layer, an undiscovered phenomenon at that time. Eventually, the ship arrived in Cristobal. I set up the chemistry lab on board and proceeded to occupy 12 hydrographic stations en route between Panama and San Diego. Along with the hydrographic personnel aboard, we sampled water at various depths and discovered a new water mass and an extensive oxygen minimum layer off the Mexican coast, where the oxygen content of the water was less than 0.1 ml/l; virtually deplete of oxygen. This was the first oceanographic cruise in which I was chief scientist.

The Oceans

About this time Sverdrup, with the collaboration of Drs. Martin Johnson and Richard Fleming, was asked by Prentice-Hall Press to produce a much needed reference book on oceanography. I was called upon to draft most of the figures, about 220 in all. The publication of the book, called **The Oceans**, in 1940 was celebrated with champagne in Dr. Sverdrup's home. Of the 6 complimentary copies, one went to each author , one went to Dr. Vaughan, one to Ruth Ragan and one to me. This was a hard-working, productive period, interupted only by involvement in the war effort of WWII.

It was decided that the Institute would continue offering as much assistance to the war effort as practical; in addition some of us would join the newly created University of California Division of War Research, located at the U.S. Navy Radio and Sound Laboratory on Point Loma.

UNIVERSITY OF CALIFORNIA
DIVISION OF WAR RESEARCH

Origin

In 1940 war seemed inevitable. At that time the scientific preparedness of the U.S., especially for subsurface warefare, was studied by a Committee of the National Academy of Sciences, with its findings being subsiquently turned over to the Navy Department. As a result, the Chief of the Bureau of Ships requested Dr. Vannevar Bush, Chairman of the National Defense Research Committee (NCRD), to take the necessary steps to impliment the recommendations. This resulted in the establishment of two research laboratories; one at the U. S. Navy Underwater Sound Laboratory in New London, Connecticut, and the other at the U. S. Navy Radio and Sound Laboratory on Point Loma in San Diego, California.

Dr. V. O. Knudsen, then Dean of the Graduate School of the University of California at Los Angeles, was appointed to get the project going and eventually he became the first Director. Thus, the University of California Division of War Research was created to conduct research and development, principally in submarine research.

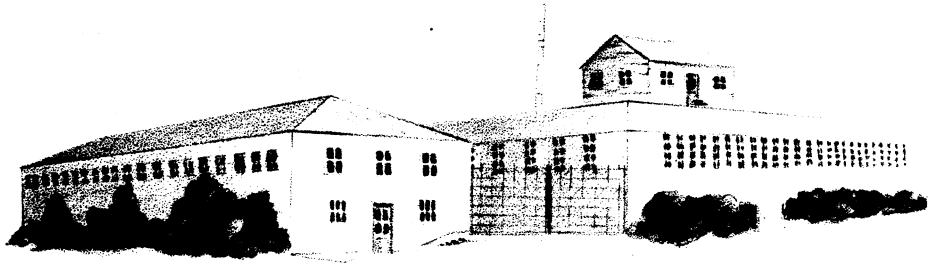
Initial Staff

At that time Scripps was administered by UCLA, Dr. Knudsen's campus. It was only natural that the Director of Scripps, Dr. Sverdrup, be called upon to participatre in the organization of the oceanographic part of UCDWR, which was to be engaged in oceanographic research and fundamental sonar studies. It was decided that Scripps would continue offering as much assistance to the war effort as practical, but some of us would join UCDWR. It was evident that Scripps had an efficient and productive research organization and would be effective in the war efforts.

On 1 July 1941, Dr. Sverdrup moved a small group of Scripps oceanographers to UCDWR. The members of the newly created **Oceanographic Studies Group** were Dr. Fleming, Richard Tibby (graduate student), and Mrs. Bonnie Groves (statistical clerk). I remained at Scripps one month longer to finish some final drawings for "The Oceans", and reported at Point Loma on 1 August 1941. We 5 constituted the original oceanographic group at UCDWR, the Laboratory which developed into the Navy Electronics Laboratory, etc. As the Laboratory grew, many of the early personnel came from U. C. campuses; later representation was from nearly every state. Dr. Sverdrup spent 3 days per week at UCDWR; during the other time he continued his duties as Director of Scripps.

Quarters

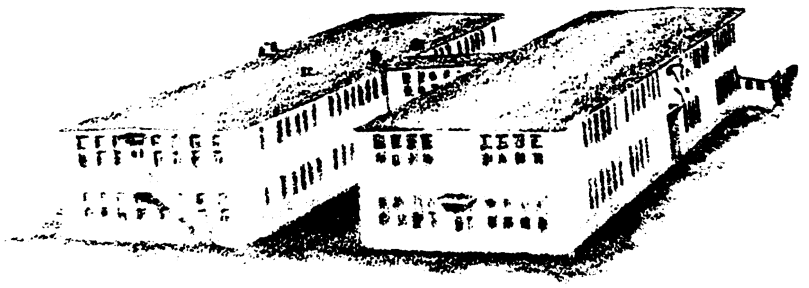
The first 5 of us were quartered in a central room of Building 4 on the crest of Point Loma. This was the only building available at the former radio station. Space was meager. In the early phases it was as little as 30 square feet per person but later increased to 75. With rapidly increasing personnel, other buildings were constructed. The then called **Oceanographic Section** moved in February 1942 to the west end of Building 1, newly built adjacent to Building 4. Here we had one



UCDWR Buildings 1 and 4 on Point Loma in 1942

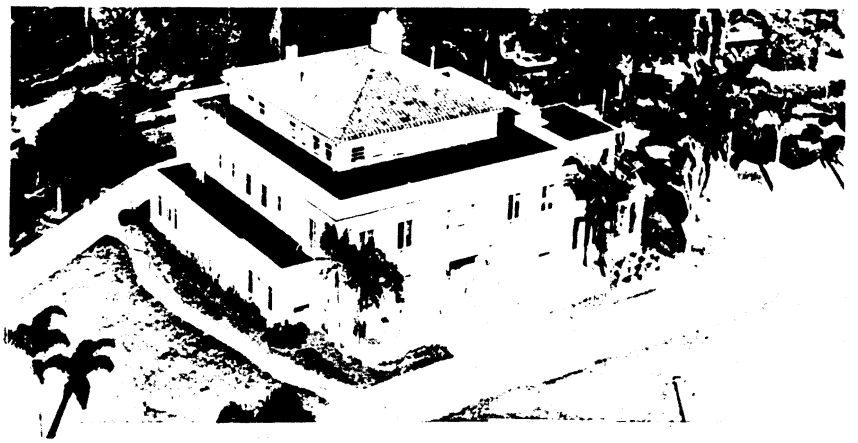
large room and 2 small offices. As additional programs were taken on by the **Oceanographic Section,** more staff were added and more space was required. In June 1943 we moved to Building 3, later known as 3E, when an adjoining duplicate structure was built called 3W. Building 3 was on San Diego Bay in the

Navy's Sound School grounds, and adjacent to a convenient pier from which local sea trips were made. Buildings 3E and 3W became the Admiral Kidd Officers Club after the war.



UCDWR Building 3 on San Diego Bay in 1943

Space continued to be critical, so a large house was rented a couple of miles away in Loma Portal near the Point Loma High School. This was known as the Bridges Estate and house was called building X. In May 1944 the non-seagoing part of the **Oceanography Section** moved to this luxurious home. There was an organ in the central part whose pipes extended 2 stories My office, located off a bedroom, was a former dressing room with embossed cloth wallcovering. A large wine cellar was converted to a dark room for making bathythermograph prints. We were quartered here until the latter part of 1945, the beginning of the dissolution of the **Oceanography Section.**



UCDWR Building X in Loma Portal in 1944

Transportation

Point Loma was a goodly distance from Scripps, and with gas rationing transportation was a real problem Four of the 5 members lived on the Scripps campus. The problem was solved when Dr. Sverdrup purchased a 1937 Ford. He drove it 3 days a week, taking all of us, and he allowed us to drive it to Point Loma on the other 3 days of the working week. When he was forced to give up work at UCDWR, he sold the car to 6 of us who still needed to commute from Scripps and La Jolla. However, since each person owned only one sixth of the car and there was little spare time, each felt that the other 5 should take care of the maintenance; this no one did. The surprising thing is that the car held up for 4 years to the end of the war, tho the exaust spewed so much black smoke that passing motorists would tell us that we were on fire. We did, however, purchase, but never used, a fire extinguisher.

Oceanographic Investigations

The main oceanographic programs at UCDWR consisted of: acoustic support, sea floor studies, harbor surveys and BT programs.

Acoustic Support: Nearly all of our oceanographic studies were in support of acoustics. They included sea surface roughness, bottom roughness and water structures, sometimes measured simultaneously with acoustic measurements. Even some biological work was carried out by Dr. M. Johnson, at Scripps, when he was able to account for an ambient noise caused by shrimp. A hydrophone was suspended at the end of the Scripps pier and the recorded sound intensity was found to increase at sunrise and sunset. I scaled the light intensity from the pyroheliometer on Ritter Hall and correlated it with the sound intensity.

The deep scattering layer, a diurnal vertically migrating layer in the ocean, was first known as the ERC (Eyring, Raitt, Christensen) layer, after its discovers. It was initially thought to be a physical discontinuity in the water column, but after much water sampling and temperature measurements, it was finally attributed to marine

organisms. Dr. Gorden Tucker later made many net hauls with a closing net at specific depths and concluded that the deep scatering layer was a variety of usually small organisms.

Dr. Gordon Tucker

Sea Floor Studies: It was soon realized that the depth of water and the type of sediment had an influence on sound absorption and scattering, thus information on marine geology was desired. Dr. Francis Shepard was the first geologist to join the **Oceanographic Section** in 1941 and was followed by Ed Bushman, Dr. K. O. Emery and Dr. Dana Russell. They sounded, sampled and photographed the local operating areas, and by using the sediment notations of sand, rock, mud, etc., on existing navigational charts, were able to contour the type of sediment in many coastal areas.

Harbor Surveys: The defense of harbors, stimulated by the Pearl Harbor attack, was of immediate concern. In addition to submarine nets across harbor entrances much effort was expended on listening arrays, placed some distance out from the harbor, which were designed to detect enemy craft. A knowledge of depth, currents, bottom type, thermal structure, ambient noise and fouling, was desirable for the optimum location for these arrays.

New York harbor was the first area to be environmentally surveyed. Although USNUSL had primary

responsibility for the east coast, they lacked in oceanographers. As a result, in early 1943, I was sent by the Laboratory to New York to assist in a 3-month oceanographic-acoustic survey of the approaches to New York Harbor. This was in the middle of the winter and working from a small boat in the open Atlantic Ocean was a challenge. Almost every day, including Sundays, I commuted from the Lexington Hotel in Manhatten by subway and ferry to the snowy docks of Brooklyn Navy Yard where we boarded a small boat. A glass enclosed hut on the stern, which housed our acoustic recorders, bore a sign put up by the navy crew "Farmers Mate Wanted - Quick Rate". This survey was followed by a 3-month survey of the approaches to Block Island Sound. Spring weather made this more enjoyable. There were analyses of our data at USNUSL in New London and at UCDWR to determine the optimum location for instalation of submarine detection devices.

Another harbor survey in which I participated was the approaches to San Francisco Bay. This was strictly an UCDWR affair, in which Dr. Russell, Dr. Shepard and Lt. Jess Long were also engaged. The shoal off the north side of the outer channel is appropriately called "Cactus Patch". The high, steep, short-period waves washed over the rail of our small boat, making the work exciting. Although the harbor survey program had grandiose ideas of including foreign harbors, the last surveys were off San Pedro, Pearl Harbor, Kaneohe and Midway. I did not participate because of my new responsibility with the expanding BT program.

BT Program: In sonar operations, one of the first phenomena to be investigated was refraction. The effect of this phenomenon was surmised by Captain Rawson Bennett, then at the Fleet Sonar School in San Diego, when he observed shorter sonar ranges occuring in the afternoon and called the phenomenon "Afternoon Effect". Dr. Roger (then Lt. Revelle) and Dr. Fleming helped explain the actual refraction process based on Schnell's Law.

The bathythermograph was just being developed at Woods Hole and its use in Anti Submarine Warefare was proposed. One BT had been sent to Scripps in

Roger Revelle

Dick Fleming

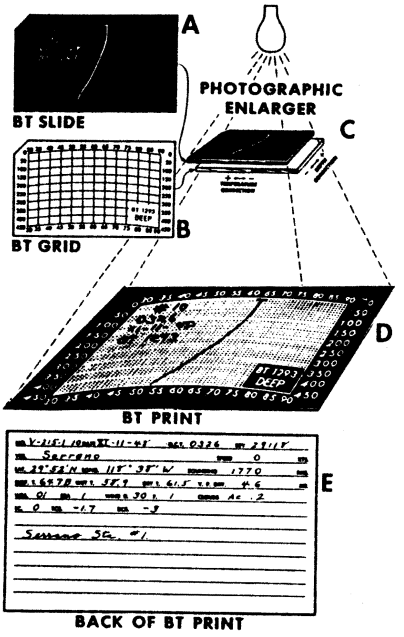
November 1940 for testing. When lowered on a wire into the sea, it produced a detailed trace of temperature vs depth on a smoked slide. These recorded changes in vertical gradients provided information which could be used to determine sound refraction patterns and thus range of detection.

Mechanical Bathythermograph

When bathythermograph instruments were issued to the fleet by BUSHIPS, programs were set up to train Navy observers in their use and in the handling of the data. Headquarters for this program were based at Pearl Harbor and Lt. B. King Couper was assigned to train Navy ensigns to install and operate bathythermographs. The BT program also included the training of civilian scientists as BT field engineers and instructors. Their responsibility was to go out to the fleet and explain, with the aid of printed manuals and charts, what was known about the relationship of the oceanographic

environment and sonar range, bouyancy, etc., as it was being evolved by oceanographers and acousticians at UCDWR and elsewhere.

The program called for Navy ships, with BT equipment to collect as much data as practical. All resulting BT slides, taken in the Pacific and Indian Oceans, and their related log sheets, were sent to UCDWR, where I was given the responsibility of their processing and analyses. The approximate sonar range for submarine detection was computed from the recorded depth of the upper mixed layer and the strength of the underlying thermocline. These ranges were summerized both temporal and spacial to create sonar charts. The opperation, at its peak, employed about 30 people engaged in photographing the slides, transcribing related data on the back of the prints, scaling temperatures, computing sonar ranges and compiling the sonar charts.



Photographing BT Slides

A similar arrangement for processing BT data taken in the Atlantic Ocean was set up at Woods Hole Oceanographic Institution (WHOI) under Jeff Allen and Fritz Fuglister. Every 6 months Fritz and I would take our

data, summarized on charts to New York in order to standarize and compare results. For several days we worked at the OSRD office on the 58 floor of the Empire State Building from early morning to 9 PM. But since we were in the big city, we felt we should take advantage of the opportunity to see the sights and bright lights, and as a result we had little sleep.

Our charts were quickly printed by the U. S. Navy Hydrographic Office and issued to the fleet. In order to get a feed–back, we held a conference in 1943 with naval officers in Honolulu, in which Lt. Cdr. Roger Revelle and Lt. B. King Couper participated. As a

B. King Couper of BuShips

result of our deliberations we produced more elaborate charts giving month-to-month information as well as near-surface and at-depth ranges. Every 6 months for nearly 3 years we produced a set of up-to-date charts, based the thousands of accumulated BT data for both winter and summer seasons, for the North and South Pacific and Indian Oceans.

Phasing Out of Oceanography at UCDWR

Fortunately, the war drew to a close and the sonar chart program was terminated. However, the scientific potential of the valuable collection of BT temperature data covering the Pacific and Indian Oceans was apparent. In 1945, Dr. Sverdrup and I arranged to transfer this extensive collection of bathythermograms and a staff of 6 analysts to 2 rooms on the lower floor of the Library building at Scripps. Here we began an intensive study of the thermal structure of the ocean. I was glad to be nearer home and back on the Scripps campus.

The BT processing still remained at Point Loma for a few months longer, under Margaret Robinson, but it too moved to Scripps. After the war the amount of BT data to be processed decreased, but the detailed analyses of world temperature structure continued for many years.

Other members of the then called **Oceanography Department** at UCDWR soon left the laboratory and returned to former, usually academic, positions, most thankful the conflict was over.

BT Distribution in the Pacific Ocean before 1969

OCEANOGRAPHY AT NAVY ELECTRONICS LABORATORY

Structures Section

With the termination of UCDWR as such, and its conversion to the Navy Electronics Laboratory (NEL), the initial oceanographic organization started by Dr. Sverdrup was completely dissolved. However, it was immediately realized that oceanography was also needed in the new organization in order to understand any meaningful relationship in underwater acoustics. As a result, a Structures Section within the Propagation Division was set up and I was invited back from Scripps to head this Section.

Dr. Waldo Lyon, head of the new Propagation Division, was already a physicist in the navy civil service part of the Laboratory, working on ship wakes and related programs. His invitation, uncharacteristically on a dance floor, to head NEL's oceanographic effort, presented a difficult decision. Should I give up my secure and comfortable position with the university and a home on the campus overlooking the ocean to enter an unknown future for me and my family? However, the new position seemed like another challenge and at a more lucrative GS-5 civil service level. Furthermore, Dr. Lyon's friendly

Dr. Waldo K. Lyon

and cooperative attitude was reassuring. Thus, I became a federal civil servant on 7 April 1946, which position lasted for 27 years.

Bikini Atom Bomb Tests

Even before I could develop an oceanographic program for the new NEL organization, I was needed for the Atom Bomb Tests at Bikini Atoll. A group of Japanese war ships had been assembled in Bikini Lagoon and two atom bombs were to be detonated, one in the air and one under water, to see what effect the bomb would have on war ships and other objects, including animals on board. It was a hurried but rather complete experiment.

There was considerable public opposition to deploying more atomic bombs. For example, full page advertisements appeared in Time magazine contending that the detonation would trigger a chain reaction and destroy the earth. I had some apprehension to again leave Katherine and 2 young active and mischievious boys, prone to illness, but I flew on navy planes to Kwajalein, tranferred to a sea plane and on to Bikini Lagoon. I was quartered on the crowded survey ship Bowdich with many other scientists studying animal and plant life, to be reevaluated after the bomb blasts.

On the plane the crew informed me that a fellow at Bikini had the best possible job. All he did was to shoot birds with a shotgun. However, I found out later that he did shoot birds by trudging through the sweltering jungle, taking them back to the ship in the evening, identifing and measuring them, and then skinning them until late into the night and drying their stretched skins. It was probably the hardest job of any of us.

Nearly all oceanographers in the U.S. were conscripted for the operation. In fact, Woods Hole even put an add in the Boston newspaper to attract people, who were then trained a few weeks and sent to Bikini. I was needed in an oceanographic program designed to determine the currents in the open sea around the atoll, a type of operation with which I was familiar from former Scripps days. This involved

Oceanography group on the USS Haven

occupying Nansen stations from a small gunboat with Hal Turner, a veteran from Woods Hole, the data from which was to be used for computing geostropic currents. We occupied lines of stations in all directions from the atoll, in the hot, rough trade wind zone. It was a 24 hour day operation and even the gunboat crew found it uncomfortable. Finally, the skipper of boat declared the stern to be "off limits" and served cold beer, a no-no for navy ships.

Between cruises we had an opportunity to dive in the lagoon and explore the tropical fauna and flora. It was a molluscologist's haven, with an unspoiled wide variety of beautiful molluscs. I treasured the small ruffled and large colored tridacna, some as large as 2 feet in diameter and too difficult to retrieve from 20-30 foot depth. Most aspects of the operation were classified, and theoretically we were not supposed to wander about the islands comprising the atoll. However, by carrying a glass bottle and convincing the guards that we were collecting samples, we had a free run. I had brought with me one of the earliest pair of fins and a face plate, which proved ideal for the sport.

Tridacna shells from Bikini atoll

As the time of the bomb detonation in air approached, I was transferred to the hospital ship U.S.S. HAVEN, where a group of technicians from Woods Hole, under the direction of Dean Bumpus and John Lyman, had an oceanographic office in a large hospital records room of the ship. They were studying the circulation within the lagoon by both current meters and water properties. The purpose of the study of outer and inner lagoon was to establish the flow patterns which the radioactive material would follow after the bomb was detonated.

The first bomb was scheduled for air detonation on 1 July 1946. A group of about 90 Japanese and a few U.S. warships, anchored at one end of the lagoon, served as the target. All personnel and other ships were moved out of the lagoon and 60 miles up wind of the blast. At the scheduled time for the blast, I stood on deck of the HAVEN behind a large winch used to lower a life boat. I faced away from the bomb with the winch between us, then folded my arm over my eyes. This was the moment of truth. Would the bomb go off? If so, would it create some sort of chain reaction, as predicted in ads in Time magazine, and destroy the earth? We even had a contest onboard to see who could guess most accurately what was going to happen. There were few correct guesses because many feared the worst.

As the bomb went off high in the air, I could clearly see the extremely bright flash which went through my arm, even while standing behind the winch which towered over my head, and all at a distance of 60 miles away. This exploding bomb was most awesome and impressive,to say the least, and left an unforgettable imprint on my mind. How could anything be so bright?

Jerry Black and I then transferred to a smaller vessel and within a few hours after the detonation, were the first to enter the lagoon and anchor over one of the larger ships sunk by the blast. Our mission was to make repeated samplings of the water at different depths to be used for ascertaining the intensity and distrbution of radiation. Although we wore badges to determine the doses of radiation on our bodies, the results were never revealed.

The weeks between the first and second bomb detonation gave me time to arrange for other programs. I designed patterns of BT stations around the atoll, to be carried out by two destroyers (DDs) at a time. The results established, and I later published, a relationship between bathythermograms and dynamic height calculations for current flow. In addition, we arranged for 2 DDs with Nansen sampling capability to be put at our disposal to occupy stations from 20° N to 5° S across the equator. Lyman was in charge of the program on one DD and I was in charge of the other. A cast at each degree latitude was made from identical lines 10 degrees (600 miles) of longitude apart. I recall both ships were stopped occupying their 0° (equator) station when Lyman radioed me that he was experiencing a 70° degree wire angle In other words, the wire with bottles was nearly horrizontal as it left the ship. I, too, from 600 miles away was experiencing a 68° wire angle in dead calm weather. The importance of this unusual discovery was not further investigated until 10 years later when drifting fish nets revealed the existance of a west flowing subsurface current on the equator. It was named the Cromwell Current.

Also, crossing the equator brought on the traditional shellback initiation. Garbage was accumulated for several days, placed in a 20-foot long canvas tube and allowed to decompose in the tropical heat. Each of we pollywogs

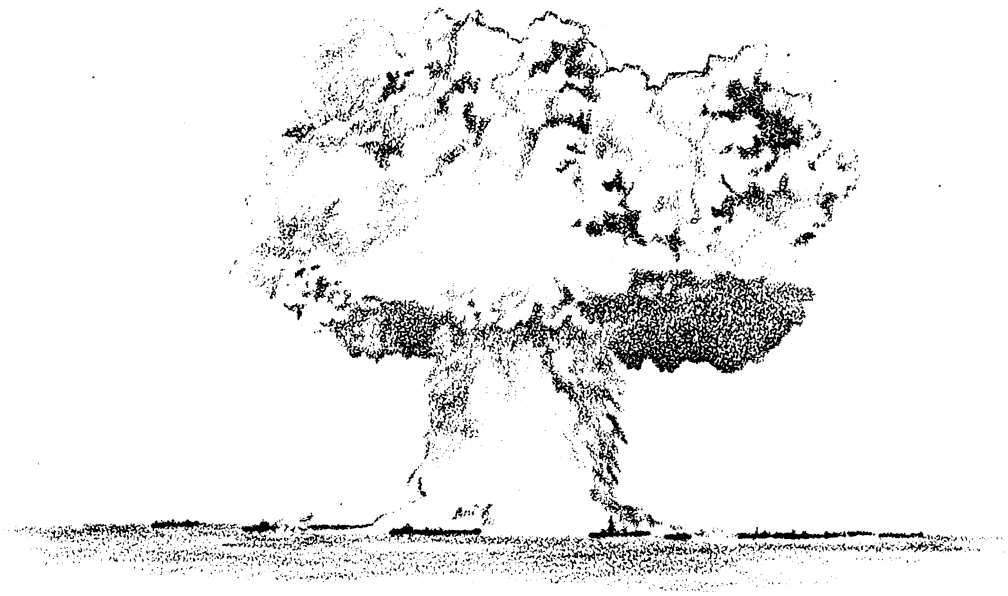
was required to crawl through this stinky mess and then be hosed off with a fire hose, to the enjoyment of those shellbacks who had previously crossed the equator.

One day between bombs a few of us requisitioned a landing craft, on some pretense, to go to a distant remote, unspoiled island called Namu. While the others dove for tridacna, I decided to walk across the narrow island whose width was only a few hundred yards from the lagoon side to the open sea. I entered the tall tropical growth but could penetrate only a short distance. The intertwining growth made it physically impossible to get through without a lot of cutting which I was not prepared to do. Furthermore, the stifling heat, devoid of any breeze, in the dense tropical jungle discouraged any further penetration. This experience permanently quenched my desire for further jungle exploration.

There was an officers club set up on the main island though it had very limited drinking hours. We occasionally visited the club in the evening and its environs seemed like a good place to bury my collected shells. The theory was that the organisms in the sand would eat the flesh on the shells, thus cleaning them and removing the smell. Unfortunately, the sand living organisms were not hungry enough and were of little help in the short time we were there.

For the scheduled underwater blast, I was tempted to bring the smelly molluscs back aboard the Haven so they would not be washed away by waves caused by the blast. Fortunately, I ran into Dr. Lyon, my boss who I had not seen for a couple of months. He correctly forcasted and assured me that the underwater blast would not cause a wave that would wash over the island. Thus, I left my shells buried a little longer. He also asked me if I was turning in overtime. Overtime? I had never heard of it working for the university, but it turned out that on civil service one is entitled to it. A pleasant revelation.

For the second bomb explosion on 25 July our ship was moved 20 miles away. Being 90 feet under the water we were not affected by the brightness, in fact a few of us were asked to make rough measurements of the speed at which the water column was forced up into the sky. I was issued a graduated plastic scale which I held at arms length which showed heights at 20 miles away. My measurements indicated 3000 feet in $1\frac{1}{2}$ seconds which is 1500 miles per hour. It was a fantastic sight, this massive column of water 2000 feet in diameter and 5000 feet high moving upward with a couple of the 100 naval vessels airborn in white water. Atomic bombs are more awesome than I could ever believe.



Underwater explosion in Bikini lagoon

After 2 months of testing most scientists flew home, but I was invited to ride a DD back to San Diego in order to help prepare a summary report of the oceanographic activities associated with the operation. Thus, I was busy all the way home. We stopped briefly in Honolulu, then on to San Diego. Meanwhile the shells had been dug up, packed in sawdust and the stout wooden box securely sealed. A returning ship brought it to San Diego and a surprised Katherine was delighted to receive it. Delighted, that is, until the box was

opened, by this time they were truly a stinking mess. Katherine "digested" the meat by soaking them in water containing a small amount of lye. Every day the water was changed and loose meat fragments shaken out. By the time I arrived home the shells were clean and beautiful, but Katherine had a few words to say about the gift.

Our DDs anchored off the 32nd street naval station. Katherine and boys came to meet me but unfortunately we civilians were ferried to the Broadway pier. One taxi driver declined to let us in his cab, fearing we were radioactive. Thus ended my memorable Bikini experience.

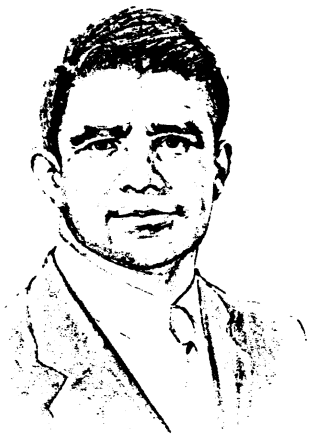
Develoment of Structures Section

After the Bikini tests ended in late 1946, I returned to NEL and assumed my new position as head of the Structures Section. The need for oceanographic information was evident in a variety of NEL programs. For shallow water acoustics studies, a knowledge of the depth, bottom roughness and type of sediment, as well as the sea surface roughness and sound velocity structure of the water present at the time of the acoustic testing was necessary. Thus, we initially provided services to other groups, but soon started oceanographic research studies on our own.

Helen Steward, Secretary

Initial Oceanographic Staff

To provide the oceanographic services I had to assemble a new staff of oceanographers, since virtually all, including myself temporarily, had returned to their pre-war jobs. Bent Holtsmark of the former BT Section was available and was the first to join the new Structures Section. Helen Stewart, a secretary both at Scripps and UCDWR, became my first secretary and an important addition. I was fortunate in acquiring Dr. Robert Dietz, a former geologist at Scripps, who had recently been released from the air force, and Gary Prible right after he had been discharged from the army. Gary had been drafted from our 1942 UCDWR group, acquired additional cartographic training in the service. Dr. G. W. Marks, a chemical physicist with Scripps in 1935, had transferred to the Department of the Interior, and now came back as our chemist. Development and operation of oceanographic equipment were taken over by Joe Roque who had worked on Scripps ships, and Herb Mann, a former Scripps sea going technician, joined at this time. To help with electronics, we acquired Harold Lucens, a UCDWR electronics technician. The marine geology work under Bob Dietz, was later strengthened by the addition of Alfred Carsola and Robert Dill, recent USC graduates in geology. Others were hired as the programs broadened, and the Captain and Technical Director wanted to expand the laboratory.



Bob Dill

Dr. Bob Dietz

NEL OCEANOGRAPHIC PROGRAMS

Harbor Surveys

Harbor protection, an extension of the war time program, was proposed as a suitable program for the Structures Section. To study the operation of equipment and techniques, NEL had laid heavy cable off Point Loma and connected it to instruments in a building on the extreme tip of the Point. Knowledge of the nature of the bottom topography, sediments, sound velocity structure, marine fouling, currents, etc., as well as flushing of the adjacent harbor, was essential.

Harbor surveys in Italy, Japan and other countries, were envisioned, since it would be possible to make such surveys, as U.S. ocupational forces were still there. Furthermore, we had already had experience in several U.S. harbors. For this proposed program, several people were hired, including Ed Buffington, Ernest Anderson, Don Pritchard and Ted Saur. Although charts and existing data were compiled, the surveys were never actually made. Several reasons contributed to the demise of the program, one of which was the desire in the new organization to conduct research instead of surveys. The influx of these young, well trained people strengthened the Section scientifically.

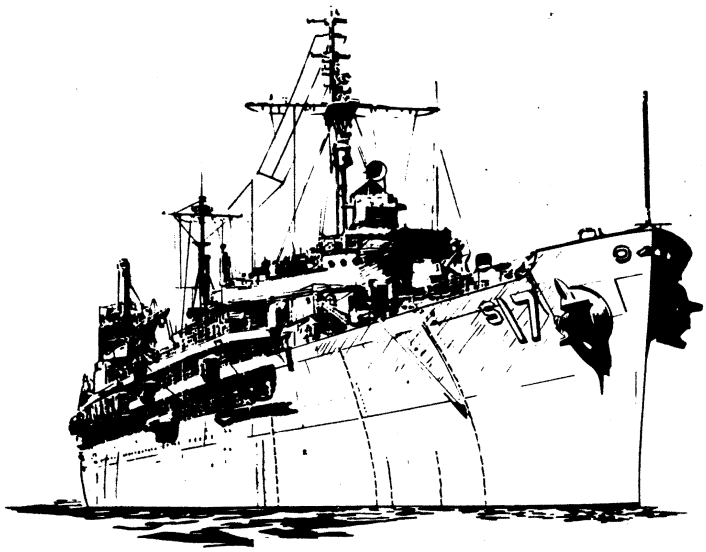
Antarctic and Arctic Oceanography

Even before personnel for the harbor survey program were hired, the Laboratory was assigned the problem of investigating the Antarctic and Arctic Oceans for submarine operations, a type of work that fell in Dr. Lyon's division, which included the Structures Section. The program, of course, required oceanography, i.e., investigations in areas where very little work had been done. It offered a real challenge.

Antarctic Cruise 1946-47. In connection with the Antarctic phase of the program we had an opportunity to send scientists on the program called HIGHJUMP. Dr. Dietz was sent on the USS Henderson and Herb Mann went on the USS Cacopan. BTs and bottom snappers were assembled and they participated in the southern

summer cruise in 1946-47, which operated around the ice sheet in the southern Pacific and Indian Oceans. They also took BT obsrvations enroute, and more or less single handedly established in detail, the temperature structure in the antarctic convergence. They also determined the sediment type and water structure around the antarctic ice boundary. Aside from the Bikini current study, this was the first research carried on by the new Section.

Arctic Cruise 1947. In connection with the Arctic phase of the program we were informed that Submarine Squadron 1 was taking the 30,000 ton submarine tender NEREUS and 4 submarines to the Bering and Chukchi Seas. By use of these ships we would have an opportunity



USS NEREUS

to investigate this relatively unexplored area. We assembled and bought from Kahl Scientific Instrument Co., all the oceanographic equipment we could, and developed a program to measure as many oceanographic variables as possible. All available oceanographers in the new Section were recruited. The field party consisted of Dr. Wally Marks, Don Root, Herb Mann, John Knauss, R. E. McFarland (a photographer), Walter Munk (from Scripps) and myself. Dr. Lyon and some other acoustical people were on the submarines. We rigged the massive NEREUS with an A-frame on the high stern

deck, and gathered Nansen bottles, corers, LaFond-Dietz bottom snapper, plankton nets, underwater cameras, bathythermographs, underwater listening gear, sampling bottles, etc. The NEREUS was loaded in San Diego and we later flew to Honolulu to join her. While in Honolulu I wrote to Dr. Lyon's Administrative Secretary, "I am taking up a beach erosion study, lying on Waikiki Beach waiting for it to erode, send more money". They all laughed but we did enjoy the Island.

Navy ships are designed to accommodate the exact number of personnel to man the ship. When additional people come aboard it puts a strain on space and facilities. Furthermore, they are not designed for civilians, although we civilians are treated as officers. With the exception of Herb Mann and myself, none of our party had had sea experience nor knowledge of navy regulations which did not help living and working situations. We did have very cooperative navy officers and crew, who rigged an overside A-frame and fabricated equipment.

A-frane to lower equipment on stern of USS NEREUS

We departed Pearl Harbor 15 July 1947 on the USS NEREUS accompanied by the 4 submarines and headed north for the Aleutian Islands, arriving at the cold, wet and muddy navy base at Adak on 22 July and and explored the Island near the base.

When the ships were in harbors such as Village Cove (St. Paul Island), Port Clarence, Womens Bay and Middle Bay (Kodiak), Resurrection Bay (Seward) and Gasteneau and Taku Inlet, we made additional surveys from a small boat. At the Pribilof Islands we enjoyed a tour of the immense seal rookeries. At sea north of Adak we stopped our large ship twice a day for full physical, biological, geological and acoustical stations. This continued through the Bering Strait to the limits of the Arctic ice pack in the Chuckchi Sea. To explore the ice pack, where the NEREUS could not penetrate, a group of us took a launch from the ship and proceeded up leads in the ice cover for 8 miles. One of the party was Admiral McCain, consequently extra precautions were exercised, including the addition of a metallic-covered balloon tethered from the launch which was in radar contact with the ship. We sampled ice and

In a lead of the Chukchi Sea ice pack, 1947

sediments and plant life on the cold ice. The 4 submarines charted the ice limits and sounded in some areas. On the return trip we continued our stations into Kotzebue Sound (where my grandfather wintered in 1898-99), through the Strait and into Port Clarence.

We had all the latest Hydrographic Office Charts, one of which showed the mouth of a small river emptying into Port Clarence near the tiny town of Teller, so we decided to explore it. The ship provided a launch and coxswain, and we headed up the narrow slow-flowing river. It was remote Eskimo country with salmon drying on racks on shore. We came across a couple of Eskimos

in a walrus skin boat coming down the river. As we picked up our cameras to photograph the primative sight, one Eskimo reached down in his skin boat, pulled up a movie camera and photographed us.

An Eskimo trading post at Teller provided us with authenic mukluks, and in a visit to a small Eskimo's home the owener pulled out a tobacco can from under the bed which contained a walrus ivory bracelet. It still has the tobacco stains.

After a stop in Kodiak where we witnessed salmon running up stream to spawn, we proceeded to our last stop in Juneau. Our charts of the region showed not only the deep channels but the type of bottom sediment. We were intrigued by one of the sediment notations indicating 'gold'. The chart also showed a large glacier emptying into Taku Inlet near Juneau. Again we acquired one of the ships launches and proceeded to TAKU glacier. We climbed the enormous mass of cold, blue ice, massive chunks of which had calved off and were floating in the Inlet. In addition to sampling the ice we recorded underwater sounds produced by the glacier.

Reading thermometers with Walter Munk and Wally Marks

Thus ended the first major expedition in which I was in charge and the data from which produced several scientific papers.

As part of our continuing arctic program, we built a sled and specialized equipment for arctic work and planned and carried out studies off Point Barrow. Bent Holtzmark pioneered in techniques of making observations through the ice. Also in the winter of 1948, he and Norman Hicks made an oceanographic survey of the northern Bering Sea from an icebreaker which produced new information on the oceanographic conditions in that area and season.

SOFAR

Another NEL program which received prominence was SOFAR (Sound Fixing and Range) which utilized the deep sound channel 700-1500 meters below the sea surface. Knowledge of the depth and strength of the channel throughout the northeast Pacific as well as the environmental nature of near shore listening stations was needed. Thus, surveys were made off Kaneohe, Adak, Sitka and Monterey. I participated in a winter survey off Monterey aboard a DE used as an oceanographic vessel. It was rough and I nearly became seasick when pork chops were served.

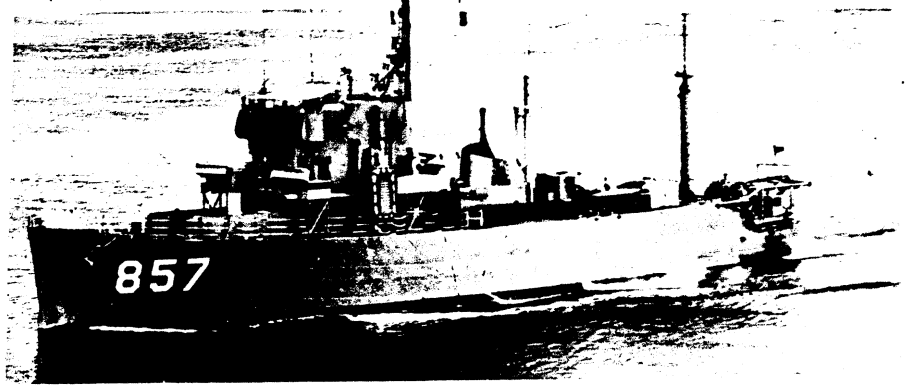
Also, the NEL SOFAR people, working on long range underwater sound transmission, asked me to set off some underwater explosions on our 1947 Arctic cruise enroute from Hawaii to the Aleution Islands. They would then try to monitor the sound, if any, on their hydrophones at Monterey. It sounded simple enough. They supplied me with one-pound blocks of TNT and a bunch of pencil sized detonators which were designed to be actuated by pressure as they sank in the sea. The charges were to be dropped starting at 6 AM every day. I had had no experience in handling dynamite but all I had to do was get up at 5 AM and collect the dynamite from the ship's magazine. Then I prepared the charges by taping 2 to 4 blocks together, digging a hole in the blocks and inserting the detonator, and finally tossing the bundle over the side, trying to miss the ship and hope it would not explode until it reached the depth coded on the detonator. Three of these packages were prepared each morning in near darkness on a rolling deck. The gunnary officer, after observing my operations, decided that it was not according to navy regulations, so he wrote a letter to the captain

saying that he would not be responsible if I blew up the ship. Fortunately, we had an understanding captain and I was allowed to continue my early morning activities, and reports from Monterey confirmed that most of the sounds from my explosions several hundred meters below the ship's hull did reach the California coast 2000 miles away.

Other Additions

As our oceanographic interests and requirements grew, we acquired more people. Dr. Bill Menard and Ed Hamilton, geologists, joined the Section which had by this time become the Oceanography Branch. This was the only period in which the oceanographic effort had a proper name. Organizational and name changes, which were frequent, were done in secrecy at high levels. It seemed to be the favorite sport of the management.

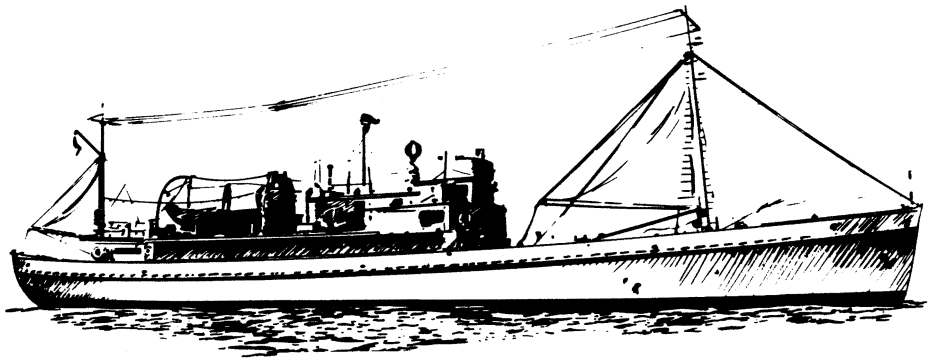
In 1948 the Laboratory acquired two 860 ton ships, the USS MARYSVILLE PCE(R) 857 and the USS REXBURG PCE(R) 855. We arranged to have the MARYSVILLE fitted out with two winches, one contained 10,000 meters of 5/32 inch hydrographic wire and the other with 10,000 meters of 3/8 inch wire rope. The REXBURG was fitted with a large electric cable winch for acoustic work. Although the accommodations for scientists were crowded, 6 persons per room, the ships were well suited for sea work and served the oceanographic programs for nearly 30 years, including cruises to Japan, South America and the Arctic Ocean.



USS MARYSVILLE (PCER 857)

Arctic Ocean 1949

In the summer of 1949 we again carried on a major oceanographic program in the Arctic. This time we used 3 ships: USS BAYA (a submarine), USS MARYSVILLE and HMS CEDARWOOD (a Canadian naval/oceanographic vessel). This was not only a joint oceanographic-acoustic operation, it was also a U.S.-Canadian effort. I was co-chief scientist, along with Dr. Jack Tully of Canada. Others of the U.S. Scientific party on the CEDARWOOD were Ted Saur, Joe Roque and Bob Lesser. The Canadian team was headed by Jack P.L.Tully, an energetic extrovert with a wooden leg which did not hamper him. Because we had more control of the operations we could improvise our program and position of our stations to cover the entire eastern Bering and Chukchi Seas.



HMS CEDARWOOD

We flew to Adak in the Aleutian Islands, boarded the CEDARWOOD, and headed north. We stopped briefly at the Pribilof Islands then skirted St. Lawrence Island to the west toward Siberia, but took great care to stay just inside the international line, and then on up to the Bering Strait. It was possible to anchor in the Strait and measure the relatively strong north flowing current. It is amazing that my grandfather in 1899 could have sailed south against this current in his handmade boat.

While running up the Alaskan coast we encountered an Eskimo skin boat called an umiak. It was about 20 feet long with a small outboard motor and held 6 Eskimos. Our captain offered them a tow but the operation was not successful because of the rough sea and strain on

their boat, so after a few minutes the CEDERWOOD's crew winched the skin boat aboard. I was disappointed that the officers did not invite the Eskimos into the wardroom but restricted them to the open deck, however they were grateful for the ride which saved fuel and time in their journey fron Teller to Nome, Alaska.

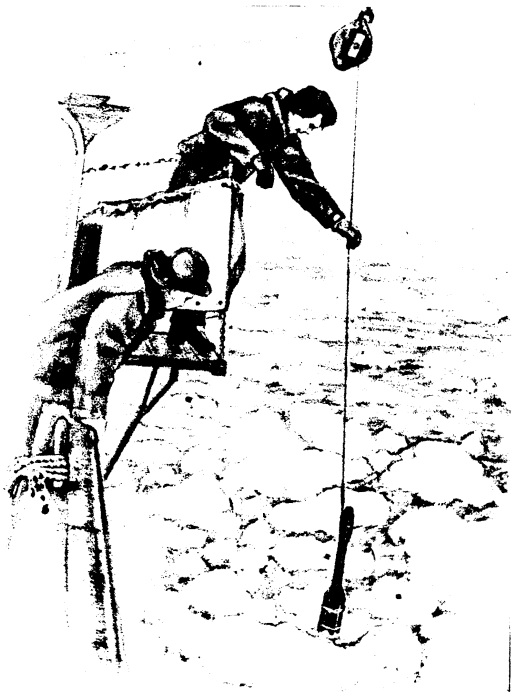
We occupied a network of stations east of 169° W in the Chukchi Sea and even into Kotzebue Sound where my grandfather wintered, and up to the brash ice at

Towing Eskimo skin boat in Bering Sea

73° N, about 1000 miles from the north pole. We went ashore by small boat at Point Hope, Cape Lisbourn and Point Barrow, and bought Eskimo carvings in bone and ivory. At the village of Point Hope the Eskimo "houses" were mounds of dirt over dugout rooms. Ted Saur and I invited ourselves into one of the houses by going down a few steps through a door which opened into a small room where snowshoes, skin coats and slabs of blubber were hung. Then through another door into a toasty warm, homey, but cramped and congested, living area containing beds, chairs and cooking area. There was even a big pan of sour dough rising.

The graveyard was fenced with whale rib bones. On our return we visited the trading post at Teller where Eskimo products were sold. Near Teller in a vast bay

called Port Clarence, CEDARWOOD came close enough to the unhabited shore to run a hose to a creek and pump on fresh water, an important commodity on long cruises. On smaller ships things are more informal and we had a congenial group. One difference between U.S. and Canadian navy ships is the liberal policy regarding liquor. Each member of the Canadian crew was issued 2 onces of rum daily and the officers and scientists had a delightful liquor mess.



Eugene and Al Dodimead in brash ice of the Chuckchi Sea

As we crossed the Arctic Circle the traditional "Bluenose" ceremony was held with King Neptune presiding. The ceremony devised to initiate a "bluenose" required the crew to collect a large cake of sea ice, haul it on deck and have those crossing the Arctic Circle for the first time, to sit bare-skinned on the cake for 2 minutes. Although I had crossed before I was not exempted, and was that ice cold.

The MARYSVILLE was crowded, not only with acoustic personnel working in conjunction with the BAYA, but also with NEL geologists from the oceanography branch,

including Ed Hamilton, Ed Buffington and Bob Dietz. In addition, Gordon Tucker, a biologist, made net and dredge hauls for marine life. The collected cores, bottom samples and plankton, as well as the physical and chemical data, provided a great deal of information about these shallow seas, from which several reports were published. Our cruise ended in Kodiak, from where we flew home to our loved ones.

Nodales Channel

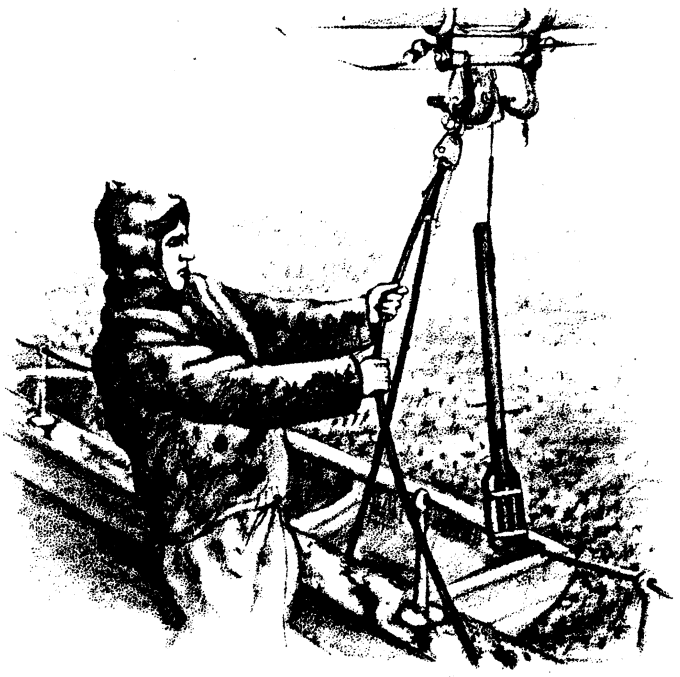
The Canadians, especially Jack Tully and Bill Cameron, were keen to work with the U. S. acousticians and have a submarine for acoustic detection. So, in November 1949 we again conducted a joint U.S.-Canadian program of acoustics supported by oceanography. This time in Nodales Channel, British Columbia, Canada.

Enroute to Canada we flew by navy plane from North Island to a navy air station on Lake Washington, in Seattle. To get off the navy base we took a short cut by climbing over the base's fence. The guards who caught us thought the crime was at least as severe as declaring war. Fortunately, Ev Thatcher, our U.S. cordinator, kept his cool and diplomatically got us out of hock and onto the boat to Esquimalt, Canada, and thence aboard the Canadian vessels.

Nodales is a long, narrow channel in the northwestern part of British Columbia, and connects to what is known as the inland passage. In November the water is virtually isothermal from the surface to the bottom, a depth of about 1000 feet. Such a condition is advantageous for some acoustic studies since it offers very little refraction. Our task force, identified by its 8-ball flag on all ships, consisted of the submarine USS BAYA, the USS MARYSVILLE, and 2 Canadian ships the HMS EVERGREEN and a small oceanographic vessel HMS ECHOLI. On the ECHOLI, besides myself, as chief scientist, were Ted Saur, Bob Lesser, Don Pritchard and Joe Roque. Ev Thatcher visited us occasionally.

The oceanographic program was to monitor the environment during the acoustic tests. For this we set up a weather station and tide gauge on shore, and a floating

wave reference grid in the water. Although the wave float worked well, it required too much ship time to operate. We charged around the channel in the ECHOLI measuring temperature and salinity structure, to be translated into sound velocity, and tried to stay out of the other ships way while they were making acoustic runs on the BAYA, which was suspended at mid-depth by two large surface buoys.

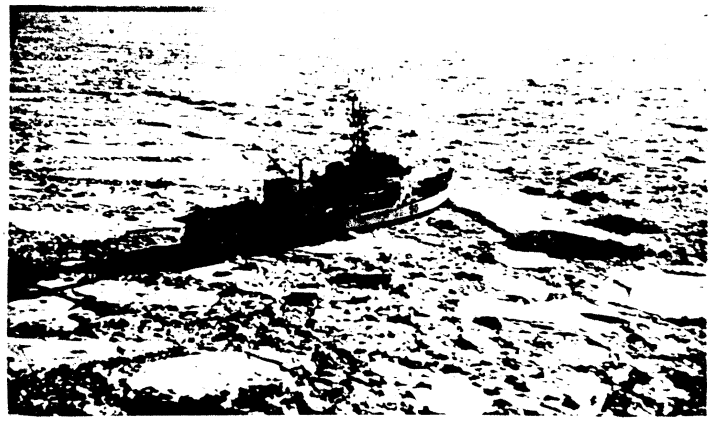


Joe Roque in rainy Nodales Channel, 1949

This was a lot of fun, but the weather was something else, since it rained or snowed every day we were there. However, the steep, tree covered shores were beautiful and later in December we cut a number of small trees and shipped them back to San Diego on the MARYSVILLE to arrive in time for Christmas. Our scientific results supported the acoustic part of the program and in addition a report on the oceanographic structure and circulation of Nodales Channel was prepared.

Arctic Oceanography, 1950

The following summer we were off again to make additional oceanographic studies, without acoustics, from the ice breaker USS BURTON ISLAND. This year our efforts were confined to the eastern Beaufort Sea to Banks Island, a virtually unexplored area. We occupied

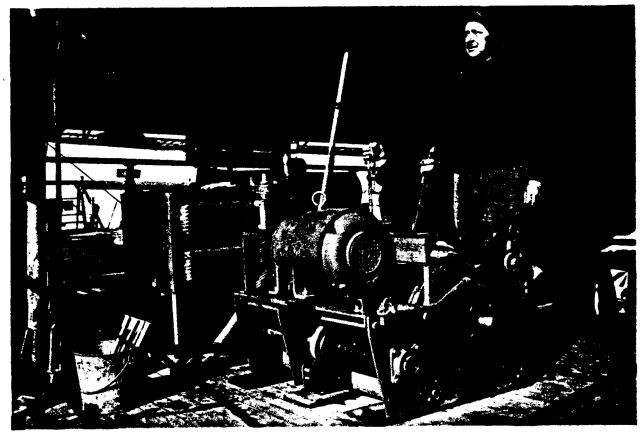


USS BURTON ISLAND in Arctic ice pack, 1950

a network of Nansen stations throughout the area and extended our work from the ice free water near shore to well into the ice pack. This was possible because

Scientific staff: Waldo Lyon, Bob Paquette, Al Carsola, Jack Wickham, Warren Wooster, Eugene LaFond, Cliff Barnes and John Lincoln on the USS BURTON ISLAND

the ice breaker was able to penetrate much of the summer ice. Most of the time, when on station, the drifting ship created a little open water next to the hull on the windward side, allowing the bottles to be lowered. But frequently large blocks of ice would drift into the wire making it necessary to fend them off with long poles. One time the ship started up while the string of bottles was down. This necessitated paying wire out rapidly and running to the bridge to have the ship stopped. Working well into the ice pack, the air temperature would frequently be below freezing. Recording data on deck requires removing gloves, and my fingers would become stiff, making my writing illegible. But this was new and exciting work and I enjoyed it.



Eugene operating winch on USS BURTON ISLAND

An innovation in oceanographic work was the use of a helicopter, operated from a landing pad on the ice breaker. On one flight to reconnoiter open water in the ice pack. a polar bear was sighted and later shot from the helicopter. It was brought on board, skinned and the meat cooked, which tasted like sweet veal.

On another flight I asked the pilot, "what would happen if the motor stopped over all this jagged ice"? He delibertly turned off the motor and we fluttered slowly, but alarmingly towards the ice. Just before crashing, he started the motor again. I didn't ask any more such questions.

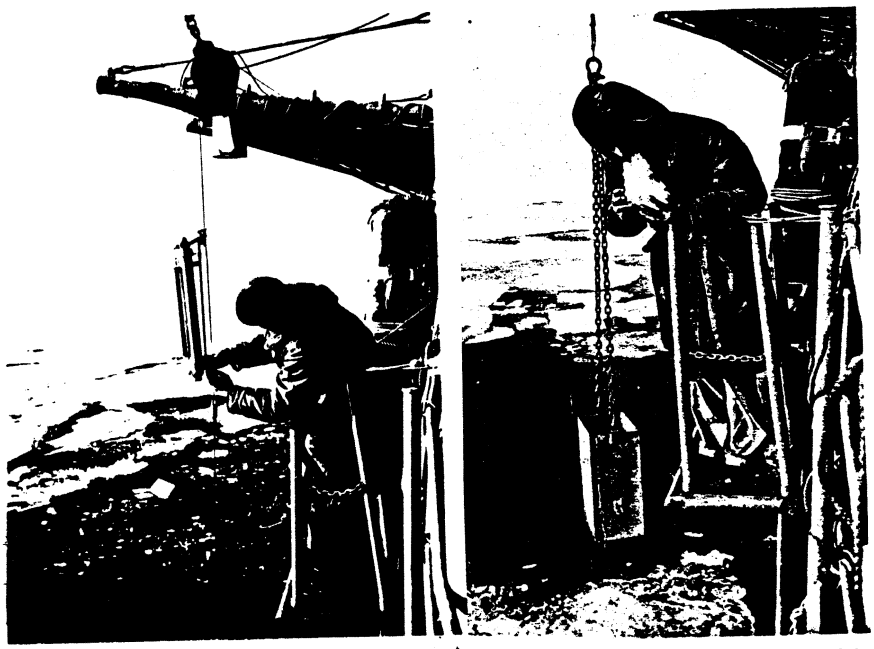
Arctic Oceanography, 1951

In 1951, I again left Katherine and the boys for my 4th summer in the arctic. This was a similar cruise in the same area and the same ice breaker, the USS BURTON ISLAND. It was a slightly warmer summer and we could penetrate further into the ice than in 1950. In addition to many stations occupied, many soundings and bottom samples were collected, and the data were used by Al Carsola for his PhD thesis.

Eugene with LaFond-Dietz bottom sampler and collecting samples from a sea floor sediment core

A secondary program was to study the convergence current system which was postulated to occur off Point Barrow. Water from the west seemed to converge with water from the east and then flow northward. To investigate this phenomenon, we laid out a network of closely spaced stations, only an hours run apart. The program required 48 hours to complete. Since I was needed on all stations, there was no time to sleep. I found it extremely hard to stay awake for 48 hours and occupy these cold stations, but it was a successful challenge.

At the conclusion of the program we flew from Point Barrow to Fairbanks on a small plane. Many of the passengers were oil drilling personnel for Prudhoe Bay. When the lights of Fairbanks came into view one exclaimed, "Look at all those lights. I know what the red ones mean, but what are all those green ones?"



Operating Nansen bottle and bottom dredge from USS BURTON ISLAND in the arctic ice pack

Other Programs

Back at the Laboratory, in 1950-51, Gordon Tucker was actively studing the deep scattering layer, Bob Dill was promoting the newly developed aqua lung, Ed Hamilton was starting work on sediment properties, Bob Dietz was developing the theory of sea floor spreading, Bill Menard was discovering new sea mounts and I was investigating internal waves. Our oceanographic effort was financed by the acoustic desk of the Bureau of Ships, and King Couper, in Washington, was our program manager. The projects on which we worked were certainly good scientific oceanography, but we were frequently questioned as to "how they made a better transducer?" Tho the gap between science and hardware continues to this day, King continued to support us for nearly 20 years. My policy was to carry on basic research, since you cannot apply research results until you have the data. As a result oceanography prospered. During this period we were the 3rd most productive oceanographic establishment, only Scripps and Woods Hole were accomplishing more. This was based on the number of references cited in the published scientific literature.

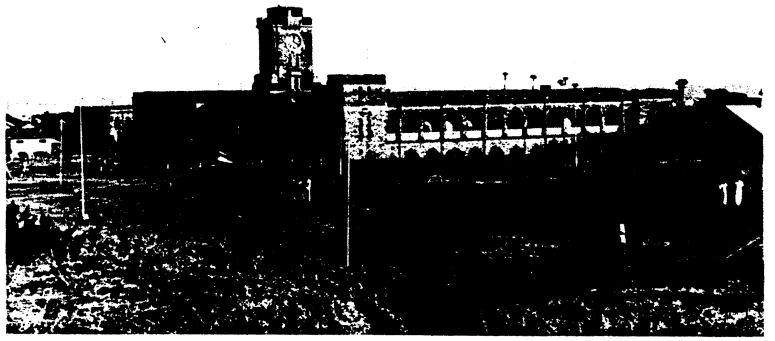
Indian Oceanography 1952-53

One of the most far-reaching activities was our trip to India. It all started when, in late 1951, Bill Menard came into my office and showed me a U.S. State Departmemt brochure which explained that a new Fulbright program was being set up, and two of the financial grants for teaching and research were to be in oceanography. There would be one opening each in Australia and India. Since I had been to New Zealand in 1948 attending the Pacific Science Congress, India seemed intriguing. Katherine and I discussed the matter and sought advice. Political unrest in India due to recent partition, the probability of catching diseases, and an unknown, unfamiliar (Andhra) university were some of the discouraging answers. On the other side, we could work together and be helpful to the Indians, and the trip offered an unknown, adventurous challenge.

We halfheartedly applied for the Indian grant. Surprisingly my application was enthusiastically accepted by the Indians, who knew me only through publications; we knew no one in India. I was reluctantly granted leave-without-pay status by the NEL Technical Director, borrowed some of the laboratory's oceanographic equipment and on 11 August 1952 Katherine, our 2 boys, ages 8 and 11, and myself set out on a new adventure.

We flew to New York and boarded the Cunard line's S.S. Queen Mary bound for Southampton, England. From there the P. and O. line's S.S. Himalaya carried us to Bombay, arriving on 16 September. Enroute there were numerous unexpected travel problems. When we arrived in London, American Express had not made connecting travel arrangements which required a 2-week layover in London while we searched for an ongoing passage. Then in Bombay our instruments were impounded by customs. Ten days later we had recovered our gear, conquered dysentery and after 2 cancellations of the railroad tickets, boarded the train for the 2-day hot and sooty ride to Waltair on the east coast.

On 27 September 1952, after 45 days of travel, we finally arrived at the dingy, sweltering Waltair train station. Our spirits were at a low ebb and did not



Andhra University campus

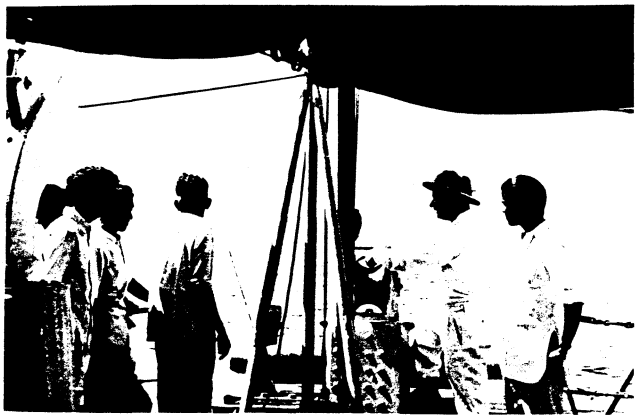
immediately improve even though we were met by many friendly university people and driven 2 miles to our 3 cell-like rooms at the faculty club. But shortly things did improve. New quarters and a competent bearer were provided. Friendly teachers and students sought us out and together we devloped oceanographic research programs.

Our bungalow on the university campus

One program was a beach erosion study, to be made on the sandy beach about half a mile distant. This required frequent hot hikes to the beach for measurements of beach profiles and sand sampling. But the main effort was a shipboard program utilizing old Indian navy mine sweepers and carried out from the local harbor of Visakhapatnam.

Indian navy mine sweeper

However, the mine sweepers were not designed for oceanographic research. It was necessary to use improvised winches and spliced wire to lower the instruments that, fortunately, we had brought with us. For overnight cruises we needed to bring sleeping bags and sleep on the open deck. Nevertheless, with enthusiastic teachers and students from the Geophysics, Geology and Zoology departments we collected sea floor sediments, biological and water samples, and temperature data on 19 short oceanographic cruises off the east coast of India.



Eugene with students in Bay of Bengal, 1953

The samples and data were analyzed back at the university laboratories, and provided new and exciting information about the Bay of Bengal, including the effect of

Oceanographic activity by students and teachers aboard Indian navy minesweepers in the Bay of Bengal, 1952 1953

the monsoons on the ocean and its life, and the upwelling and sinking circulations. Fifteen papers were published in a special Andhra University Memoirs in Oceanography. Other data led to several PhD. theses.

Living on the university campus was quite different from the life we were accustomed to. The meager housing, lack of car, no refrigeration and the hot tropical climate were difficult, especially for the boys. They tried to bus to school but it was too enervating. However, the Indian people were most friendly and helpful and they could not have been nicer. We enjoyed our stay.

Bob, Bill, Katherine and Eugene in India, 1953

At the conclusion of our academic year, 1952-53, we packed up our belongings, purchases of Indian collectables and what equipment that had not been lost overboard, and booked sea passage for home.

The day before we left our colleagues arranged a farewell party where they presented us with a carved ivory box and read a printed farewell address.

"It is with mingled feelings that we, of the Geology, Geophysics and Zoology departments, who have been associated with you in oceanograohic research since September 1952, bid farewell to you and Mrs. LaFond on the eve of your departure to your home after a strenuous and fruitful work at the Andhra University. It was a matter of great good fortune for the study of oceanography in India that the United States Government agreed to spare your services as visiting Professor of Oceanography to this University. Both on the account of the excellent harbour facilities available and the location of the University with the well developed departments of Geology, Geophysics and Zoology, Waltair is ideally suited for oceanographic studies. Almost since the day you came, you and Mrs. LaFond endeared yourselves to us by your geniality and informality. Unmindful of the rigours and inconveniences of life in the mine-sweepers, you, Sir, have led practically every party of workers on the cruises, and from the very start initiated all the workers into the techniques and operational methods of oceanographic research. When mistakes were made and when calamities like the loss of valuable instruments occurred, it was an extraordinary experience for us to see that you never lost your temper or equanimity. It was an inspiration to us to work under your leadership and able guidance."

"Mrs. LaFond, your goodself and your children have been so much a part of the life on the campus, that your departure will cause a void in the social life of the University teachers, their families, and students which will be impossible to fill. Your visit has been of the utmost value in promoting good will and understanding between our ancient land and your great country. In bidding you and Mrs. LaFond farewell, we assure that you carry with you the gratitude and affection of one and all of us in the University who have had the opportunity to work with you and the friendship of a large number of persons in the Indian Navy and in civil life with whom you came in contact. We wish to assure you that it shall be our endeavour to continue oceanographic research so ably initiated under your inspiring leadership at this University and which is of such importance to the Nation's economy."

"May we wish you, Mrs. LaFond and your children a bon Voyage and long happy and prosperous life in the years to come!"

JAI HIND

"We remain, Dear Sir, Yours most cordially, Oceanographers, Geology - Geophysics - Zoology"

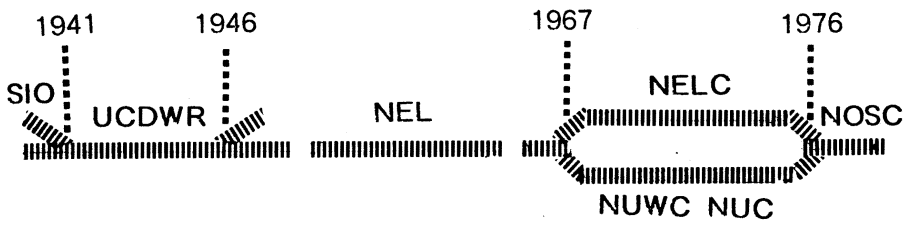
Our homeward voyage was on the Java Bengal line's freighter S.S. ROEBIAH. We cruised down the Hoogly River from Calcutta. I sampled the water enroute and found the salinity higher part way up the river than at its mouth, due to lower salinity water flowing along the coast at this time of year. We stopped at Penang, Singapore, Manila and Honolulu, finally after a memorable 35 day cruise, we landed in San Francisco on 1 July 1953. With our tin trunks, boxes and even a large woven bamboo barrel-like container, we must have looked like back-water missionaries. Thus ended our first trip to India.

Drinking Dutch beer on S.S. Roebiah, homeward bound, 1953

An unexpected and long lasting aspect of our trip to India was our exposure to international oceanography. In fact, our efforts in India have influenced our future and thrust me into world-wide marine science activities. Soon after our arrival home, Andhra University, applied through the U.S. State and Navy Departments for our return to India. In his application, the Vice Chancellor stated, "Professor LaFond and his family adjusted themselves to the Indian conditions admirably and they took part in all activities on the campus. The experiment has proven successful beyond all expectations."

Organizational Changes

About this time there was an inevitable laboratory organizational change. Reorganization was the favorite sport of management and caused confusion among many scientists in other more stable organizations. Not only was the unit designation for oceanography repeatedly changed, but even the name of the entire laboratory. Although the Navy Radio and Sound Laboratory existed before the war, the first oceanographic effort at Point Loma began with the transfer of a few oceanographers from Scripps to the newly created University of California Division of War Research (UCDWR). This lasted 5 years. At the end of the war most of the personnel went back to their original jobs but a few of us stayed on to join the Navy Electronics Laboratory (NEL) which the navy created in 1946. NEL lasted 21 years until it was divided into 2 laboratories: The Navy Electronics Laboratory Center (NELC) and the Navy Undersea Warfare Center (NUWC), but the latter was soon changed to just Naval Undersea Center (NUC). This duplication of effort lasted 10 years until the laboratories were again reunited in 1976 into a new organization called the Navy Ocean Systems Center (NOSC).



Oce. Sect.	Oce. Dept.	Stru. Sect.	Oce. Br.	Oce. Sect. & Mar. Geol. Sect.	Marine Envir. Div.	No Oce. Org.
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Changes in laboratory name, oceanographic unit changes and number of oceanographic staff

Over the years the laboratory's oceanographic unit underwent even more changes; from Oceanography Section to Oceanographic Division under UCDWR; then to Structures Section to Oceanography Branch to Oceanography Section and Marine Geology Section under NEL; then to Marine Environment Division under NEL, NUWC and NUC; and finally to no oceanographic unit at all under NOSC. Fortunately, I retired in 1973 and did not have to experience the final dissolution of oceanographic research in favor of the required hardware development for the navy.

Mine Hunting Projects

In 1954, the laboratory had a joint program with the Mine Defense Laboratory (MDL) in Panama City, Florida, on the detection of bottom laid mines. This proved to be a difficult problem. One day a ship with mine hunting sonar could detect a number of simulated mine targets; the next day it could not, and the only thing that could have changed was the marine environment. In March 1954 I was requested by MDL to go to Panama City and work with their oceanographers to evaluate the environment as it pertains to mine hunting.

The program that we developed was to anchor a ship with oceanographic gear in the center of a pre-set mine field in the Gulf of Mexico. As the mine detecting ship cruised a set track in the mine field, we made a variety of oceanographic measurements, which could be correlated with the percent of mines detected. These operations were conducted during the day, which left evenings and weekends free to work on the data from the Indian Ocean that I had collected during the previous year, as well as enjoy my recently acquired ability to scuba dive in the warm clear Gulf waters. Some of the Panama City oceanographers were avid scuba divers. I accompanied them in dives off the local jetty and on spelunking dives in fresh water springs of Florida. For the latter it was necessary to use a light and safety line to find ones way in and out of the dark underground passages. The water was surprisingly clear and we could see our aqualung bubbles collect on the roof of the water-filled caves. Large catfish also inhabited some of the caves. I was never comfortable spelunking, since it was not

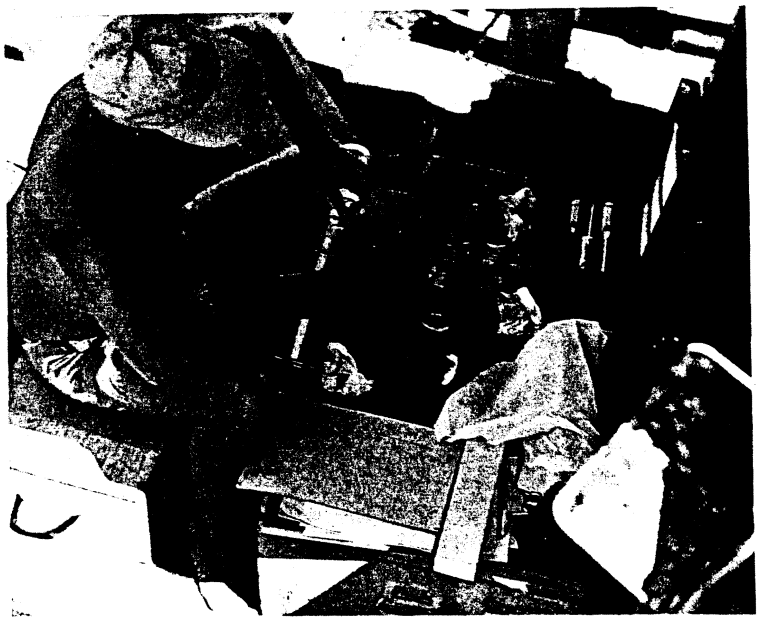
possible to surface in case of an emergency, as one can in the open sea, but it was thrilling to explore places where no one had been before.

Katherine and Eugene diving off Panama City jetty, 1954

As the result of my glowing accounts of diving and marine life, Billy asked, "Why can't we go there, too?" So, Katherine decided to drive herself and the boys all the way to Florida to see the area and be with me for a while. It was a long 5 days drive, but the whole family enjoyed the south, its culture, food, and especially scuba diving. They returned home only when our operation moved to Norfolk, Virginia.

After 3 months work off Panama City it was decided to repeat the mine detection experiment in a different environment, off Norfolk, Virginia. George Dowling of MDL and I drove across Florida in his car and up the east coast, visiting points of interest new to me. At Norfolk the oceanographic ship was again anchored in 70 feet of water in the middle of the mine field in the open Atlantic Ocean. During breaks in the program at Norfolk we played golf and went swimming. On one occasion we swam out beyond the breakers off Virginia Beach. Although we felt that we were good swimmers

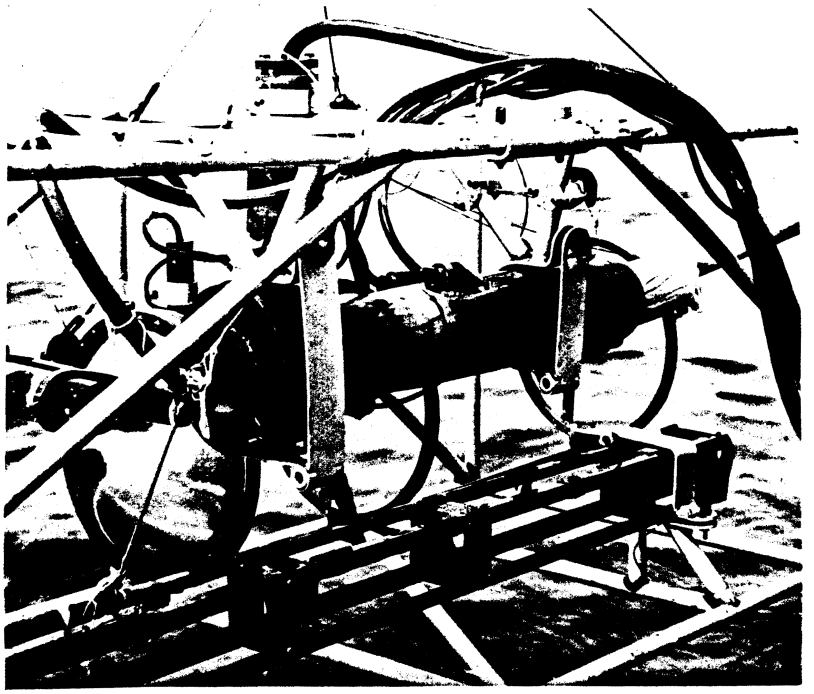
and in no danger, a lifeguard felt differently. He blew his whistle at us from shore, so we swam parallel to the beach for over a mile, trying to shake him, but to no avail. He was red faced from blowing and had summoned other guards and reportedly the coast guard. We were barely reprieved from going to jail. After a couple of months of field work we took our data back to Panama City for analysis and reporting. Although offered a higher grade to stay at MDL, I returned to NEL and family.



Eugene determing specific gravity of sea water samples on deck during mine hunting operations off Norfolk, Virginia

In late 1954 and in 1955 similar efforts pertaining to mine hunting, and involving oceanography, were carried out at NEL. They consisted of a program of evaluating sound transmission in shallow water from an anchored mine sweeper, the USS KESTREL, off Mission Beach. The acoustic mine hunting people transmitted very high frequency sound through the water in a path from bow to stern of the ship, we oceanographers monitored the water properties. We measured everything that we could think of which might affect sound transmission, even including bubbles, by use of a bubble detector. It was suspected that bubbles were being confused with

plankton and temperature changes. To evaluate the time changes which might be caused by tide, we made 25-hour continuous, though physically tiresome, sampling periods. At times the acoustic results showed periods of no sound transmission, which we called "black outs". Our studies, though enlightening, were not completely conclusive due to the turbulence caused by the rolling ship.



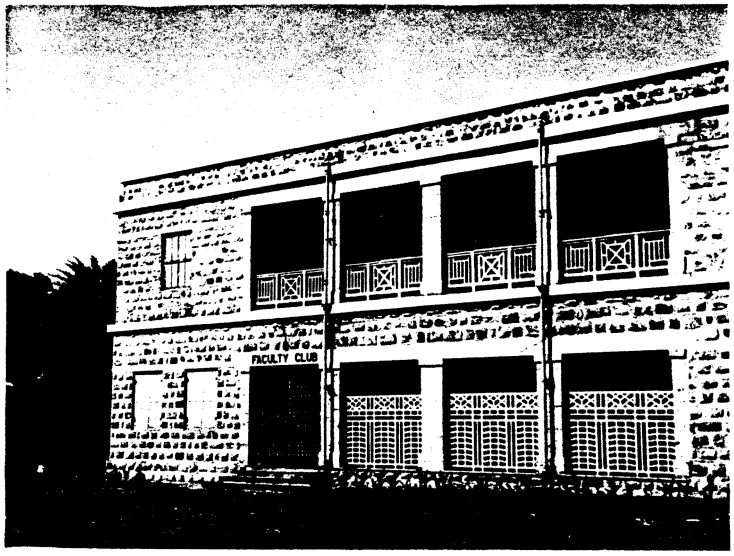
Framework of instruments used to measure oceanographic parameters related to acoustic detection of mines, 1954

It was difficult to schedule navy ships for anchoring longer than 25 hours, and the problem of making continuous measurements caused me to propose a better scheme for studying the shallow water environment and making acoustical measurements. Thus, on 13 March 1955, I summitted a proposal for the design of, and program for, an oceanographic tower, to be erected off Mission Beach. Ralph Christensen, the technical director, routed my proposal to the mine hunting and harbor defense people, with favorable results. Tho the wheels of progress turned slowly, money was appropriated and the structure was built 4 years later.

Indian Oceanography 1955-1956

By late 1954 the request from Andhra University via the Indian Fulbright Foundation for my return to India had passed through the U.S. State and Navy Departments. I would not have been allowed to take leave-without-pay, had I simply applied through normal channels. Even when approved by the Secretary of the Navy, there were grumblings when my leave slip was signed. "If I could be spared for a year at a time, why was I needed in the first place?"

This time the boys remained in a boarding school in Norridgewock, MA, run by a former teacher of Katherine's. It was hard for them and us to be separated so long. Since there were only 2 of us when we arrived on the Andhra University campus, we were again quartered in the Faculty Club's guest rooms. We did participate in the social life both at the university and in town,



University Faculty Club served as our home, 1955-1956

especially at the Waltair Club whose membership was predominately British and French. Liquor was available in this section of dry India, but only for certified alcoholics, so our necessary liquor license application stated this in detail.

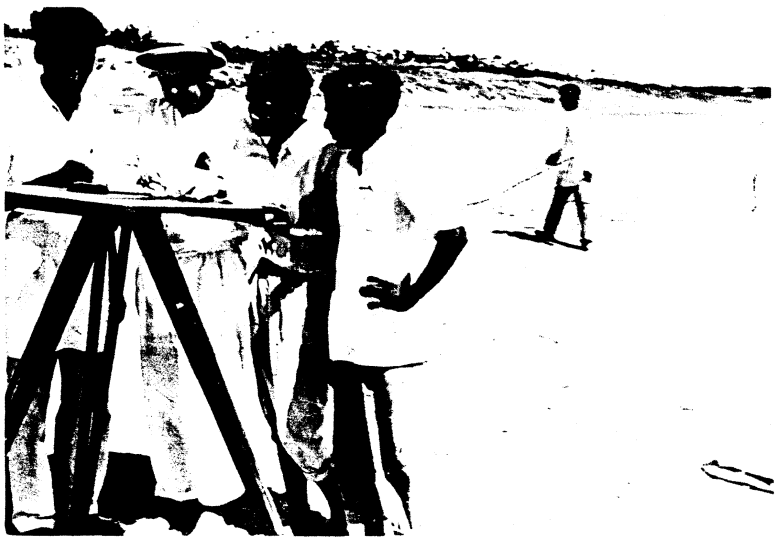
Katherine and Eugene at Waltair (social) Club, 1955

The university faculty members were avid bridge players. Also, Katherine played bridge back home with her lab-group. On occasion when I joined them I was reminded that I had broken some hard and fast rule, so I decided to establish my own rules. Thus in 1956 between cruises I wrote a booklet on bridge, which I called "The Miller System". Getting the text printed at our local shop was a real challenge. The small parts requiring Hindi and Telegu type offered no problem, but the printer did not know English, and so would place the letters on their sides or upside down. However, persistance prevailed, and my little book spoofing bridge rules, was eventually printed. Later on, when I was criticized, I would answer, "but I play the Miller System".

However, I was glad to have another opportunity to explore part of that vast but little-known Indian Ocean and work with Indian scientists, so I again became Professor of Oceanography at Andhra University in September 1955 and conducted 10 cruises on rusting Indian navy mine sweepers. I slept on deck, ate strange spicy food, and collected, with my Indian colleagues, new oceanographic data. The results were exciting and gratifying. A second volume of Andhra University Memoirs in Oceanography was compiled from the results of our studies. The Senate of the University voted to award

me an honary Doctor of Science Degree for my academic work and the 50-odd papers published on the Indian Ocean. The degree was to be awarded at the upcoming convocation in December of 1956.

Sleeping on deck of Indian minesweepers at sea, 1956



Conducting beach studies on Waltair Beach, 1956

On December 1, painfully, I again left without Katherine, for India. This time the State Department appointed me as a Specialist in Oceanography. Although my assignment called for a speaking tour, but of course, it was to attend the convocation at Andhra University and be awarded the DSc degree. However, I did fulfill the speaking engagements at Andhra University, Waltair; Indian Meteorological Department, New Delhi; Osmania University, Hyderabad; Central College, Bangalore; Travencore University, Trivandrum; Annamalai University, Chiddambaram; Madras University, Madras; and Calcutta University, Calcutta. I returned via Tokyo and talked with Dr. Tomosaburo Abe about sea foam and the possibility of his coming to NEL and work on his speciality, sea foam.

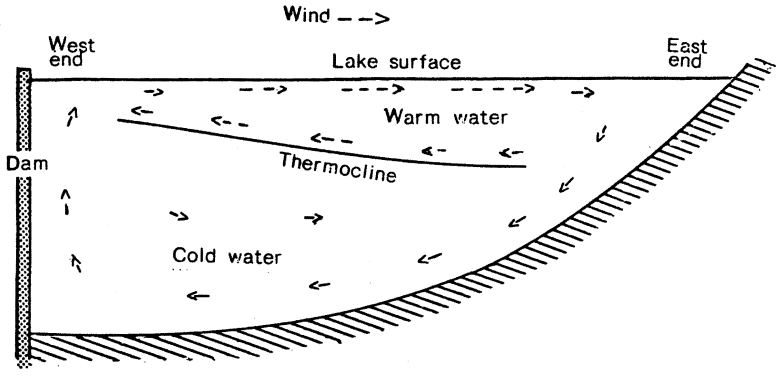
Other Activities

Other programs that took some of our time at the laboratory were the evaluation of new types of oceanographic instruments such as a radio frequency salinity meter, an XSVM-3 sound velocity meter, etc. The procedure was for the Bureau of Ships to award a contract to a commercial company to build an oceanographic gadget that may be useful to the navy, then have it sent to NEL for evaluation and to see if it worked. It usually didn't, and this was a non-research, time-consuming chore. We tried to squeese in as much science as we could.

I was studying not only bubbles but also sea surface slicks and internal waves in the sea. These studies involved a lot of work from small boats, including the USS SALUDA, R/V E. W. SCRIPPS, picket boats and the YFU-45 (a cable layer). Another technique I used was to take time-lapse movies of the sea surface slicks off Mission Beach from Mt. Solidad, which speeded up their motion 50 time normal. For bubbles, I developed an inverted 3-foot diameter funnel to concentrate any rising bubbles. It was suspended 10 feet below the surface under an anchored buoy. I thought it might collect oxygen produced by plankton but the results showed 80% nitrogen and 20% oxygen (air) from the gas saturated water.

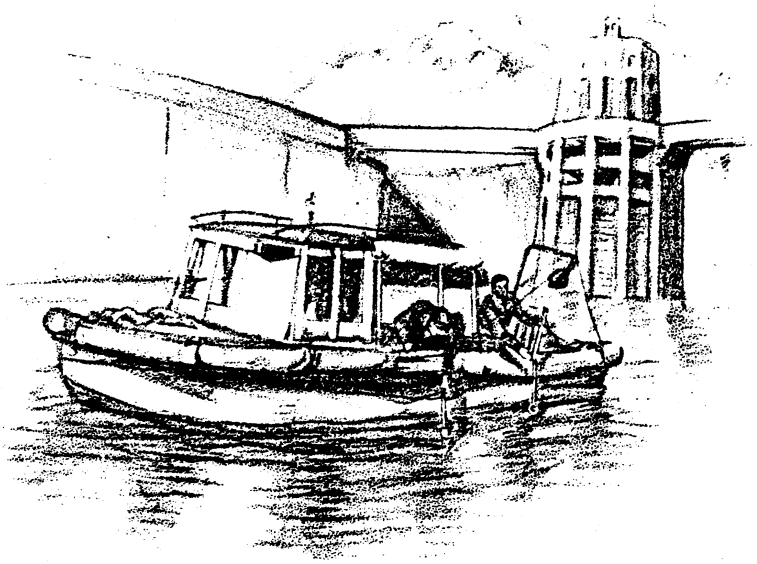
Limnological Studies

Not all my work was carried on at sea. One study which I took up was the internal surge in Sweetwater Lake, a dammed fresh water lake, about 15 miles east of San Diego. Fluctuations in acoustic signals were experienced at the NEL transducer calibration station at the west end of the lake and a program was set up to find out why. In 1957 as the water in the lake became shallower, the problem became more acute. We therefore carried on current, internal waves and biological investigations, to find out the cause of a diurnal cycle in sound transmission properties of the lake. After several months of investigation, it turned out that the diurnal sea breeze blew the warmer surface water to the east every afternoon. The return flow on the upper side of the thermocline would increase its strength and cause small internal waves at the interface between the warm and cold water. The strong thermocline would actually come up into the sound path between the transducers, cyclically refracting the sound rays as small internal waves propagated on the thermocline, and greatly affected the intensity of the sound received, making acoustic calibration impossible. The solution was to avoid the periods of shallow thermoclines.



Water circulation determined in Sweetwater Lake in the summer of 1957

Another fresh water study was that of Lake Mead, created by the conctruction of Hoover dam in Arizona in 1936. The Department of the Interior wanted to make a study of the sedimentation rate and water properties of the lake and asked the navy to help. Our Oceanography Branch agreed to supply 2 people to assist in 12 monthly surveys. The procedure was to occupy a network of stations all over the 80 mile long lake from a small navy boat, taking samples of water and sediments. Each survey took about a week and it was necessary to beach the boat each night and sleep on shore. I participated on only one week long survey. Since there was so much sediment brought down by the Colorado River it did not have time to compact. The lake bottom was like a thick chocolate milk shake. When I lowered a BT, it sank about 20 feet into the soft sediment. But unlike the water above, the temperature increased with depth in the sediment due to the heat created by decomposing organic matter brought down by the river. The study indicated that, although the sediment is accumulating rapidly, the lake should be useful for around 150 years.



Eugene and others making limnological measurements near Boulder Dam in Lake Mead 1955.

Travel

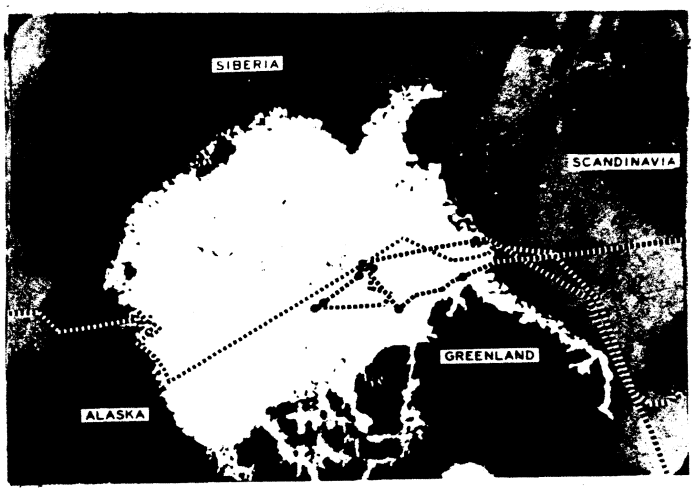
The policy of NEL was one of liberal travel, not only to other laboratories to keep abrest of their programs and to many administrative conferences, but also to scientific meetings. Our Branch had much to report and I encouraged attendance of others to these meetings. I participated in nearly all meetings of the International Union of Geodesy and Geophysics (IUGG), Pacific Science Congress (PSC), American Geophysical Union (AGU), American Society of Limnology and Oceanography (ASLO), Eastern Pacific Oceanic Conference (EPOC), and others. Some meetings were held in foreign countries. As a result, I became known in the oceanographic community and served as an officer in several national and international organizations, which eventually led to my appointment to UNESCO and election to IAPSO.

Arctic oceanography by submarine 1958

One of the most publicized programs was the cruise to the Arctic Ocean by submarine. Our NEL arctic program, started in 1947, was continuing, but now with the development of nuclear submarine activity in the area, it became more classified.

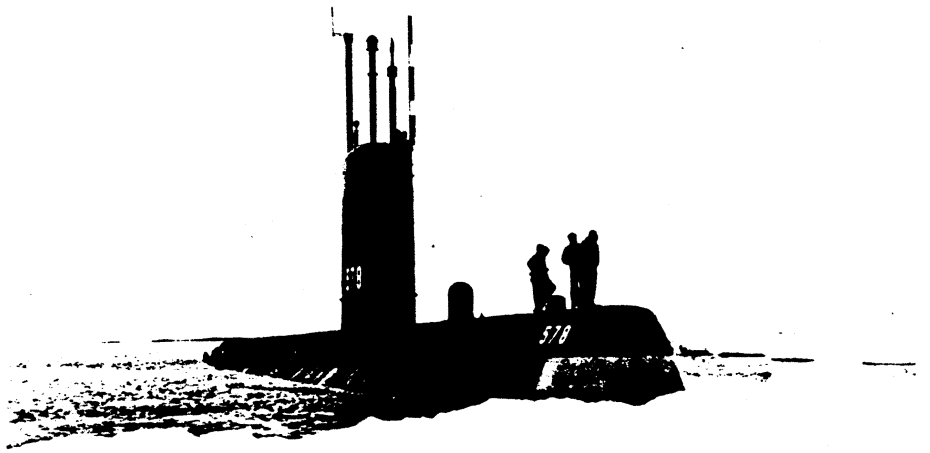
An important operation was scheduled for the summer of 1958, and because of the experience gained on my 4 previous cruises to the arctic, my services were requested. In the previous year, 1957, the USS NAUTILUS had gone under the ice and had had trouble. Its electrical supply went off causing the gyro compass to fail, and its periscopes were bent when it missed a polynya while trying to surface through the ice. Now in 1958, the atomic submarine USS SKATE was directed to again try to operate under the arctic ice cap and conduct some scientific work in this harsh and unfriendly region.

When I arrived in New London, Connecticut, I helped equip the sub with deck mounted echo sounders and light sensor, and set up an oceanographic lab of sorts. On 28 July we headed out to sea, submerged and traveled the Atlantic Ocean up the coast of Greenland. Just beyond Spitsbergen we encountered the ice pack and cruised under it at 165-foot depth, towards the north



Tracks of SSN NAUTILUS (1957) and SSN SKATE (1958) in the Arctic Ocean under the ice cap. Dots indicate locations of SKATE'S surfacings

pole. Initially, the ice overhead was just floating blocks but it soon became a thick continuous sheet. There were, however, occasional small areas of open water called polynyas (a Russian word). Under 9 of the polynyas the sub stopped and gingerly ascended to the surface, without incident. One surfacing was at Ice Station Alpha where a couple dozen air-lifted scientists were working



SSN SKATE in a polynya near the north pole

for months on ice problems. Another maneuver of the captain's was to go to the north pole (90°N), circle around it in about a 2-mile radius, and surface in the nearest polynya. This called for a celebration with a shot of whiskey for all hands, an uncommon occurance on a navy ship, but thejustification was "its cold outside".

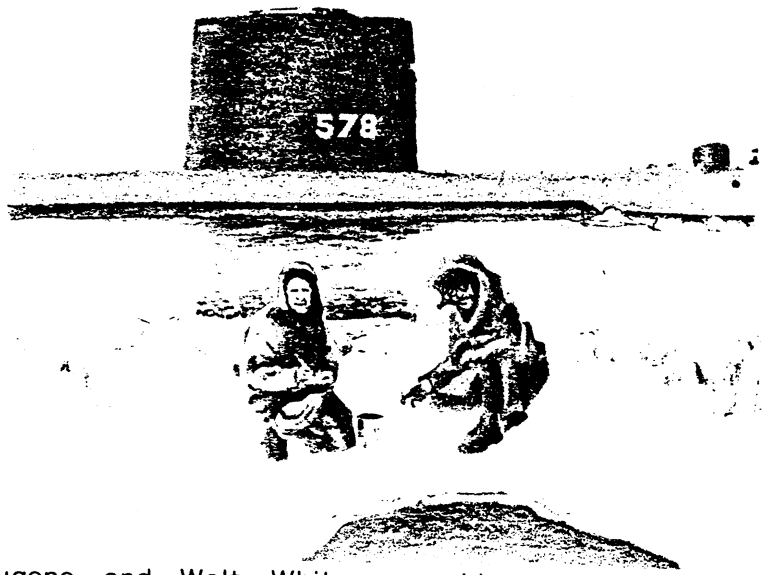
Eugene collecting water and ice samples on the ice flow in the Arctic Ocean, 1958

On shipboard, the NEL scientific program, conducted by Rex Rowray, Walt Whitman of the Navy Oceanographic Office, and myself, was to chart the ice thickness with two upward directed echo sounders. The continuous readings of ice thickness showed long stretches of flat ice about 10 feet thick, alternating with small and large ridges which had formed when ice sheets pushed together and rafted. Rafting was especially prominent near the pole. To help avoid collisions with the ice there was a forward looking TV, however our cruising depth was thought to be sufficient to clear the greatest downward projecting ridge, which turned out to be 109 feet. We also had a downward directed echo sounder to provide a continuous recording of water depth below the sub. Prior to the NAUTILUS's cruise a year before, only spot soundings had been made in the Arctic Ocean. Our records added enormous quantities of topographic information, including areas of smooth and rough bottom, and even a mountain range.

Space was hard to find so I set up a working area in the stern, over the propeller shaft. It was convenient to sample water from an injection pipe used for cooling. A valve could be turned on to allow water to flow through my plankton filter. Although I was concerned, the discharged water spilled into the bilge by my feet. In order to obtain a vertical series of samples, the submarine would change its cruising depth 50 feet at a time, level off while I sampled and then proceed to the next lower depth. The water samples were saved for salinity determination, others were analyzed on ship-board for optical properties using a nephelometer which I set up in my laboratory, such as it was.

I had installed a photocell in a housing on deck to record the ambient light. An increase in light intensity was an indication of the absence of ice overhead, a polynya. Even variations in light indicated ice thickness. However, after a few days in the very cold water the electric cable leading to the photocell shrank and created a leak, making the readings unreliable.

When we surfaced in polynyas we were usually able to get out on the ice with an inflatable boat and sample the ice and melt ponds. When the SKATE was at the



Eugene and Walt Whitman making measurements in a melt pond on the arctic ice pack. This picture was inserted in shredded wheat packages by the Nabisco Co.

surface it was also possible to make vertical casts from the bow to determine the properties of the water stratification at the ice/water interface in polynyas.

Rex Rowary and Eugene collecting water samples from the deck of SSN SKATE in the arctic ice pack, 1958

Working conditions in the submarine, overcrowded with 98 crew and 8 civilians, posed problems. Because I was the senior scientist, I was quartered in the officers wardroom on a drop down wall bunk. The main problem was that the wardroom was in use until midnight, and breakfast was served at 6 AM, thus the hours for sleep were few. Though the quarters were cramped, the vessel functioned well. I was impressed with the immaculately clear superheated water around the large nuclear reactor. The hot superheated water heated other separate water to form steam, which in turn was able to power the sub at high speeds for months without refueling.

Should a fire break out in the sub while under the ice, it would be serious, since we could not surface under the ice. So unannounced, the captain held a fire drill. Smoke was introduced into the ventilation system and filled all compartments. I was concerned as I choked and donned a provided gas mask. The air eventually cleared and all was well. However, it made me acutely aware of what could have happened.

The garbage in a weighted sack was periodically discharged through a pressurized shoot. A brick or two was added to each bag to cause it to sink, thus a lot of bricks were needed. The best place to store these hundreds of bricks was on the deck of the passageways, making it similar to a loose, brick paved sidewalk, and giving the passageways a non-nautical atmosphere.

There was little to do besides work, and certainly no place to go. A couple of times we played poker in the wardroom. The captain in his book about the criuse, entitled "surface at the pole", described me as an "absolutely ruthless poker player", because he lost a little money.

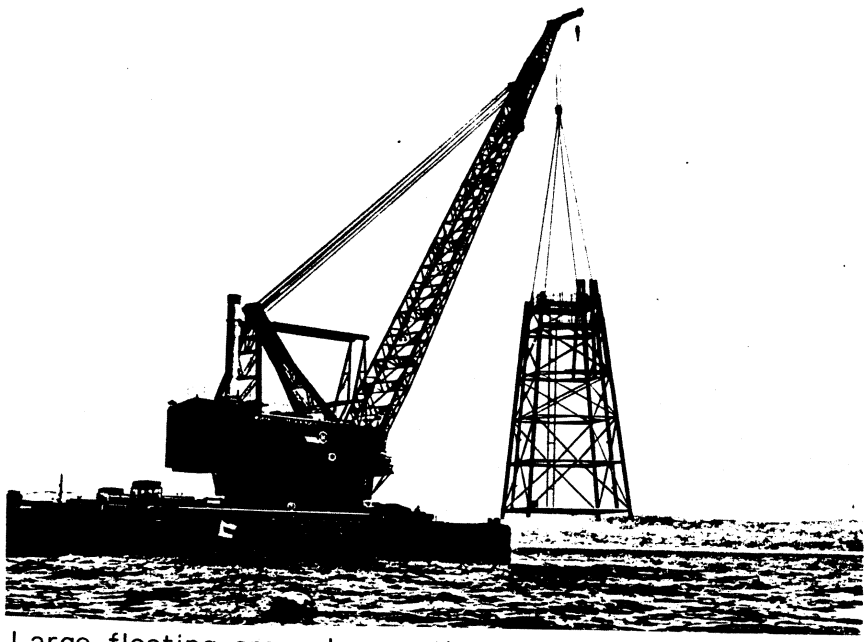
After 10 days of this cold, strenuous work in tight quarters, we emerged from under the ice near Norway and stopped in Bergen and Oslo for ceremonies given by the Norwegian government and the US Embassy. In Bergen the secrecy of the operation had been lifted and I sent Katherine a telegram. The fact that we had been in the ice and reached the north pole was in the news media, and she was concerned. I sent "everything scrumptious" to save words and reassure her. After leaving the ship in Holland, Rex Rowray and I took in the 1958 World's Fair in Brussels.

The technique of exploring the arctic by submarine was the topic of many popular lectures and scientific talks. The same procedure had been tried by Dr. Sverdrup in 1929 but his old submarine developed operational problems and few under ice operations were achieved.

Oceanographic Tower

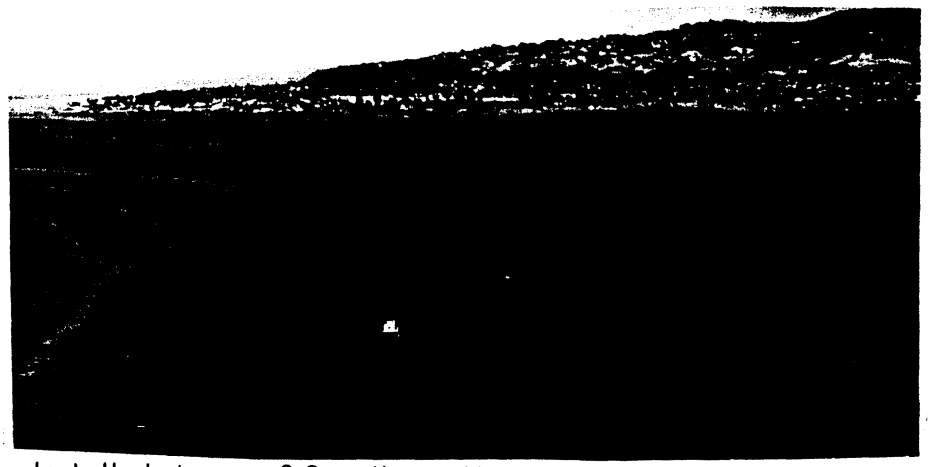
One of my major achievements was the development and utilization of an unique oceanographic tower. At the time, acoustic detection of mines and submarines was given high priority and as a result, my proposal to construct a research facility for this purpose was approved up and down the chain of command. My arguments were that it would be accessable, permanent, stable, versatile and above all economical. Although I stressed acoustics, my real motive was a desire for an oceanographic platform, essentially an extension of the Scripps pier, from which to carry on expanded programs.

The basic design had been carefully thought out over a period of 4 years and in 1959 when funds ($35,000) became available, a contract was let for its construction. Several trips to the construction site in Long Beach were necessary. Finally, the large framework was ready for transport. It was loaded on a barge with crane and arrived off Mission Beach early on 10 June 1959. By 10 PM on the same day it had been lowered in the sea and securely fastened to the bottom by means of 12-inch diameter steel piles, which functioned as giant nails



Large floating crane lowers the tower frame into the sea

driven up to 60 feet into the sea floor. This specific location 0.8 miles off Mission Beach was chosen because it had a gradually sloping sandy bottom, was reasonably free of noise and ship traffic, and afforded an unobstructed open sea environment.



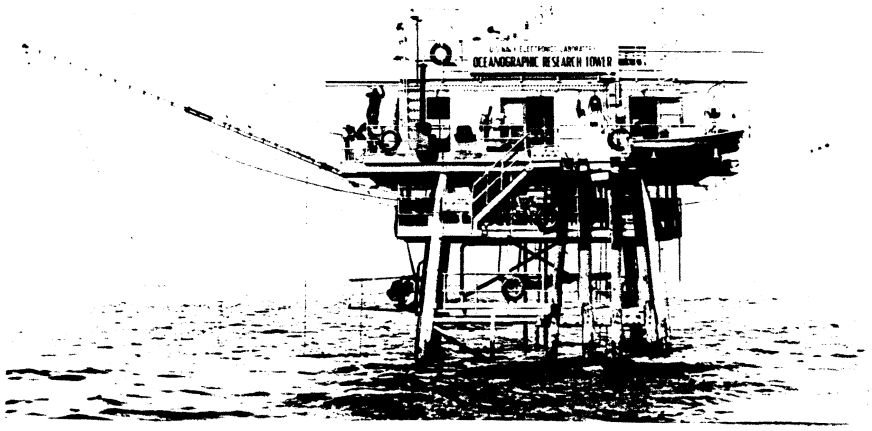
Installed tower 0.8 miles off Mission Beach, California. Note the light colored band slicks on the sea surface.

The navy provided frequent boat service from Quivera Basin. A loading winch, boom and basket brought equipment and supplies aboard. Off-loading passengers and equipment at the tower was tricky since the boat would rise and fall with the swell while the tower remained stable. We established radio communications linked to all boats, my office and even to our trailer in the desert.

Though it was an impressive sight, its presence was not universally appreciated. One irate person called to say the residents of Mission Beach were unhappy with the structure as it detracted from their view of sunsets, and that they had burned me in effigy.

Seagulls thought the tower was built for them and they came in flocks, littering the place. Several schemes were proposed to scare them off. Stuffed owls mounted on the roof were only partially successful, so we settled on broadcasting the distress call of the seagulls as the best determent. Initially it worked well, but eventually the gulls got wise to our deception.

The initial design called for one room 21 feet above the sea surface. This proved too small so 2 additional adjacent rooms were cantalevered out from the main deck.

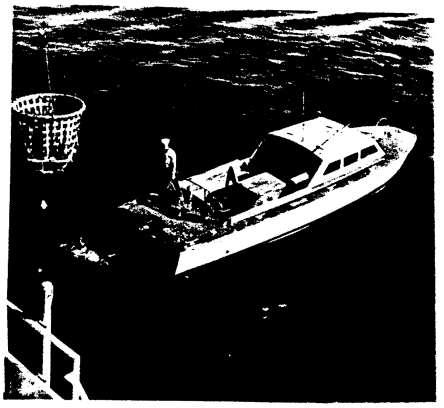


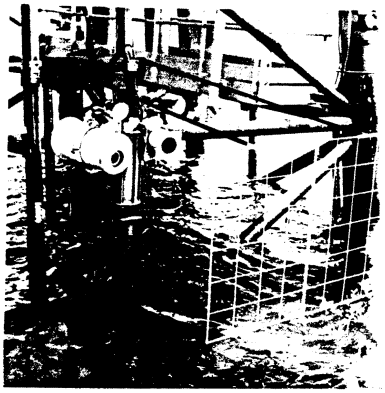
U.S. Navy Electronics Laboratory
Oceanographic Research Tower

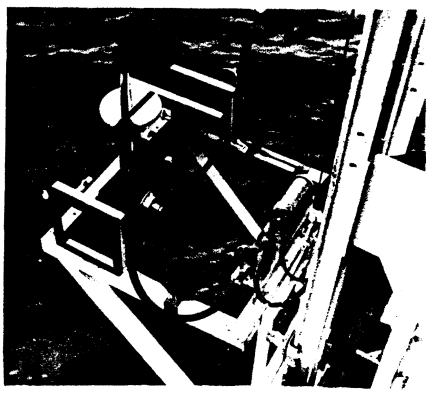
The facility had living accommodations - a galley, head, bunks, refrigerator, as well as stable and quiet laboratory rooms. Electricity (480 volts) from shore operated all equipments and made life aboard pleasant. Katherine and I occasionally commuted to the tower on week ends in our lightning sail boat from Mission Beach Yacht Club to attend the recording instruments.

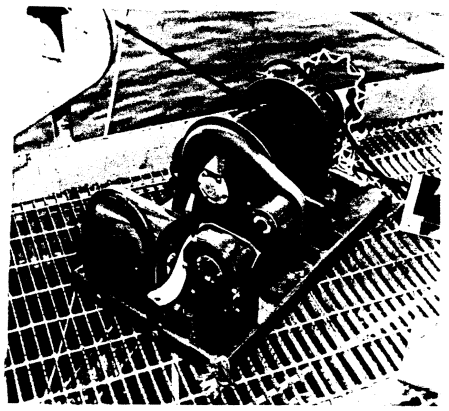
The lower of the 4 decks was designed for diving. From it a retractable ladder extended into the water for easy access by divers. Scuba divers were used to install and repair instruments on the legs and bottom, observe the operation of underwater equipment, study the sea floor ripples and benthic organisms, and scrape off accumulated growth from the structure, which was collected and transported well away from the tower in an effort to maintain a natural environment. For long periods of diving we installed a compressed air tank on the upper deck, and a long hose extended to hookah diving gear. The air was

also used for underwater bubble screens to study their effects on acoustic transmission. We even developed an underwater telephone system to communicate with the divers.





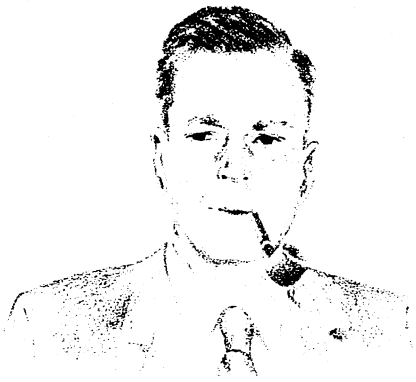




Stuffed owls used to frighten seagulls; loading basket and service boat; underwater TV and movie camera; hydrophotometer and underwater pump; isotherm follower reversible winch; and Eugene diving by grid at tower

One feature was 3 vertical railroad tracks on which lighted TV and movie cameras could be lowered and raised through all depths of the water column for round-the-clock studies of fish and other marine life, as well as for studies of vertical and horizontal water motion. Acoustic transducers were similarly used. Another inovation was a convex mirror mounted high above the tower to provide time lapse movies of the sea surface from horizon to horizon.

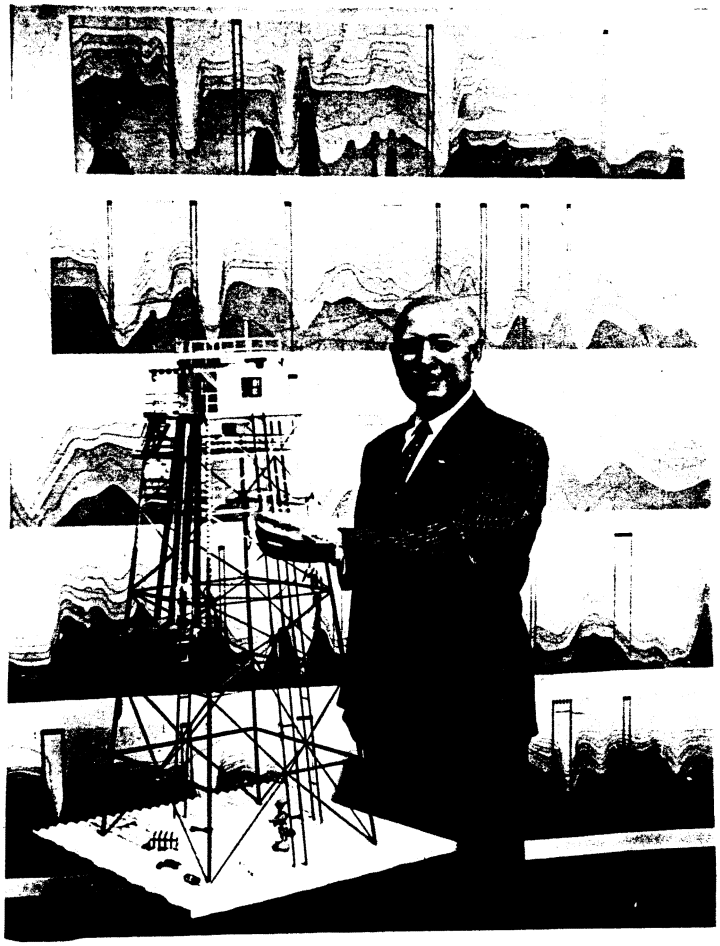
The tower was used not only for investigations in under-water acoustics, but also for a wide variety of studies in marine biology, chemistry, geology, physical oceanography and underwater communications. With the help of Art Nelson and Bill Armstrong, many unique equipments and techniques were developed. Instruments were attached to the framework, floated on the surface and mounted on the bottom. Also, an underwater hyrophotometer provided optical properties of the water, and an associated pump furnished water from any depth, surface to the 60-foot bottom.



Art Nelson engineered many of the tower equipments

Another most successful system to investigate the depth of the thermocline was proposed to Dave Baldwin and Jim Price. They came up with an instrument called an "isotherm follower". It consisted of a reversible winch supporting an underwater temperature sensor attached at the end of an electric cable. The sensor could be set to

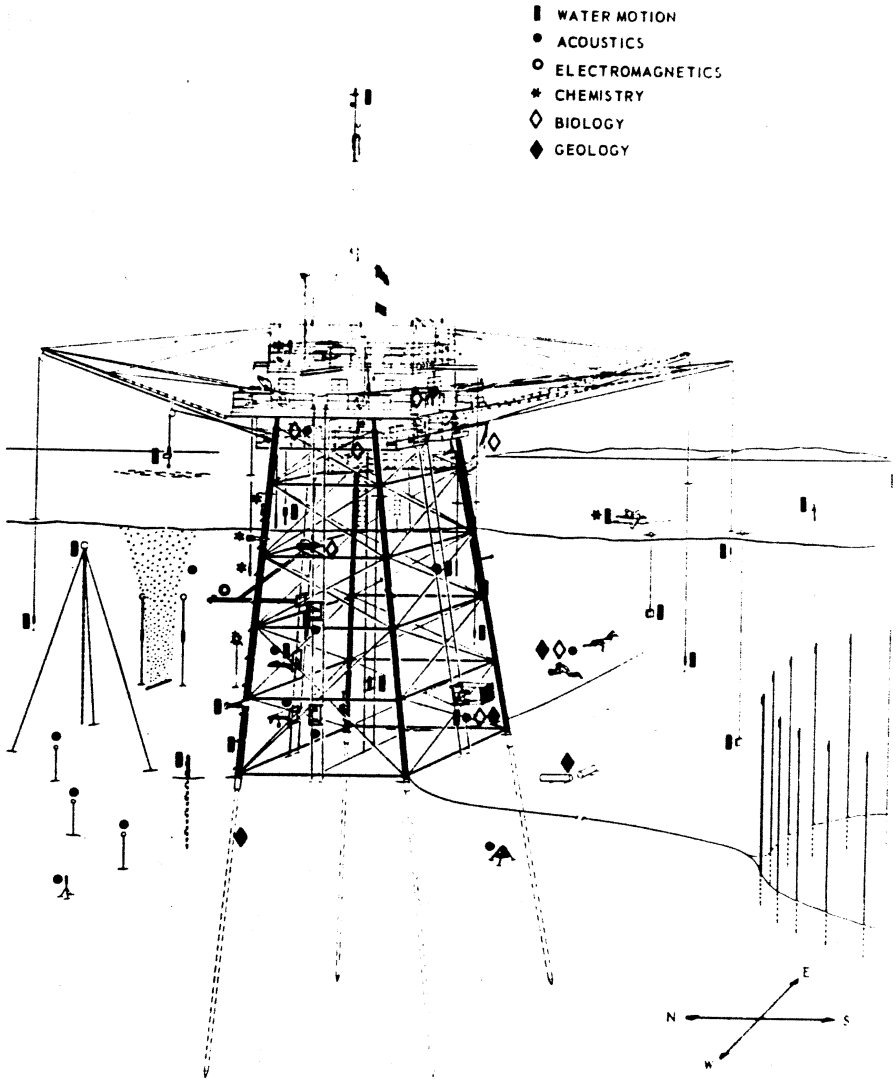
seek out any desired temperature, lock on to it and follow it up and down through the water column for months at a time. With 3 isotherm followers suspended 30 feet out from the tower in 3 directions, it was possible to record the amplitude, speed and direction of propagation of internal waves. In addition to their relationship to sea surface slicks, their influence on biological populations, optical properties of the water, acoustic transmission and sound scattering, were ascertained.



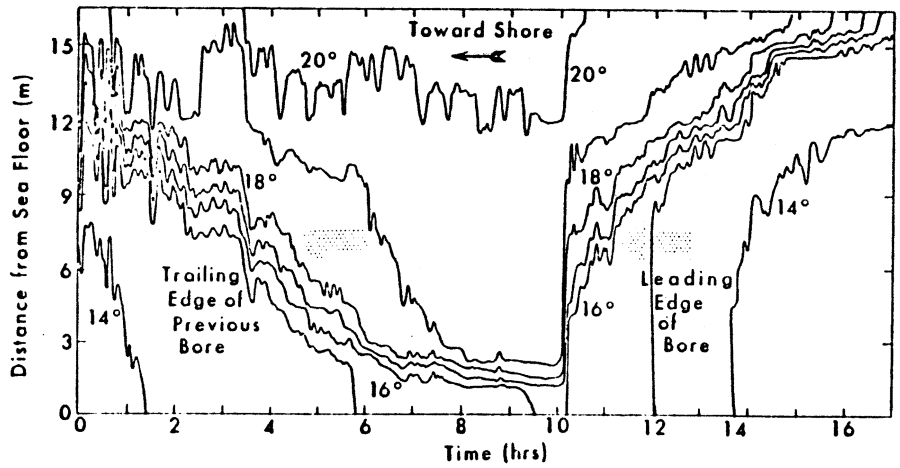
Eugene with model of tower. In the background are plots of internal waves measured at tower

Although I was concerned with virtually all tower studies my main interest was in thermal structure and internal waves. In addition to the isotherm followers, thermistor

beads were installed on a leg of the tower and suspended two feet apart from a float to provide time series of all isotherms in ocean fronts that passed through the area. For coherance of internal wave propagation, Owen Lee installed a circular array of sensors 450 feet in diameter, 700 feet out from the tower. Dozens of other projects were carried out by many NEL personnel, as well as those from other laboratories, including scientists from Japan, Australia and France.



Variety of studies and location of equipment on and around tower



Temperature structure of tidal bore which passed the tower

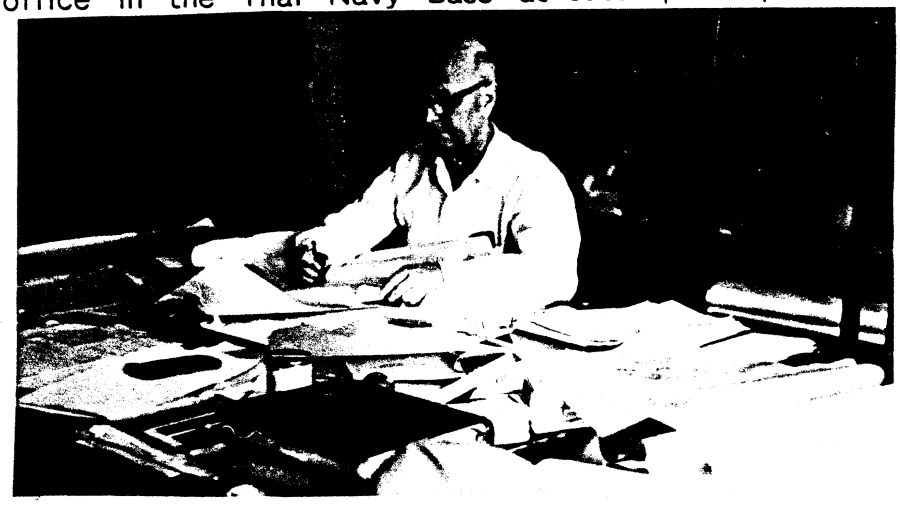
The tower required little expense as compared to a ship. It continued to operate even after I retired from the Laboratory, but with decreasing activity. For nearly 29 years it had served us well, until a severe storm on 17 January 1988 caused it to break off about half way down and crumpled the upper part to the sea floor. However, an enormous amount of information about the shallow ocean environment was gained from this unique platform, and it was fun.

Celebrating Dr. Abe's birthday on tower

NAGA EXPEDITION

In 1959 the Scripps Institution of Oceanography entered into a contract with the International Cooperation Administration of the U.S. State Department, to conduct an 18-month oceanographic and biological survey of the Gulf of Thailand and the southern part of the South China Sea. Thailand and Vietnam wanted to develop their marine resources, especially a commercial fish called "Restrelliger". The program was fairly well along when the Director, Dr. Anton Bruun, a Danish oceanographer, contracted amoebic dysentery and had to return to Denmark. As a result of my Indian experience, I was requested by Scripps to go to Thailand and assume the position of Scientific Director of the NAGA Expedition, NAGA being the name of a southeast Asian God. Since Scripps requested my services, my leave-without-pay status was granted by NEL and I again became a University of California employee, with the improbable title of Biologist 1.

On 23 September 1960, I left for Asia on the State Department project, without Katherine, and traveled first class - a new experience for me. In Bangkok I lived in the Grand Hotel, but not necessarily grand. From downtown Bangkok I commuted each day, usually with Thai Navy Captain Amporn Penypul, through crowds of people, rickshaws and cars, across the river to my office in the Thai Navy Base at Sattihip. Amporn was



Eugene in his office at Thai Navy Base, Sattihib, Thailand

the senior Thai scientist and father of 5 daughters named, Pim, Pam, Pom, Poom and Pum, and drove a small rattletrap car.

Another almost daily contact was with the head of the Thai Fisheries Department, Nai Boon. He was a jovial bureaucrat and seriously interested in the development of fisheries. One of his problems was pollution. Distilleries located on the river bank discharged their by-products into the aleady turbid river, which were not producive to acquatic life, but booze had piority over fish.

My marching orders, as I left for Bangkok were, (1) to review the oceanographic results and develop a program for the balance of the contract and (2) determine the need for extension of the contract with the State Department, based on the need of local participants. However, on arrival it was necessary to process the physical oceanography data in collaboration with both the Thai and Vietnam scientists. Though most of my co-workers were Thai. there were usually 2 Vietnamese scientists, Drs. Tran Ngoc Loi and Nguyen Hai, since this was a joint U.S.-Thailand-Vietnam operation. The processing and analysis was slowed by holidays, the warm weather and the leisure attitude. For example, the Thai chemist who titrated the samples for salinity was a junior naval officer who mainly sat and combed her long black hair. Amporn, on the other hand, was more energetic and worked in spurts, occasionally all night.

The observational part of the NAGA program was progressing well. The R/V STRANGER, a Scripps ship under Jim Faugn, with a crew of Thai officers and sailors, had repeatedly occupied a network of oceanographic stations throughout the Gulf of Thailand and part of the South China Sea approximately every 2 months. The data were accumulating in my office.

In a few weeks I was able to get much of the data processed and plotted and then prepared lecture slides. I tried to assure the Thai and Vietnam officials that the results of the program would be economically useful to both countries. On one occasion we went to Saigon, Vietnam, where I reported to a high government official on the status of the Expedition. He was so busy, or important, that he kept us waiting for 2 days. In Saigon

one could get a higher rate of money exchange in the street, but at some risk, as one of our party was short changed by receiving folded bills in a pack which were counted twice.

Katherine, Amporn Penypul, Nai Boon and Margaret Robinson at a dinner party in Bankok, Thailand

Thailand was new and exciting for me. We had lunch at the officers club on the base enjoying exotic foods, a favorite was a bamboo soup with pieces of raw liver. Another was sticky rice. It consisted of rice and honey stuffed in a section of large bamboo stock and then roasted. On a later trip to Bangkok we were served a small whole roast pig on a platter, with battery operated lights positioned in the eyes. An open air snack bar at the entrance to the base supported 38 Siamese cats, some of which snoozed on the tables. I enjoyed the temples and festivals. At one evening festival everyone was supposed to put his written troubles and a candle on a tiny boat and float them down the river. Judging from the flickering candles all over the river, a lot of troubles were washed away.

The visit to Vietnam afforded an opportunity to visit the Oceanographic Institute of Nhatrang. Even in 1960, guerrilla fighting was going on and I could hear shots as the train meandered through the jungle. A friendly association was established with the Vietnamese scientists which has long endured.

The NAGA Expedition ended in 1961. It provided a great deal of new information from this underdeveloped region, and the results were published. Some of the charts were produced, with the help of Margaret Robinson of Scripps, in 3-D color. The R/V STRANGER was returned to Scripps and all the crew came to our house for a party which my mother attended and enjoyed the friendly Thais.

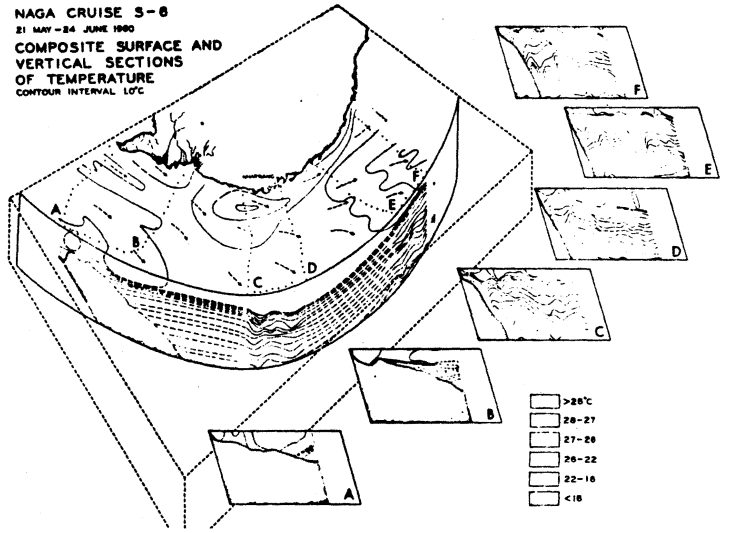
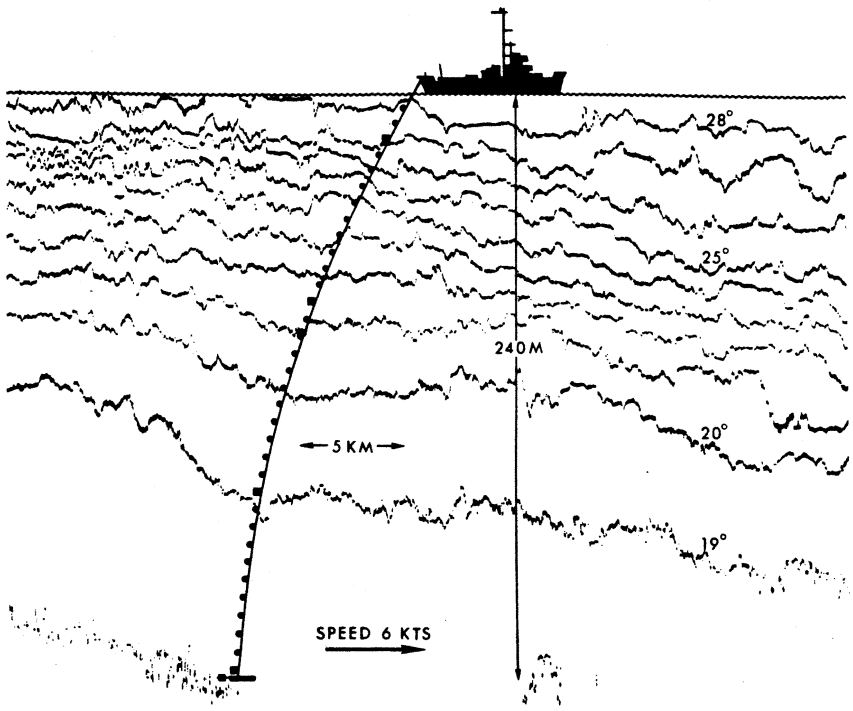


Chart of water structure off Vietnam in the South China Sea developed from the NAGA Expedition

En route to Thailand I stopped in Tokyo to renew contacts with Japanese scientists, especially Dr. T. Abe, and make preliminary arrangements for his visit to NEL for a few months to work on his speciality, sea foam. Then on my return from Thailand I had an opportunity to again visit India and see my friends at Andhra University and attend the 10th reunion of the Fulbright Program in New Delhi, following which I presentd a paper at the Pan Indian Ocean Science Association Congress in Karachi, Pakistan. A field trip associated with the Congress, up the Indus River, made a lasting impression as we passed, one after another, ruins of large ancient cities. Another stop was at the newly created Office of Oceanography at UNESCO in Paris, where I talked with the Director, Warren Wooster, about the NAGA Expedition and other international programs, which were eventually to be even more concern to me. I arrived at home sweet home on 28 November 1960.

Thermistor Chain

After my return from Thailand, it was reported by Bob Dietz that Bill Richardson of Woods Hole had developed a towed thermistor chain which produced a 2-dimensional (depth and distance) record of temperature in the upper layers of the sea. This was a development dear to my heart, since my oceanographic career started with the plotting of the location of serial hydrographic stations and T-S curves where the sea temperature was only known at depth intervals of 25 meters or more and stations were spaced many miles apart. Then in 1940, the advent of the BT gave a quantum step forward in the measurement of temperature-depth structure. Now Richardson had added another dimension, distance, which was especially exciting.

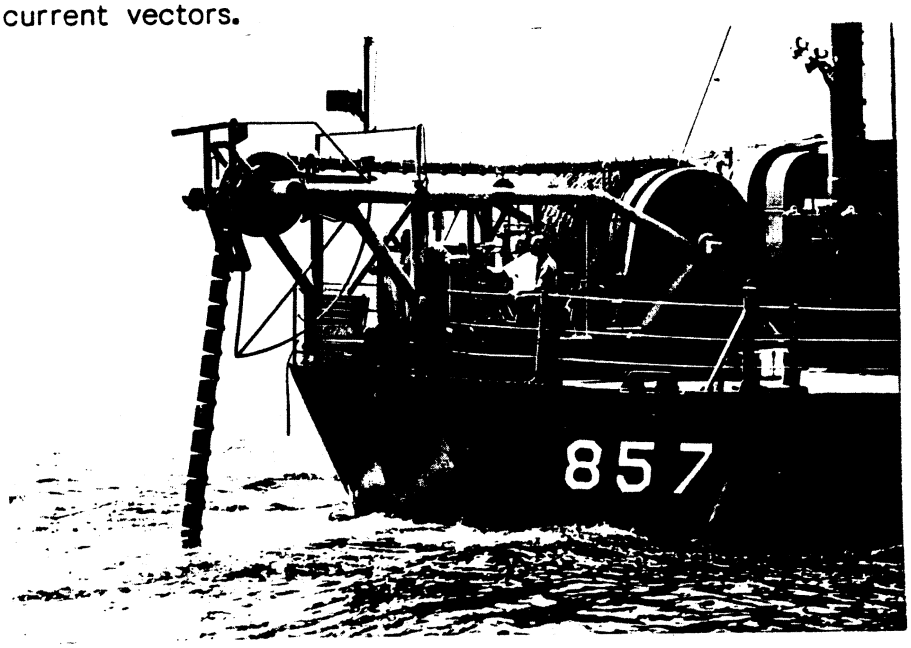


Schematic of towing the thermistor chain and the isotherms which it records

This instrument was investigated and it was decided to construct one for NEL. Woods Hole had built the first thermistor chain 600 feet long, ours was designed

to be 900 feet. The chain consisted of flat stream-lined links, through which passed multistrand insulated electrical cable connected to 34 thermistor beads spaced every 27 feet, and with a heavy 2,300 pound torpedo-shaped weight on the end. The complex state-of-the-art electronics was designed to scan the beads every 11 seconds and interpolate between them for whole °C temperatures, and then print the isotherms on 19 inch wide paper.

Contracts were let to Roy Rather of Houston for the hardware and to Bill Huckabay of Dallas for the electronics. It was a difficult job to get the large 19-ton complicated instrument installed on our PCE(R) 857 and operational, but Art Nelson solved many of the electrical and mechanical problems. Finally, when the massive chain was lowered and towed from the stern of the MARYSVILLE at 6 knots, it provided a vertically scanned profile every 90 feet, which was essentially a 2-D section of temperature structure from the surface down to about 760 feet. In addition we placed propeller-type continuously-recording current meters at 4 depths along the chain. This gave relative current with depth and when towed in box-shaped patterns, they provided current vectors.



Thermistor chain on USS MARYSVILLE, 1961

In 1961 cruises deploying the 900-foot long chain became routine. The 4th cruise was a continuous tow to the Hawaiian Islands, where we held open house onboard the MARYSVILLE at the time of the 10th Pacific Science Congress in August 1961, and displayed our equipment and results.

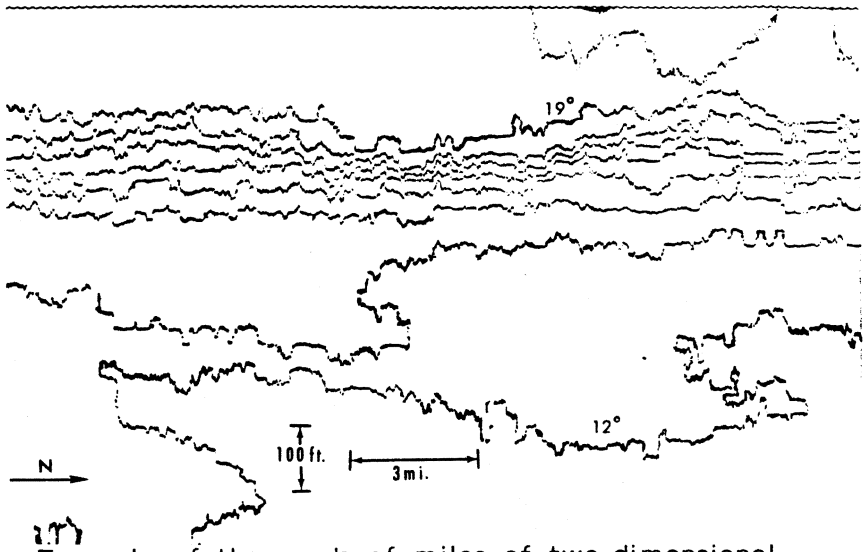
Roy Rather and Eugene at the controls of thermistor chain hoist

We continued to make several cruises a year, including long slow (6 knots) trips to the Gulf of California, South America, Bering Sea and even to the Sea of Japan. The latter was timed to coincide with the 11th Pacific Science Congress in Tokyo in 1966 where we again displayed our equipment and data to large crowds. A Soviet research ship tied up next to the MARYSVILLE and their friendly chief scientist came aboard for a visit, and brought a bottle of good Georgian brandy. I explained that it was against the rules to bring liquor aboard a U.S. navy ship, but he replied "put it under your coat and no one will know, which I did.

Eugene explaining thermistor chain to delegates of the Pacific Science Congress in Tokyo, 1966

We planned cruises to determine the thermal structure associated with sea mounts, island wakes, eddies, ocean fronts, internal waves, etc. Katherine and I made a detailed study of the California Front from data collected on numerous tows across the front in several directions. Another joint paper was an extensive study of the ocean fronts off the tip of Baja California. On one cruise I accompanied the ship down the Mexican coast to Tehauntapec where Katherine met me and we returned by bus to Mexico City, an enjoyable trip.

I spent a great deal of time on this program but I did not participate in all cruises, however the planning of the cruises and the processing and analysis of the data were my responsibility. The data accumulated, from 43 cruises over 12 years, so fast that it was not possible to throughly analyze all of them. Even after I retired in 1973 much of this unique temperature data were brought home to be analyzed later.



Example of thousands of miles of two-dimensional temperature structure recorded with the thermistor chain. This example obtained off Baja California, 1965

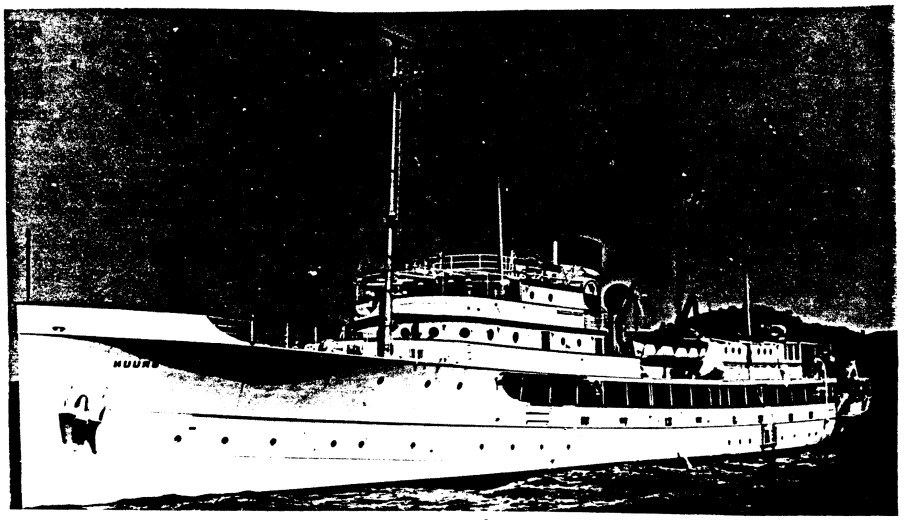
International Indian Ocean Expedition

In 1957 a new Scientific Committee on Oceanic Research (SCOR) was created by the International Council of Scientific Unions. In searching for an international oceanographic program, they noticed the paucity of deep sea and other data from the Indian Ocean. Thus, SCOR proposed a major effort to study the Indian Ocean. There was much discussion about what, when and where to study, for oceanographers are noted for their individuality. A newsletter called the Indian Ocean Bubble was issued by Woods Hole. Its function was to print the different opinions and in one issue I expressed my opinion that since we would be working in the Indian Ocean, Indian oceanographers should play an important part in the program.

The program was soon to be called the International Indian Ocean Expedition (IIOE) and all countries and laboratories were encouraged to participate. Bob Snider was appointed by SCOR as coordinator. He charged all over the world encouraging participation and issuing beautiful colored charts showing the track of wishful

cruises by ships of different countries. He was effective and arranged for all sounding to go to one laboratory and all plankton to go to another. However, the Russians objected to an American as coordinator, and as a result, coordination was transfered to UNESCO in the waning years of the expedition.

The U.S. part of the program was largely financed by NSF and consisted of several cruises by Scripps, Woods Hole, and others. However, our major effort for the IIOE was the U.S. Program in Biology. This involved the acquisition of President Truman's 247 foot, 1700 ton, presidential yacht, the USS WILLIAMSBURG, its conversion to an oceanographic vessel, and its renaming the R/V ANTON BRUUN.



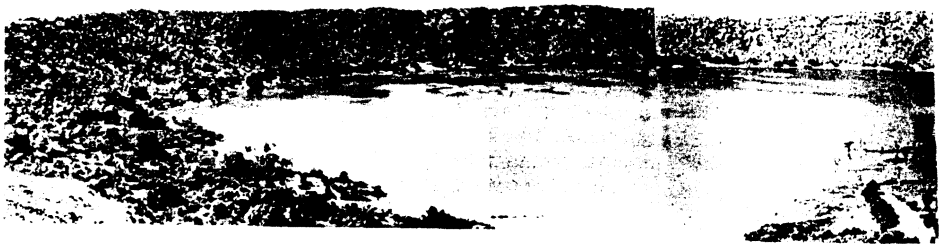
R/V ANTON BRUUN, Truman's presidential yacht, used for oceanographic work in the Indian Ocean, 1963

In 1962 John Ryther of Woods Hole informed me that he was the coordinator of the U.S. Program in Biology and would like my assistance for the initial part of the program, since I was acquainted with the Indian oceanographers and familiar with the oceanographic problems in the Indian Ocean. I went to New York in September 1962 to discuss the matter with him, and agreed to participate in the program only if Katherine was included as one of the scientific staff. We developed a program in which I would work in the Bay of Bengal and include some Indian scientists.

Again on leave-without-pay from NEL, I accepted the job as Chief Scientist for Cruise One of the R/V ANTON BRUUN and both Katherine and I became employees of Woods Hole. The program that we developed also called for us to go to India prior to the cruise and help establish a base for our ship, recruit Indian and Thai scientists for participation in various sections of the cruise, and give a series of lectures throughout India explaining the purpose of the cruise.

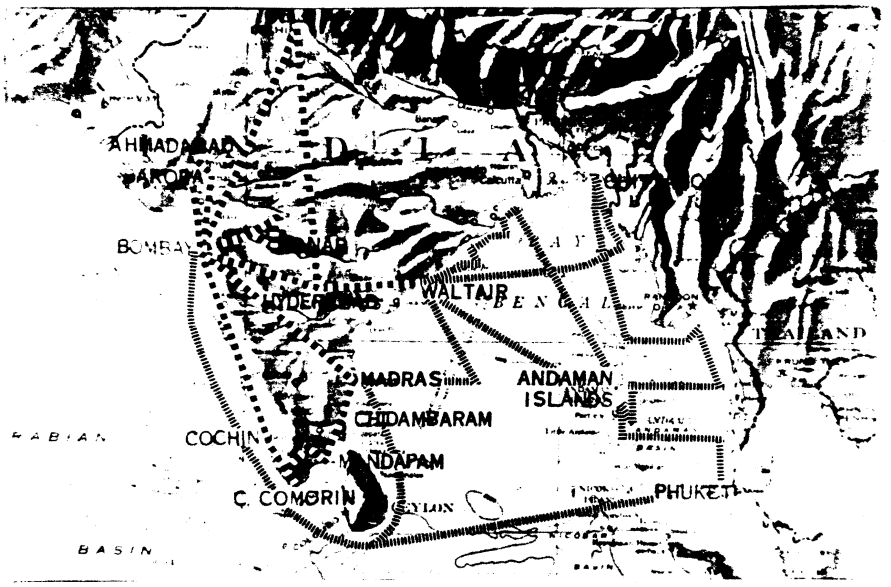
Eugene lecturing at an Indian oceanographic institute and over Voice of America

After visits to Tokyo and Bangkok to see our oceanographic friends, we arrived in Bombay on Christmas day, 1962. For 2 months we toured Indian universities and oceanographic institutes from one end of the country to the other, and on the suggestion of Bob Dietz, we even digressed into the hot hills of central India to investigate Lonar Crater, a suspected impact crater. We walked down 570 feet to the base of the crater and around its inner rim of 1 mile diameter to look for evidence of a meteorite striking the earth. We did not find any astroblems but it proved to be an impact crater.



Lonar Crater in central India, 1963

Early in March 1963 the ANTON BRUUN arrived in Bombay. On 12 March we put to sea with 28 scientists and a crew of 30. We headed for the Bay of Bengal and the Andaman Sea. Katherine, the only woman on board, and I had Truman's spacious stateroom on the main deck, complete with large portholes and a locker full of booze for entertaining dignitaries. The scientists consisted of a permanent staff of 8 who could handle the basic Nansen casts, net hauls, chemical analyses and primary production work. The remainder were specialists on molluscs, foraminefera, fish, shrimp, ostracods, algae, birds, etc., from a variety of U.S. institutions. We even had a man from National Geographic magazine. We also invited 6 Indians and 2 Thai scientists for the first leg. Other Indians were accommodated later as bunk space became available.



Track of cruise one of ANTON BRUUN in Arabian Sea, Andaman Sea and Bay of Bengal, and lecture travel within India prior to cruise

We occupied a network of stations throughout the Andaman Sea and Bay of Bengal. I set up 2 watches, 6 hours on and 6 hours off, as was the proceedure at Scripps. However, Katherine and I were on deck for all stations both day and night. Katherine kept records and I would oversee collections of the whole spectrum of samplings and measurements.

Activities on board the ANTON BRUUN, 1963

l. to r. Katherine and Sidney McGuire with Nansen bottle; T. S. S. Rao with ship's track; Alan Pease with Nansen bottle; C. Poornachandra Rao with BT; Bruce Rogers with IIOE net; Bruce Rogers and K. Balasubramanium at fish sorting table; Don Fenner with water sampler; N. K. Panikkar with echogram; C. H. N. Rao and Eugene sampling sediment; Dick Myers with incubator for primary production; Eugene and Katherine with BT; and at recording station; C. H. M. Rao drying sediment samples; Eugene with dredge

Life aboard was hard work but pleasant. The food was excellent, we even had baked Alaska, and the weather was good, with spectacular sunsets over the tropical Bay of Bengal.

Katherine and Eugene and moon over the balmy Bay of Bengal

Of course, there were problems: the big winch for deep dredging and trawling became inoperative, and the still for fresh water and the air conditioner did not work well. As a result, we took on water at our first stop, Puket, Thailand. Our next scheduled stop was to be Rangoon, but the Burmese thought we were spies and would not allow us entry. This necessitated skipping of some stations and we ran on directly to Chittagong, Bangladesh, for water and fuel. Because the heavy winch did not operate, we then headed for Vizag to discharge the fisheries scientists but occupied a line of hydrographic stations enroute. From Vizag we occupied 2 more valuable, unscheduled, lines of stations crisscrossing the Bay of Bengal from Vizag to the Nicobar Islands, then to the mouth of the Hooghly River and back to Vizag. At Waltair, my Alma Mater, we held a seminar on the preliminary results of the cruise. It was supported by the U.S. Information Service in India and attended by all leading Indian oceanographers.

Caricature of Eugene as Chief Scientist on R/V Bruun

Next was a dog-leg of stations to Madras where for several days the USIS provided us with a car and driver. The last leg of the first cruise landed us in Bombay on 10 May 1963, with lots of new chemical and physical data, rolls of depth soundings, jars of plankton, barrels of pickled fish, bags of sediment samples, and miscellaneous samples to be shipped to specialists around the world. The winch was eventually repaired after we left and used on 9 other cruises to other parts of the Indian Ocean.

Getting ready to enter the blue grotto, Capri, Italy, 1963

On our return home we visited Naples and Capri, Italy, and stopped in Paris where we discussed the status of the IIOE program with Warren Wooster at UNESCO. In Washington we also reported on the success of the program in biology to the Academy of Sciences.

Soon after I returned to NEL in June 1963, I was called to attend a meeting of the International Oceanographic Commission in Monoco as an observer. I was gaining experience for further international work.

In spite of the reluctance of NEL to grant me leave-without-pay to accept foreign assignments, the success of these assignments led the laboratory and the navy to nominate me for the Presidential Civil Service Award. The citation stressed international relations in marine science. I did not receive the award, mainly because of competition from the new space program, which was the hottest thing at the time.

UNESCO Office of Oceanography

Late in 1963 Roger Revelle and Warren Wooster asked me to take a position at UNESCO in Paris. Wooster was returning to Scripps and Konstantine Federov, a Russian physical oceanographer, was taking over the Directorship of the Office of Oceanography. The U.S. needed someone with experience in international marine science to represent it in the Office. Normally, such appointments are for at least 2 years but I felt that 6 months would be the longest period I should be away from my NEL job. The U.S. was to find a more permanent replacement at that time. Further, the job offered little challenge of discovery or adventure, and working under a Russian sometimes created petty political differences. The plus side of the position was that it brought me back in frequent contact with oceanographic friends from around the world, and I could be of help.

Eugene in French beret, Paris 1963

Katherine and I arrived in Paris on 9 December 1963 on a cold wintery day and took a room at the Duquesne Hotel, only a few blocks from the tall, modern UNESCO building. I was assigned a nice view room and a French girl as a secretary. My title was Deputy Director of the Office of Oceanography, and Deputy Secretary of the Intergovernmental Oceanography Commission. The other members of the Office of Oceanography, besides Federov, were Tim Parsons, a Canadian, and K. Takeuchi, a Japanese. In addition, we had three international secretaries from England, France and Brazil. Our Office tried to help developing countries by supplying funds,

equipment and teachers to build up their oceanographic capabilities. We issued publications of international activities, including bound sets of scientific publications derived from the IIOE. I answered innumererable letters,

Eugene at his desk in UNESCO, Paris

and arranged training courses and meetings. One meeting which I arranged included Laboratory Directors and other officials of oceanographic laboratories bordering the Mediterranean Sea, and was held in Algiers, Algeria. The talks were largely in French but I had Katherine and the French secretary to translate. The local Arabs provided us with an elegant party. We returned by ship across the Mediterranean and were amused by 2 open bottles of wine on our table but no water.

Eugene and Katherine cruising on Mediterranean Sea, 1964

While we were in Paris, Katherine had a contract with Woods Hole to process the IIOE reversing thermometer data, so she rented a mechanical calculator and set it up in my room at UNESCO to do her work. This was a pleasant arrangement and fortunately Federov did not complain.

In our hotel we had a large corner room, the entrance to which was through the adjoining bath. Hotel tenants were provided with a continental breakfast of croissants and coffee. UNESCO served an elaborate buffet lunch consisting of a wide variety of foods designed to satisfy their employees from around the world. We enjoyed sampling strange foods embellished with beer and wine. UNESCO also ran a fine restaurant where we occasionlly entertained visiting dignitaries, including our commanding officer of NEL, Captain Harry Mason.

Life in Paris provided us with better food, better art and better transportation, than we were used to in the U.S. After work, although it was cold in winter, we would frequently take the rapid and frequently scheduled underground metro to some distant part of Paris and seek out a native French restaurant for dinner. The food was especially good since it did not contain artificial color nor flavor. Then on Saturdays, Sundays and holidays we took in the numerous outstanding galleries, museums and theaters. Paris provided lots to see and enjoy.

French art purchased in Paris

UNESCO also arranged parties, lectures and movies with an international flavor. During Easter vacation we rented a car and went to the Loire Valley to see the countryside and castles.

Shortly before we left Paris our son, Bill, came to visit us and met Mercedes Serra from Barcelona, Spain. They were two lost souls and soon wanted to get married. It normally takes one month to post the bans for marriage, but with a little bribe the time was reduced to one week. Just the day before we sailed on the S.S. FRANCE for New York, we attended their French civil wedding.

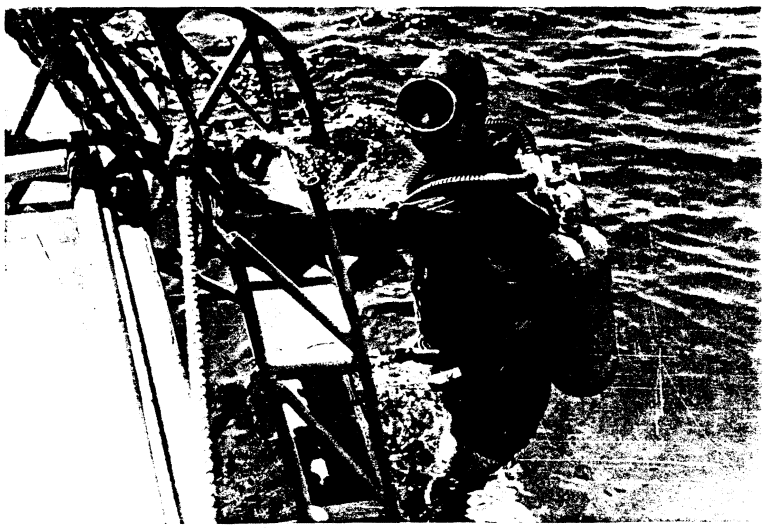
New daughter-in-law, Paris 1964

On our return on 25 June 1964, I resumed my normal duties after many memorable experiences. The thermistor chain and tower programs were doing well. I led a cruise to the oceanic front off the tip of Baja California, where the Gulf Water mingles with the California Current and the North Equatorial Water, causing abrupt changes in the temperature structure. Such fronts were studied from 1965 to 1968.

Although these leave-without-pay periods were not grantd without considerable opposition and grumbling, the management, especially Don Wilson, nominated me for the 1965 Federal Civil Service Award. Even though I did not win the award, it was gratifying.

Diving: Scuba and Submersibles

I enjoyed diving and used borrowed hard hat gear when at Scripps in 1933 and skin diving at Bikini in 1947. Then in 1951, when Jacques Cousteau developed the aqualung, NEL became involved in underwater diving operations. Bob Dill was quick to realize the potential value of scuba to marine science. He and John Beagles set up a diving locker and even a decompression tank.



Eugene ocean diving, 1958

I trained in the La Jolla Beach and Tennis Club's pool and became one of the first to qualify as a scuba diver. My first ocean dive for NEL was in the head of Scripps Canyon. It was part of a medical study to see how the heart behaved during dives. To monitor my heart, my chest was fitted with sensors connected by fine wires to a recorder in the surface boat. Although I did not see the results, my heart must have vibrated the needle off scale. The next dive was in the kelp bed at the Coronado Islands where playful sea lions made repeated charges at me while I photographed their antics. This was real fun.

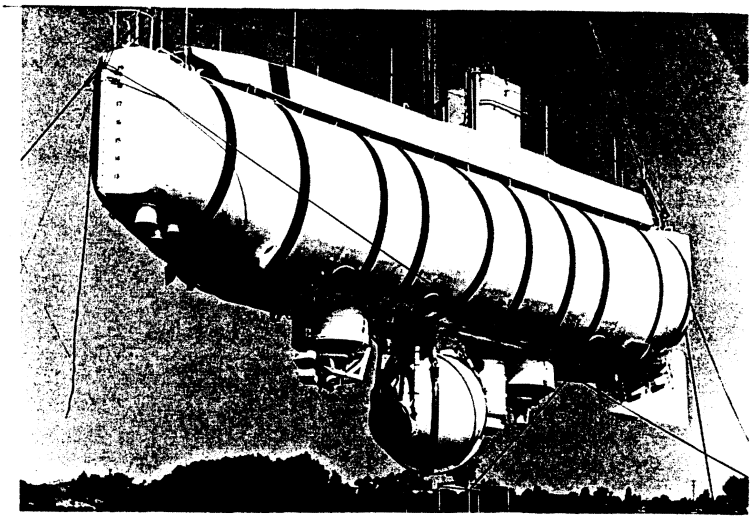
It was so much fun that we purchased 2 sets of scuba gear for our personal use. Bill and I made weekend dives all along Point Loma to see the beautiful underwater

Eugene and Bill spear fishing with scuba gear.

areas, pry off abalones and spear a few fish. We normally launched our heavy 70 cu. ft. tanks from shore but occasionally dove in the kelp beds from our sailboat, from a neighbors power boat, and even at the tower. The whole family dove with scuba gear in Florida when I was there in 1954.

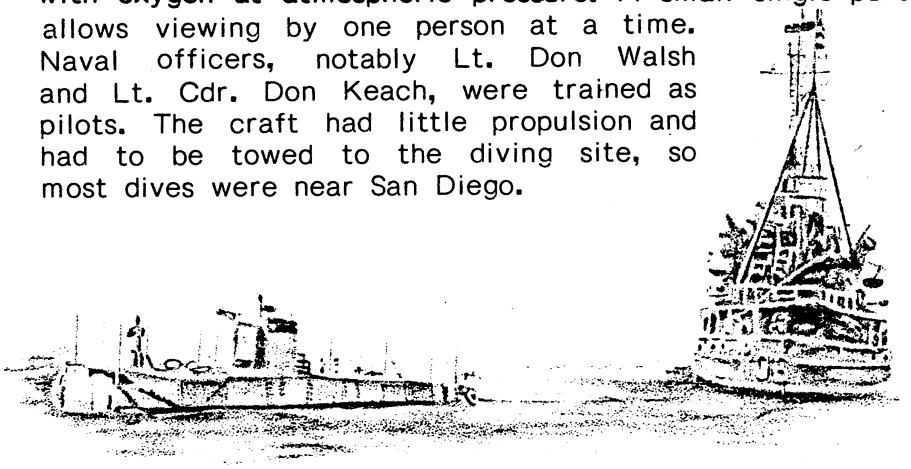
Bill with abalone catch (1955)

Another exciting program, using submersibles, was also developed at NEL. Bob Dietz, while working for ONR in London became aware of the newly constructed submersible, TRIESTE. He dove with her in the Mediterranean and was so impressed that he persuaded ONR to purchase the craft from August Piccard and assign it to NEL for operation.



Bathyscaph TRIESTE

The TRIESTE is a large, bulky craft consisting of 30,000 gallon tank of gasoline for buoyancy and a pressurized sphere below in which 2 people can be accommodated with oxygen at atmospheric pressure. A small single port allows viewing by one person at a time. Naval officers, notably Lt. Don Walsh and Lt. Cdr. Don Keach, were trained as pilots. The craft had little propulsion and had to be towed to the diving site, so most dives were near San Diego.

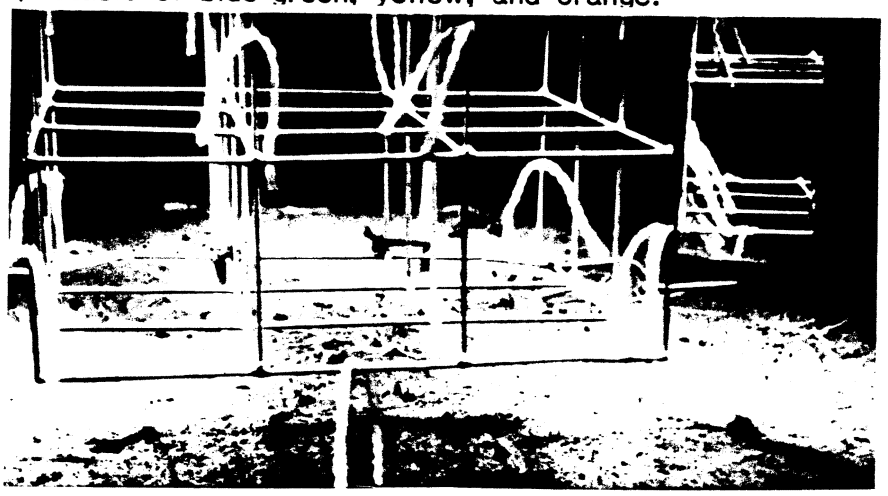


TRIESTE being towed to diving site

It was later shipped to the western Pacific in 1960 for a 35,800 foot dive in the deepest known part of the ocean, the Challenger Deep.

I was anxious to see the water column and the sea floor, and what kind of motion occurs close to the bottom. I expected very slow motion, so I designed a grid with nylon yarn strands suspended from it. The angle the yarn subtended was related to the speed of the current, and with side mirrors I could see the yarn in 2-D. My first submersible dive was on 25 October 1961 (called dive 84) in the San Diego Trough, 15 miles west of San Diego, with Don Walsh as pilot.

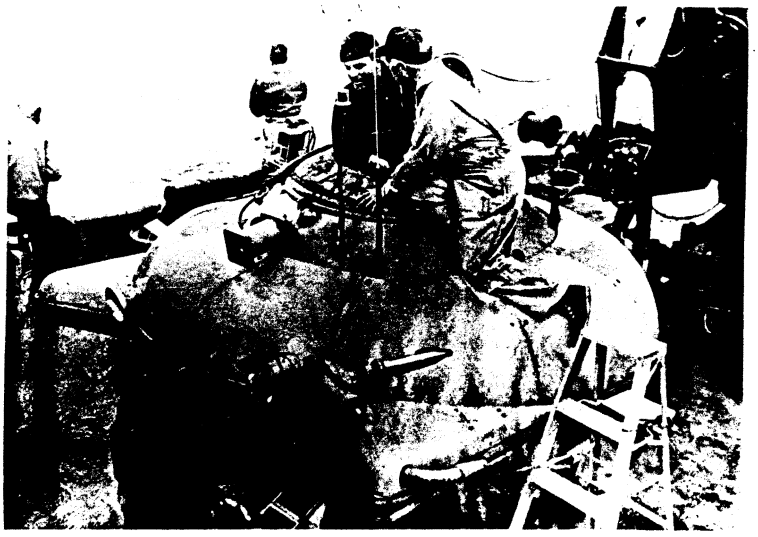
I looked through the window at the lighted area a few feet out as we decended. I was excited and surprised to see myriads of snow-flake-like organisms at all levels. It was a revelation to me to observe fragile organisms lighted against a black background. There were so many that, dead and alive, colored and transparent, individuals and thread-like-strings, the ocean gave the appearance of a large, polluted block of ice, all the way from the surface to the bottom. When the external lights were extinguished, the variety of bioluminescent forms was startling. Strings and circles of individual light, bright single bursts, and blaze-like flares gleamed in a color spectacle of blue-green, yellow, and orange.



Grid with nylon streamers positioned near the bottom at 3870 feet in San Diego Trough used to measure weak currents. A side mirror can be seen on right (1961)

In a couple of hours we reached the bottom. The momemtum forced the gondola into soft sediment which curled up like toothpaste in front of the single window of the gondola. I had visions of being stuck in the bottom. When the water cleared the port was just above a flat bottom partly covered with brittle stars, sea cucumbers and a couple of fish. We photographed their movements and measured the current with the nylon yarn streamers attached to the grid mounted on the ballast tank. The speed averaged 0.04 knots. After we finished our work we released the ballast of iron BB-like shot onto the sea floor and started to float upward.

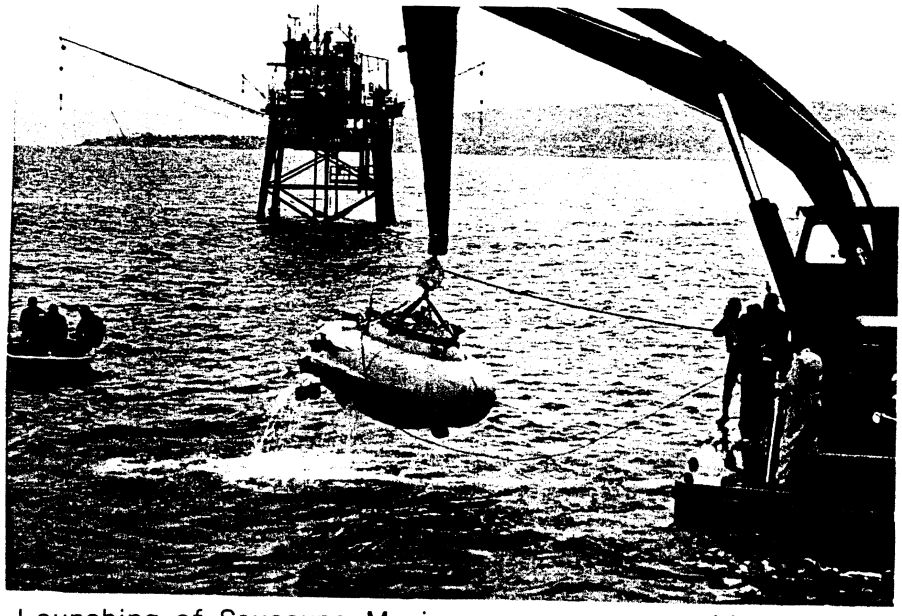
When we approached the surface, I was elated with a sense of success, but it was premature. The water in the tube through which we must exit would not clear when our compressed air was turned on. We used our underwater telephone to summon the mothership for an air tank to be hooked up externally, but the service boat had engine trouble and could not come to our rescue until the engine was repaired. We remained bobbing in our gondola 18 feet below the surface for about an hour before the water was finally blown out and we could emerge. It was an exciting and educational dive.



Eugene on Soucoupe Marine getting ready for launch (1964)

The next opportunity came when NEL rented the Soucoupe Marine from Jacques Cousteau in 1966. This was a smaller craft capable of holding 2 of us, prone on our stomachs, and diving to 900 feet. It was equiped with a claw useful in collecting samples. Its small size enabled it to be easily transported to the diving site.

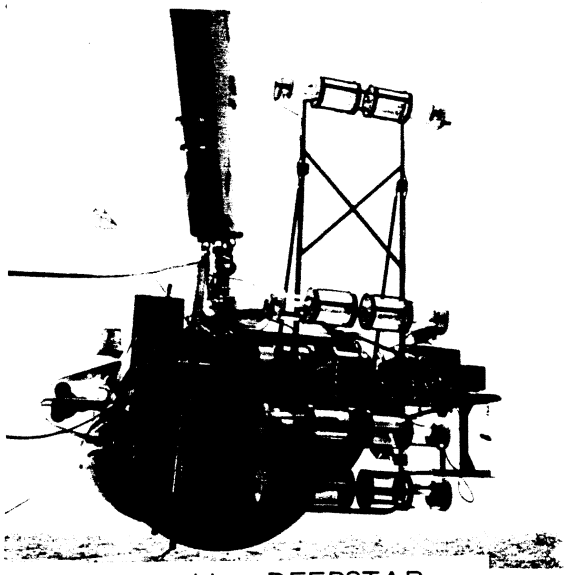
One dive was made to examine the characteristics of the sea floor in a section westward of the tower. With 2 ports, one for the pilot and one for me, I was able to keep my eyes about 18 inches from the sea floor and photograph the bottom features and benthic life in detail.



Launching of Soucoupe Marine near oceanographic tower

The next, and most useful, craft that NEL rented was DEEPSTAR-4000, since it could be transported on a mothership, was capable of depths up to 4000 feet and could hold 3 people. Instruments were attached to the outside. These could be manipulated from within the sphere and were used for water sampling, temperature and current measurements.

Bottom configuration and benthic life varied widely in different diving locations. When on the bottom our flood lights seemed to attract fish which circled the lighted



Launching DEEPSTAR

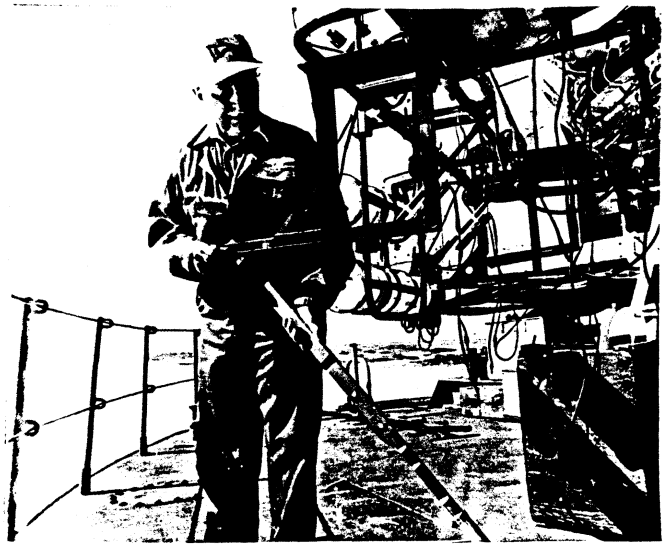
area. On one dive south of San Diego the pilot saw a large fish, the eyes of which he described as large as dinner plates. However, on a dive in the San Pedro Basin just off Catalina, I was surprised to find no living organisms. Here the near bottom water was nearly depleted of oxygen. This was a virtual desert and we attributed the condition to the basin-like shape which reduced the water circulation, preventing the inflow of oxygenated water.

Sea floor at 3500 feet in San Pedro Basin. Dead squid and fish are visable on stark, fungus covered bottom, with probe in background (1966)

Going down was easy but coming up sometimes posed problems. On a dive south of San Diego, the weights which are normally disconnected from the craft to allow for its assent, would not release. The pilot turned on the moter and tried to propel the craft upward. It was scary to see particles in the water going up as we sank downward, even with the motor going at full speed. By now the batteries were running down. The last resort was to open a valve to release the liquid mercury used to stablize the craft. It, too, did not release, so the pilot had to hand pump 100s of pounds of mercury onto the sea floor, and thankfully, to everyones relief, the craft became light enough to ascend to the surface.

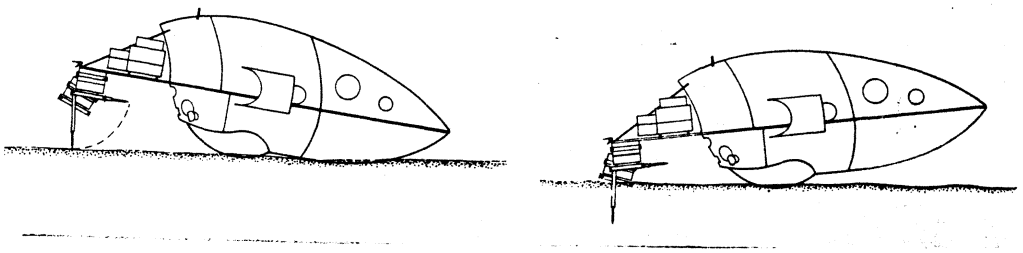
Eugene by viewing port in DEEPSTAR, holding movie camera control switch

To measure heat flow from the earth to the water above, I devised a probe with a temperature sensor on the end, to be mounted on the prow. When the craft was on the bottom the 4-foot long probe was rotated into a vertical position, then by pumping mercury to the forward part, would cause the craft to tilt down forcing the probe slowly into the sediment. We recorded the increased temperature over 3 feet below the water/ sediment boundary. On one occasion the probe, after being forced into the sediment, would not come out. We were literally nailed to the bottom. Finally, by moving our bodies forward and back, we rocked the craft and slowly pulled the probe from the sticky mud.



Eugene with probe used to measure subbottom temperatures

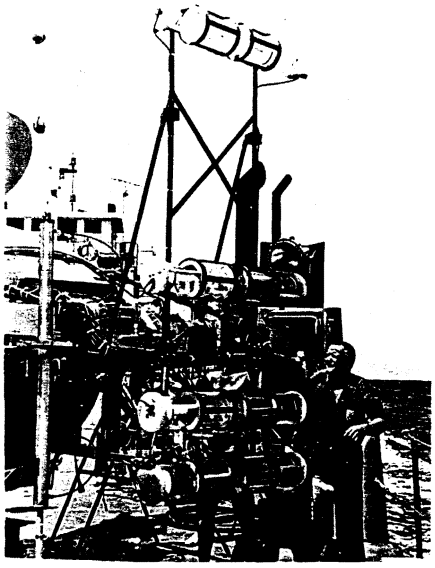
This method of measuring heat flow worked well and a similar method was used to determine the vertical temperature gradient just above the sea floor. In some areas a warming was discovered next to the bottom which created a near bottom sound channel.



Tilting of DEEPSTAR to insert probe into bottom for heat flow measurements

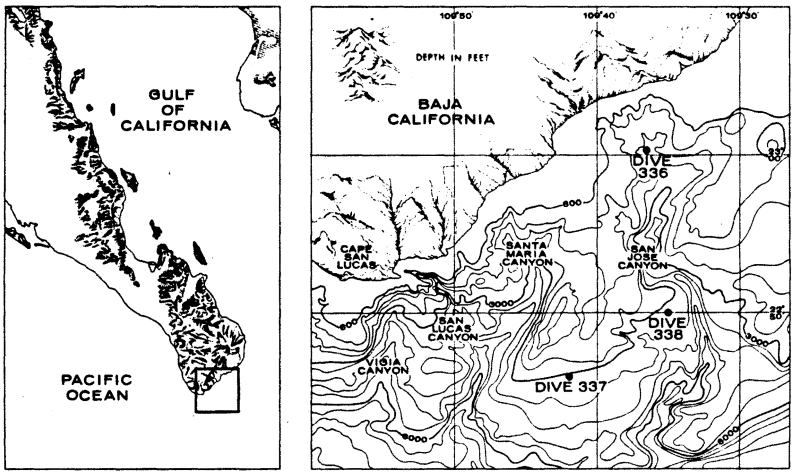
For the collection of water samples for chemical analyses near the sea floor we developed a framework holding plastic bottles which trapped water at different levels. The bottles were closed at desired depths by exploding bolts triggered from within the craft. The

array of bottles was referred to as the "bedstead" but it was effective in collecting a series of samples at 6, 18, etc., inches from the sea floor.



Water sampling bottles called the "bedstead" mounted on the brow of DEEPSTAR

In 1968 we made a series of 3 dives in an area off the tip of Baja California. Here we found relatively strong currents and a shrimp bed at 2100 feet. On this



Location of dives 336-338 off Baja California in 1968

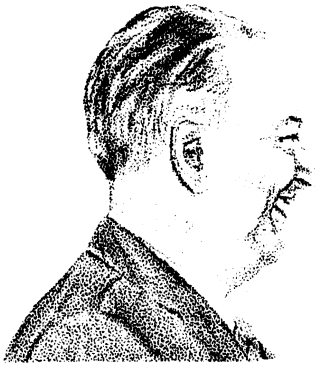
dive I carried the Explorers Club Flag No. 170 in the craft and planted a facsimile of it on the sea floor. In all, I made 12 dives in DEPSTAR and collected new information about the near bottom zone in more detail and accuracy than could be done with a surface ship. Submersibles provided a new method of studying the sea which was pioneered at NEL in the 1960s.

Eugene, Bob Bradley and Dale Good with Explorers Club flag carried on Dives off Baja California, Mexico

Senior Scientist and Consultant

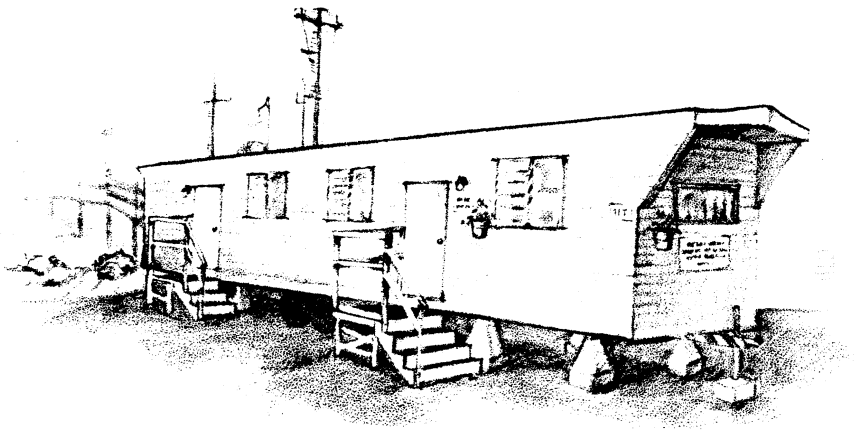
In 1968, after considerable thought, I decided to give up my position as Head of the Marine Environment Division which I had held for 22 years. One reason was because my supervisor, Dr. Gilbert Curl, died and his position was filled by his deputy, a less scientific and non-oceanographic type. But the main reason was that my Division had grown to 38 people and the administration had increased accordingly. The work included budgeting, program development, evaluation of employees, reviewing all publications, providing facilities and equipment, signing leave slips, attending administrative meetings, and other

non-productive chores. The increased administration prevented me from doing as much research and travel as I would have liked. Therefore, on 1 September 1968 I stepped down and Owen Lee became the new Division Head. Soon afterward he accepted a temporary position with the 6th Fleet in Naples, Italy, and the position went to Allen Beal.



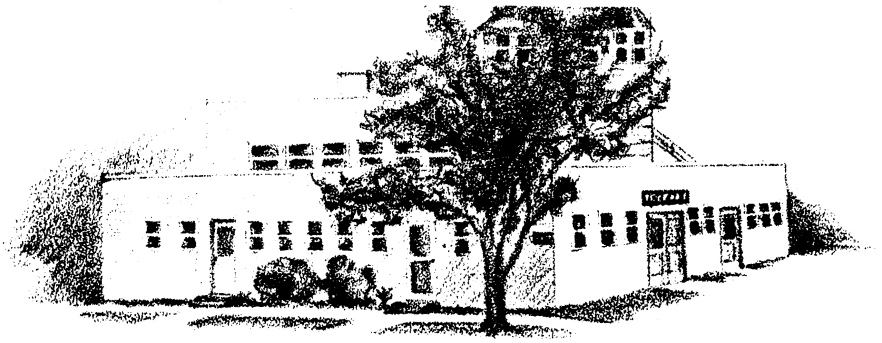
Dr. Gilbert Curl was Eugene's supervisor 1955-1968

A new catagory, called Senior Scientist and Consultant for Oceanography, at the same level (GS-15) as the Division Head, was set up for me. Althea West, as secretary, Katherine and several part time San Diego State College analysts, soon joined me in my new group. In this position, expeditions were not practical because of lack of a sea going staff. However, the arrangement was appropriate since there was still considerable previous data to analyze and report. The transfer was, however, a first step to retirement.



Trailer served as our office 1971-1973

My office and other facilities in building 112, which I had occupied for 21 years, was relinquished to the new Division Head, and my small group moved into the south



NEL building 112 - Eugene's office from 1948 to 1969

Eugene with wave tank in building 112. Internal waves were mechanically generated between 3-colored density layers, and wind produced at the surface

half of building 115 a hundred yards away. After 2 years this space was needed by the expanding mail room, so we moved, in 1971, to building 134, only to have this building demolished for new construction. The solution was to rent a 60-foot trailer, converted to a spacious office and park it near the origional building, 112. This was quite satisfactory until I retired in 1973.

As expected, in this new position we were able to produce more reports, participate in more scientific meetings and give more lectures. One trip in June 1969 was to Monoco to attend the First Meeting of the International Group for Scientific Coordination of Cooperative Investigation of the Mediterranean. This was followed by a drive

along the French and Italian Rivierias to visit the SACLANT ASW Research Center in La Spezia, Italy, and friends who worked there.

Eugene and Katherine in our trailer office

Secretary of IAPSO

One of the opportunities as Senior Scientist and Consultant occured in 1970 when Katherine and I were delegated to attend another meeting of the Pacific Science Congress in Tokyo. I chaired a session and presented a lecture on oceanographic instrumentation to Japanese industrialists. However, the most significant happening was that the officers of the International Association for the Physical Sciences of the Ocean (IAPSO) decided to convene its XV General Assembly there in Tokyo rather than with IUGG the following year in Moscow. This meant an election of officers. A quick appointment of a nominating committee, consisting of George Deacon, Bob Dietz, Wolfgang Krauss, M. Uda, S. H. Fonselius, K. M. Kamenkovich, Harold Grant and K. Kajiura, was made. I was acquainted with most of the members. I believe George Deacon proposed me for Secretary (later to be called Secretary-General) and to my surprise, I was elected.

My election posed a problem. The position of Secretary involved considerable work and my Laboratory, especially the new Department Head, would probably object, so to cushion the blow, I went to the U.S. Naval Attache in Tokyo and had him send a message to the Chief of Naval Operations in Washington, saying I was elected Secretary of IAPSO. CNO sent a "congratulations" down the chain of commands to my Laboratory.The election of an American, especially a naval employee, was applauded by Dr. Bob Frosh, Assistant Secretary of the Navy, and he recommended support. Even so, when I arrived back at the Laboratory my boss was not pleased. How could I get myself elected without his approval? He called a high level Laboratory meeting and as a result

I was transferred out of the Scientific Department. This was probably appropriate since my responsibility for IAPSO would change my work from oceanographic research to a more internationally oriented activity. Consiquently it was decided, in May 1972, to transfer both Katherine and me to an NUC overhead function. We were placed in a new code under Dr. E. P. Cooper, who was Consultant to the Director. Initially this was an appropriate arrangement with Katherine and a secretary financially covered in a line item in the Laboratory's budget.

Art Maxwell explaining the duties of the IAPSO Secretary and turning over voluminous IAPSO records in 1970

Art Maxwell of Woods Hole had been the Secretary of IAPSO from 1967 to 1970. After my election he came to NEL with the voluminous historical records of the Association, and explained my new Secretarial duties and the work needed for the pending IUGG General Assembly the following year. This was the start of a new and interesting career.

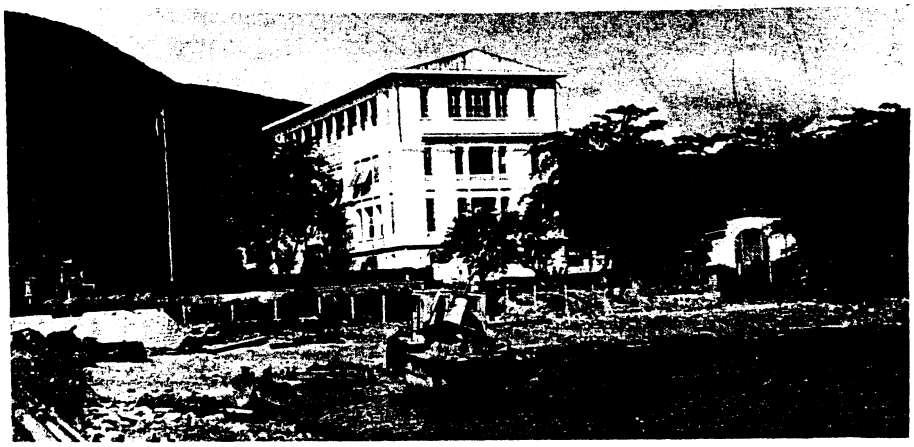
Vietnam

Under the Administrative Department both Katherine and I were even more free to travel, not only for the Center but also for IAPSO. One trip was to South East Asia. Since we had worked in India on 7 previous occasions, we were invited to the Indian Ocean Symposium, sponsored by the Marine Biological Association of India, and held in Cochin, India, early in 1971. The Indians requested our participation through the U.S. Navy Department. Washington not only recommeded our attendance in Cochin, but also requested that we stop in Thailand and South Vietnam. The 2 stops were thus combined into one trip. As the Vietnam war seemed to be coming to an end, Capt. Charlie Bishop asked both Katherine and me to go to Saigon and the Nhatrang Oceanographic Laboratory and find out what they had in line of library and oceanographic equipment and see how the U.S. could help get them back on their feet.

The Cochin meeting was a great reunion with our former students and friends. Also in attendence were 2 young Soviet scientists. When striking Indian aircraft workers prevented scheduled flights out of Cochin, the Russians were frantic for they were due in Delhi shortly and no delays were excusable. Through friends I was able to get us all on a train to Madras, from whence they caught another airline to Delhi. On our return, we were not able to visit a lab in Sattihib because navy/Thai arrangements were not completed in time but we did enjoy Bangkok, saw old friends and did some shopping.

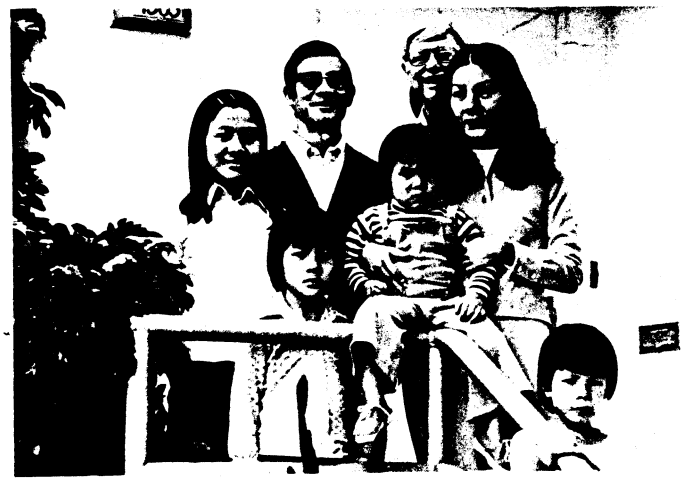
The most exciting part of the trip was our visit to Vietnam under war conditions. I had worked with the Vietnam scientists in 1960 and was acquainted with their Laboratory. We spent a few days in Saigon at the

time of their holiday called TET. Fighting was going on all around and one night soldiers knocked on our hotel door and came in and searched. Flying from Saigon



Oceanographic Laboratory in Nhatrang, Vietnam (1971)

to Nhatrang in a light military plane we could see puffs of smoke from guns below. In Nhatrang we were quartered at the Laboratory's guest house but a marine officer checked on us every day and we could not move out of the area. We consulted with Dr. Tran-Ngoc Loi, the Director, about his elaborate, though outdated library, and his need for equipment. When we returned home we were instrumental in purchasing and sending many needed instruments to him. However, the war did not go as expected and the fate of the supplies is not known.



Eugene with Dr. and Mrs. Tran-ngoc Loi and their 4 children

Professional Organizations

It is customary for those engaged in science to join scientific organizations. Membership affords an opportunity to present papers at their meetings, publish in their journals and keep abreast of ongoing work by others in your particular field. My first connection with a scientific organization started in 1938 when Dr. McEwan nominated me for Sigma Xi which had a branch in Los Angeles. Since that time I have joined a number of professional organizations, especially those concerned in marine science. My next membership, and most influential organization, was the American Geophysical Union, which in 1947, met once a year in Washington, D.C., in meeting rooms furnished by various government agencies around town. I served as secretary of Oceanography Section from 1953 to 1954, and received their Ocean Science Award in 1985.

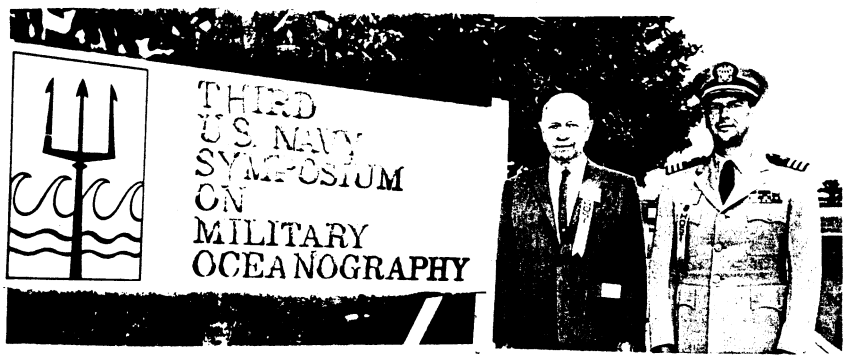
For a few years I belonged to the elite International Circumnavigators Club. The local chapter met in private homes of wealthy San Diego members. To be a member one must have gone around the world, so I qualified 11 times over.

One of the most enjoyable organizations was the American Association for the Advancement of Science, which I joined in 1950. I was elected to the Executive Board of the Western Council in 1967 and served for 5 years. The work involved 3 meetings per year. One was held in conjunction with the annual AAAS scientific meeting and was held at different universities in western U. S. The other 2 planning meetings were held in San Francisco with dinner at the Pink Poodle restaurant and all expenses were paid by AAAS.

In August 1972 the AAAS nominated me to represent the Association at the Alaskan Science Conference, sponsored by the Alaskan Division of the AAAS. Katherine and I prepared a paper on the waters of the deep Bering Sea. The trip afforded an opportunity to revisit the shore of the Beaufort Sea at Prudoe Bay where oil was being pumped from under the tundra. A highlight was a tour by car with our friends, George and Eva Harper, to Mt. McKinley and through much of the unspoiled wilderness of this large, cold, spectacular state.

Katherine with Eva and George Harper at Mendenhall Glacier in Alaska in 1972

The navy organized scientific symposia where reports on military research were presented. Some reports were classified so secret clearance was required. Katherine and I attended one in Panama City. I organized one in San Diego in 1966. We also attended one in Monterey, called the 1968 Military Oceanography Symposium, where we were awarded the 1968 Oceanographer of the Navy Award by Rear Admiral O. D. Waters.



Eugene and Cdr. Davies host Navy Symposium in 1966

The navy (ONR) also arranged international meetings. In November 1967 I was invited to particpate in the Second Inter-American Naval Research Conference in Rio de Janeiro, Brazil. I was the first keynote speaker and I had prepared slides showing a drop of water, which I called Juanita, and included the various factors that affect it in the sea.

Scientific affiliations

1. Member, Sigma Xi Club, San Diego Chapter, 1938 to 1975; Vice President, 1965.
2. Member, American Geophysical Union, 1947 to present; including the AGU Standing Committee for international Participation, and AGU Sub-Committee for IAPSO, 1973 to 1987; Ex Officio member of the U.S. National Committee for IUGG, 1972 to 1987; Secretary, of AGU Oceanographic Section, 1953 to 1954; and Life Member of AGU, 1974 to present.
3. Member, International Circumnavigators Club, 1949-1955.
4. Member, American Association for the Advancement of Science, 1950 to 1975; Member of AAAS Western Division Council, 1967 to 1972.
5. Member, American Society of Limnology and Oceanography, 1950 to present; Vice President, Oceanography Section of ASLO, 1954 to 1955.
6. Member, Explorers Club of New York, 1952 to present; Vice President of S.W. Section, 1970 to 1974; Emeritus Member, 1987 to present.
7. Member, Maritime Research Society of San Diego, 1959 to present; Vice President, 1975 to 1980.
8. Ex Officio Member, Scientific Committee for Oceanographic Research (SCOR), 1970 to 1987.
9. Member, International Union of Geodesy and Geophysics Committee for Developing Countries, 1971 to 1987.
10. Fellow, Marine Technology Society, 1970 to present; Member, of the Executive Committee of the San Diego Section of MTS, 1971 to 1974.
11. Secretary-General, International Association for the Physical Sciences of the Ocean, of the International Union of Geodesy and Geophysics, 1970 to 1987.
12. Chairman, Committee for Oceanographic Advice to Developing Countries, of the International Association for the Physical Sciences of the Ocean, 1983 to 1987.
13. President, Commission for Cooperation with Developing Countries, of the International Association for the Physical Sciences of the Ocean, 1987 to present.
14. Member, The Oceanography Society, 1988 to present.

Listings in Who's Who

There are a number of companies which publish and sell short biographeries of people who they feel to be noteworthy. The procedure they use is to send a letter saying, "you have been nominated to have your biography included in our publication, such and such", enclosing a biographical questionaire and an order form to purchase the volume. Since I did not purchase any of the volumes, I am not sure all publications have included my biography, but the following have asked to have it included.

1. Who's Who in Science
2. Who's Who in American Education-Leaders
3. Dictionary of International Biography
4. Who's Who in the West
5. American Men and Women of Science
6. International Scholars Dictionary
7. Who's Who in California Business and Finance
8. Personalities of the West and Midwest
9. Who's Who in Technology Today
10. Men of Achievement
11. Biography of the Year, 1986
12. Who's Who in Society
13. Who's Who in Ocean & Fresh Water Science
14 Notable Americans
15. Men and Women of Distinction
16. Personalities of the South
17. 5000 Personaties of the World
18. Who's Who in California
19. The World of Learning, 1981-82
20. Community Leaders and Noteworthy Americans, 1978
21 Personalities of America
22. International Directory of Distinguished Leadership
23. Two Thousand Notable Americans

Retirement from NELC (NOSC)

For us the organizational arrangement through overhead in the administration department of NELC was ideal for 3 years. Unfortunately, the technical director who strongly supported us retired, and his successor came in during an austerity period. Overhead was a key target and consequently reduced our budget. The gimmic offered was for me to retire, receive an annunity and then be hired

back part-time on the Emeritus program to carry out the duties of Secretary-General of IAPSO and write an occasional paper.

Eugene's retirement party

Thus on 30 June 1973, I retired from NELC after 27 years on civil service. I was rehired as a WAE employee with reduced salary, which with the retirement annunity would approximate my original salary, but I would work only half time. One of the problems under this arrangement was that the secretarial support was not adequate. NELC did supply Katherine and me office space, but the secretarial support was minimal and as a result it was decided to seek funds from other sources. Fortunately, Andy Rechnitzer was a member of an interagency committee in Washington and he proposed that the Office of Naval Research, the National Science Foundation and the National Oceanic and Atmospheric Administration should share the expenses of the IAPSO secretariat. Our initial contract with ONR (and others) was $20K per year which was soon raised to $30K, which was adequate, since IUGG also provided a generous allotment. For assemblies other funds were solicited from UNESCO and ICSU. Under this arrangement we were adequatly funded and since we did not need the NELC office in 1978 we moved the IAPSO secretariat to our home, and used the LaFond Oceanic Consultants for our IAPSO correspondence. This proved very convenient. We did not need to get up early in the mornings and kept our own hours. The main drawback was I had to learn to type as there were many letters to answer and Katherine could not do it all.

IAPSO Activities

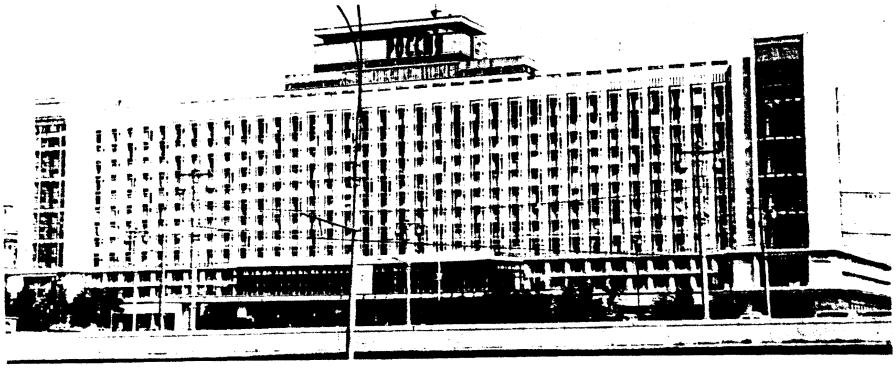
I had been active in IAPSO as a participant at its meetings in Toronto (1957), Helsinki (1960), Berkeley (1963) and Bern (1967). However, after my election as Secretary in 1970, though still employed by NELC, IAPSO became my major activity.

IAPSO is a prestigeous world-wide organization. The Executive Committee consists of a President, 2 Vice-Presidents, the Secretary-General, Deputy Secretary-General and 4 other members. There are commissions, committees and working groups, permanent services, representatives to other committees and 1 correspondent for each of the 68 countries which belong (and pay dues) to IUGG, the parent organization. There is a great deal of correspondence and nearly all the work falls on the Secretary-General. Occasionally some letters were in French, Spanish or German, and Katherine's linguistic talent came in handy. The main effort came every 2 to 4 years and consisted of organizing the General and Special Assemblies. This involved choosing symposia topics, appointing appropriate conveners for scientific sessions, issuing announcements, collecting all the abstracts, scheduling them into sessions to reduce conflicting topics, awarding travel grants and paying other expenses, at the assembly see that everything went well. In addition there were business meetings which required an agenda and working papers. All the materials needed to be circulated to the 68 countries, as well as the IAPSO officers. The duties also entailed considerable travel to assemblies, planning meetings and conferences with the President of the association.

XV General Assembly, Moscow, USSR, 2-14 August 1971: Shortly after becoming Secretary of IAPSO, I became involved with the IUGG XV Assembly, to be held in Moscow. IAPSO had already held its General Assembly the year before but for this Assembly IAPSO co-sponsored several symposia and convened business meetings. Katherine and my sister, Lois, also attended the Assembly.

Making arrangements to travel to Russia was difficult. The Russians required that hotel accommodations, travel and meals be paid before a visa could be issued and

before we left the U.S. Our visa was not actually issued until we passed through New York on our way to Moscow. When we arrived in Moscow on AEROFLOT, we were bussed to a 4000-room hotel, the Rossiya, bordering



Rossiya Hotel in Moscow, 1971

the Red Square. Checking in the hotel was a major confusion, but once in, everything was fine. We were pleased with the thick cherry juice served for breakfast, and the slabs of fat ham made nourishing sandwiches. On one occasion an honest waitress overcharged us a few cents and came back to apologize and correct the transaction. Reservations for our evening meals were hard to get even when the dinning room was nearly empty. It appears that the waiters are paid the same if they serve 1 or 10 people, so they prefer one. A bus took us to the massive university where we were provided a French speaking secretary, good meeting rooms and an office. In the lobby of the Moscow University, there were kiosks where newspapers and stamps were sold. We were fortunate to use a special assembly cancellation before some ungrateful visitor stole the stamp.

Moscow has beautiful subways with art and sculpture decorating the main stations. Although we tried the subways, the Russian station names came faster than we could translate them and we were glad to have a guide along. We walked around Red Square and bought, by pointing, an abacus in the Gum department store. We also visited a museum-like park. The spacecrafts on display and the multi-projection movie with a dome screen, were all impressive.

Our Russian hosts for the IUGG assembly held an elaborate banquet, with bottles of vodka and wine every few places. We were also most impressed with a cultural program of dances and music held in the Kremlin. The elaborate decorated movable stage was unique. A full orchestra was raised to the stage level for performing then lowered and the area covered over for dancing. We sat on red velvet covered seats and used ear phones for translations. Everything was very high quality.

Our colleagues were very friendly and invited us to a restaurant with excellent food. None invited us to their homes. We were told that if we wanted to talk business it would be best to talk in the park. With Lois, we made a side trip to Gorski, about 60 miles from Moscow. It was interesting to see the countryside and the old churches in Gorski. However, in spite of the friendliness, we felt a sense of relief when we left, because we were still a little apprehensive in the Soviet Union.

St. Basil Cathedral on Red Square in Moscow

In the fall of 1973 it was necessary to go to London for the IUGG planning meeting held at the Royal Society, to present IAPSO's plans for the 1975 General Assembly. At these planning meetings we arranged joint symposia with the other 6 associations of IUGG. While in London I participated in an international symposium on underwater discovery.

IAPSO First Special Assembly, Melbourne, Australia, 14-25 January 1974

Melbourne. Organizing the program for the first time, screening the papers, arranging travel and dozens of other chores kept Katherine and me busy prior to, during and after the Assembly. Many new friends were acquired in Australia. After the meeting one friend, Bruce Hamon, provided to us for a week his summer cottage, ideally situated on Bawley Point on the Tasman Sea.

Eugene at Bawley Point, Australia, 1974

While taking a taxi to the Melbourne airport, Katherine left a package of wool yarn in the cab. The driver took the package back to St. Mary's College where he had picked us up and they sent it all the way to us in San Diego. A nice experience. Our return trip on the SS MONTEREY, from Sydney to San Francisco was relaxing, but I did draft 70 IAPSO letters for typing on return home. Like all assemblies, the proceedings of the meeting were prepared, typed, printed and distributed.

In May 1974, we drove to Columbus, Ohio, to attend an IAG symposium on Marine Geodesy in which IAPSO was a co-sponsor. On this trip we visited our relatives in Two Rivers, Wisconsin, where my father was born, and Imes, Kansas, where my mother was born.

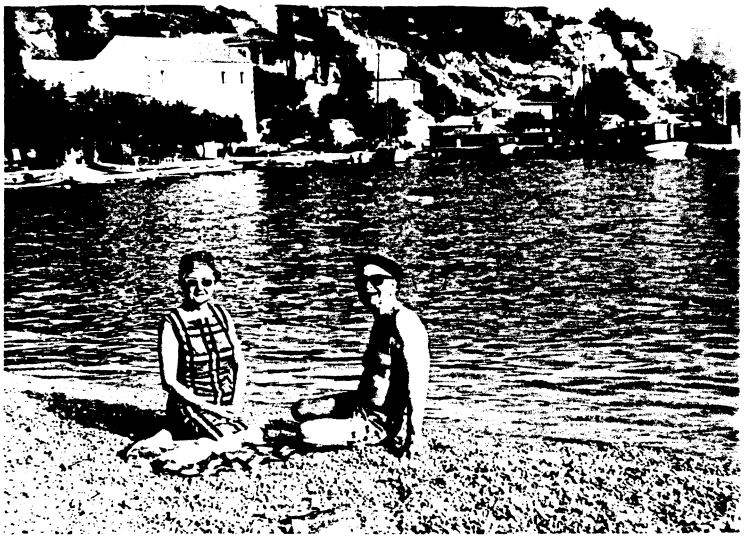
Later in 1974 we participated in the V National Congress of Oceanography in Guaymas, Mexico. We drove down the mainland, and after the meeting we ferried across the Gulf of Baja California, and drove north up the new, but narrow, peninsula highway.

In January 1975, the Bangladesh Mission to the United Nations asked us to come to London and discuss the oceanography of the northern Bay of Bengal as they were interested in establishing a marine boundary between Bangladesh and India. This proved to be an enjoyable week-long experience. Following the consultations in their embassy in London, we attended plays and visited points of interest, including looking up genealogical records of Katherine's ancestors.

XVI IUGG General Assembly, Grenoble, France, 25 August-6 September 1975: For this assembly there was considerable preparation. Approximately 300 abstracts were received from around the world, to be organized into sessions, and the preparation for business meetings was necessary. The assembly was held in picturesque Grenoble, near the Alps. IAPSO introduced poster board paper presentations for the first time. After 2 weeks we were

Eugene and Katherine with Dr. and Mrs. Henri Lacombe in southern France in 1975

invited by Henri Lacombe to visit him in his 19th century mansion in Malacène, France. Following this delightful week long visit to castles, vineyards and lavender fields, we proceeded to Nice and Venice, where we rented a car and drove to Split, Yugoslavia, then through the Alps to Zürich before returning home.



Katherine and Eugene on Adriatic Sea beach, Yugoslavia

This trip was followed by one to Boulder, Colorado, in July 1976, to discuss with Bob Stewart, IAPSO's new president, the program for the upcoming meeting in Edinburgh, Scotland, in September 1976. The meeting was to be the Joint Oceanographic Assembly, at which IAPSO would organize 8 sessions and hold an Executive Committee meeting. After the meeting we rented a car and toured Ireland and its castles, even kissed the Blarney Stone. We visited the cut glass factory, watched the cutting process and bought some of the beautiful Waterford glasses and vases, to be hand carried home.

At this time the Russians invited Katherine and me to participate in a symposium on internal waves, to be held in Novosibirsk, Siberia, 2-8 December 1976. Though the trip was most appealing and all expenses would be paid by the Soviets, Siberia in the winter was not our cup of tea for we Southern Californians. Thus, we regretfully declined.

In August 1977, 2 years before the next General Assembly, to be held in Australia, the IAPSO President and I met with the IUGG and other association officers in Durham, England to plan inter-association symposia. It was at this time mainland China was voted in as a member of IUGG, and Taiwan voted out and no longer represented China in the IUGG.

XVII IUGG General Assembly, Canberra, Australia, 2-15 December 1979: Inspite of the distance from the U.S. and Europe, IAPSO received 547 abstracts for its scientific sessions convened at Canberra, capital of Australia. Both Melbourne and Sydney wanted to be the capital so they comprimised and developed the new, modern city of Canberra. The organizers provided us with a centrally located office and new apartment for Katherine and me on the campus of the Australian National University.

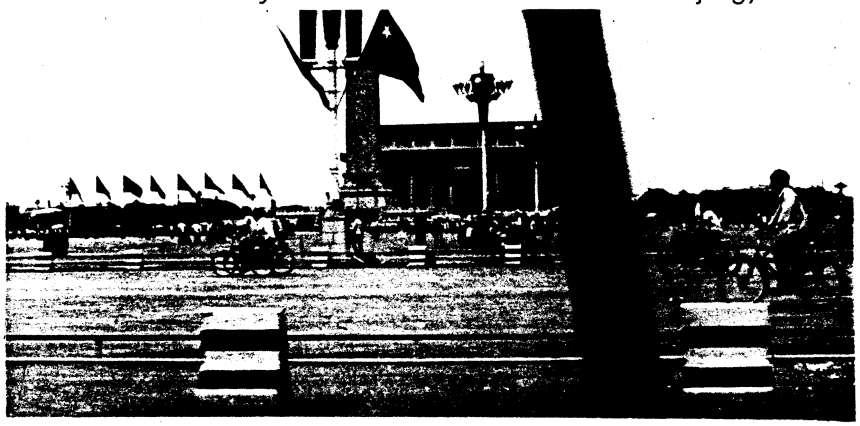
The planning meeting for the XVIII General Assembly, to be held in 1983, was held in London, Canada, 25-27 August 1981. We flew to Detroit and rented a car for the drive to London. After the meeting we visited Niagara Falls and drove all around Lake Erie, finally stopping in Cleveland to see one of Katherine's relatives, and visit the cemetary for more information on ancestors.

XVIII IUGG General Assembly, Hamburg, Germany, 15-27 July 1983: The Germans provided us with an excellent office and meeting room. At this assembly IAPSO was able to offer travel grants to many of our Indian friends. After the meeting we took a train to Lübeck where Wolfgang Krauss and his wife met us and drove us to Kiel, Germany, to visit the Institut für Meereskunde. We then flew to west Berlin. Katherine was

Katherine, Eugene, Drs. Devendra Lal and Joris Gieskes in IAPSO office in Hamburg, Germany, 1983

interested to see again where she had lived when she attended the University of Berlin in 1928-1930. Much had been bombed during the war but a few landmarks still remained. The rebuilding was well along, famous stores were in full swing with high quality products, and enough time had passed to allow the many many trees lining the streets to be full grown and beautiful. It was almost as Katherine had remembered it.

China: At the Hamburg meeting the Chinese delegates invited Katherine and me to visit China at any time we chose. This we accepted, and the first stop on 1 June 1984, was in Japan, where we flew to Kushiro on the island of Hokkaido to discuss a proposal to analyze some thermistor chain data taken in the Kuroshio current. There were more stops in Sapporo and Sendai for similar discussions. Finally on 10 June we flew to Beijing, China.



Tianamin Square, Beijing, China, 1984

As guests of the Chinese government, we were met by a guide and driver, and driven to the Jan Jing Hotel in the heart of the city. The streets were neat and full of bicycles. Our room was confortable with TV and telephone, and a thermos of hot water for tea. In the evening we were honor guests at an elegant multi-course dinner, which included scallops, eel, shrimp, chicken and beef. Other side dishes included the dark (some call 1000 year old) eggs, along with beer and wine. We were told the eggs are put in a solution of lime, the whites become transparent with little growth patterns which look like pine trees. The yolk turns blackish green and is semi-liquid. They are considered a delicacy. They were not bad tasting but looked unappetizing.

The next day we were driven around Beijing, including Tiananmen Square where some were flying kites, and the Forbidden City. Finally we wound up at the National Bureau of Oceanography. In a large room with over-stuffed chairs around the walls, I gave a couple of talks to high level bureaucrats, complete with slides which did not project well in their weak projector. Afterwards we attended a dinner in our honor featuring Peking duck, and they really meant duck. The first course was 7 kinds of cold dishes, one of which was duck web feet and another duck wings. This was washed down with a strong maitai drink. Then came duck tongues in a soup, followed by duck gizzards and livers. After a few other courses we were shown 2 nicely roasted ducks. These were taken back and sliced in pieces for us to roll with greens in a thin pancake. Then came the duck heads split open for the honored guest. Finally, duck soup and desert. This was probably the most lavish meal that we have ever eaten.

The next day our guide and white gloved driver took us 47 miles to see part of the Great Wall. The massive stone structure, reported to be 800 miles long, once extended 3600 miles. It was impressive and crowded with tourists. The countryside reminded us of India.

Katherine and Eugene on the Great Wall of China, 1984

The following day we had a quick visit to a fair/museum displaying and selling fabulous artworks and other products, before taking an overnight train to the city of Qingdao for lectures, sightseeing and banquets. Here they featured 8-10 inch long shrimp and my favorite fruit, lichi nuts. From here we flew to Shanghai and followed the same routine. The highlight was front row seats at a Chinese circus with unbelievable acts of sound, balance and trained animals. From Shanghai we flew to Amoy (Xiamen) for a similar program and finally to Guangzhou. All of our stops were oceanographic centers where we both lectured and talked with many new oceanographers. In Shanghai we shopped in friendship stores. In all places we were treated like royality and found it a state easy to become accustomed to. We left China with a good impression as we took a train to Hong Kong, and flew home. It was certainly a memorable trip.

IAPSO Second Special Assembly, Honolulu, Hawaii, 5-16 August 1985: In 1985 IAPSO joined IAMAP for its Second Special Assembly in Honolulu. Monica Ryan went with us and we all enjoyed the big banquet and a luau. We had our IAPSO office and meetings in the

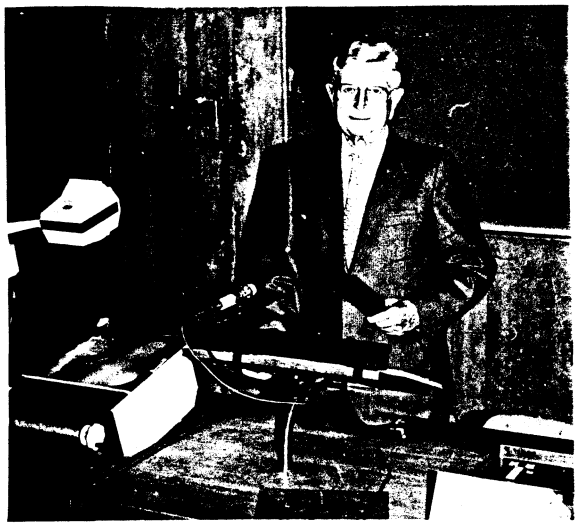
Eugene on Waikiki Beach, Honolulu, 1985

Waikiki Hilton Hotel. As always, Katherine managed the funds for travel grants and brought over with her $25,000 in cash to set up an account in a local bank from which to write checks. One amusing incident occurred in connection with Katherine's paying the travel grants. In one case, spelling the difficult Russian names on the check differed from that in the passport. The bank questioned

the check and called Katherine. When she described the person and vouched for the check, it was promptly paid. The jubulent Russian returned to his cronies and declared, "it was cashed by authority of Katherine".

The IUGG Executive and officers of other associations also met in Honolulu and made plans for the next General Assembly, to be held in Canada.

XIX IUGG General Assembly, Vancouver, Canada, 9-22 August 1987: The last IAPSO meeting in which I was the Secretary-General was held at the University of British Columbia in Vancouver. We drove north and visited friends and relatives enroute. There was an unusually high attendance with the usual business meetings and parties. One party hosted by Katherine and myself honored an impressive delegation of 18 colleagues from Andhra University, my Alma Mater, who were able to attend the Assembly. Fortunately, I was able to get additional funds for travel grants for delegates from developing countries. Although our Indian colleagues were favored for such grants, about 90% of developing country applicants also received a grant for part, if not all, of their travel expenses.



Eugene lecturing at IAPSO Assembly, 1987

After the Assembly we toured the Canadian Rockies and visited Lake Louise and Banff, then continued south along the U.S. Rocky Mountains.

With former Indian students in Vancouver, 1987

Retirement from IAPSO

The term of office for the IAPSO President is 4 years; the Secretary-General's is initially 8, but can be extended for successive 4 year terms and I was reelected on 2 occasions. I served under very cooperative Presidents: Professor Henri Lacombe, France; Dr. R. W. Stewart, Canada; Professor Devendra Lal, India; and Professor Wolfgang Krauss, Germany.

As Secretary-General, I automatically became a member of the AGU Committee for International Participation and the AGU Committee for IUGG. Thus, it was desirable for me to attend both the AGU's fall meeting in San Francisco and the spring meeting in Washington or Baltimore.

The work of running IAPSO was enjoyable and kept me in touch with advances in oceanography and key scientists. In addition, I made many new friends and renewed old friendships at meetings. However, even with Katherine's help (her salary was covered in our contracts) the work became more than we had the energy to expend, and in 1987 I decided not to stand for re-election. The association was in a good financial position in spite of numerous travel grant awards. I helped Bob Stevenson of ONR-Scripps become familiar with the job and was pleased when he was elected.

Dr. Lal in his IUGG Presidential address before the Vancouver General Assembly praised my work as the distinguished U.S. scientist. Professor Krauss in his Presidential address said, "Our present Secretary-General, Dr. Eugene C. LaFond, stayed in the office for 17 years. He organized the Assemblies in Grenoble 1975, in Canberra 1979, in Hamburg 1983, and finally, Vancouver 1987."

With Professor and Mrs. Krauss at retirement party, 1987

"I can't remember anybody who devoted so much of their work to IAPSO as Eugene LaFond and Katherine LaFond did."

I was awarded The IAPSO Distinguished Service Award at the closing ceremonies on 20 August 1987, and the officers of the association arranged a cocktail retirement party for me at the General Assembly in Vancouver. Thus ended an active period of my career.

SCOR

IAPSO is affiliated with the Scientific Committee for Oceanic Research (SCOR). The President of IAPSO is always a member of SCOR and I, as Secretary-General, was an Ex-Officio member. IAPSO oversaw some of SCOR's committees and co-sponsored some of the sessions of the Joint Oceanographic Assemblies which were held every 6 years. SCOR held other scientific and business meetings in exotic, though oceanographic, places. One meeting in September 1972 was in Oban, Scotland, a

picturesque town on the Scottish Sea. Another SCOR meeting that I attended was held in Guayaquil, Equador. As part of the meeting we had an arranged excursion to Quito on the equator high in the Andes Mountains. In 1982 we met in Halifax, Nova Scotia, where we were hosted by our good friend from Andhra days, Dr. S, V. Durvasula. Katherine and I also participated in a SCOR meeting in Hobart, Australia, in November 1986. Hobart is the capital of Tasmania and located in the "howling 50s". Though remote, the oceanographic lab was new and modern, and the local people were most friendly.

Eugene at Oceanographic Laboratory, Hobart, 1986

Enroute we visited a New Zealand sheep farm, Roto Rua hot springs and glow worm caves. Still another meeting sponsored by SCOR and IAPSO was the Joint Oceanographic Assembly held in Acapulco, Mexico in 1988. Katherine and I both participated in the Assembly as well as the CDC meetings. We flew to Mexico City, and then bussed over the Sierra Madre Mountains to Acapulco.

Commission for Developing Countries

In 1983 IAPSO set up a Committee on Advice to Developing Countries, and I was appointed its Chairman. Then at the 1987 Assembly, the Committee was changed to a Commission, and named the Commission for Cooperation with Developing Countries, (CDC), and I was appointed its President. This provided me with a continuing

"finger in the IAPSO pie", after retiring as Secretary-General.

IAPSO Commission for Developing Countries, Honolulu, 1985

The Committee consisted of 4 other members, Prof. G. R. L. Rao, India; Prof. Xia Zongwan, China; Dr. G. F. Soliman, Egypt; and Dra. M. L. Argote, Mexico. We held our first meeting in Honolulu in 1985, convened a workshop in Vancouver in 1987, and another in Acapulco, Mexico, in 1988. Dr. S. V. Durvasula joined the Commission in 1988, and agreed to edit all the talks dealing with marine science in developing countries given at the 2 workshops. As a Commission under IAPSO our funds were limited, so our best service was to offer advice, organize and sponsor symposia, provide publications and subscriptions to journals, and occasional lectures.

In connection with the objectives of CDC and at the invitation of Prof. D. Carboo, Katherine and I agreed to participate in a Regional Seminar on Marine Resources in West Africa. The Seminar was held at the University of Ghana in Legon, Ghana. So, immediately, after the Acapulco meeting, we flew via KLM to Amsterdam, then to Accra, Ghana, passing over the Sahara Desert. We were impressed with the vastness of the area that is covered with enormous sand dunes formed in ridge and cone shapes. We even flew near the famous town of Timbuctoo. The Ghana airport both coming and going, was jammed with travelers and confusion. We were met by Prof. Carboo and taken to an apartment in the Ford Foundation Guest Quarters on the lush green university campus. The campus was so spread out that we sometimes took a cruising taxi to the meetings.

Delegates from 8 West African countries participated in the Seminar. I presented a keynote address on "Oceanography from Space", and we were entertained. One party was in Prof. Armah's apartment where he proudly showed us his new-born twin daughters. On one of our tours we were boated on Tema Harbor and taken to the cocoa warehouses. Accra is nearly on the equator and the weather is normally hot, but in early September, when we were there, upwelling was occuring off the coast and the weather was pleasant. After 7 days we were reluctant to leave the kind, friendly, dark skinned Ghanians. On our way home we spent a few enjoyable days in Amsterdam viewing old masters in the museums and boating on the canals.

At party in Legon, Ghana, 1988

In 1990 Dr. Durvasula and I finished editing the 22 papers presented in the Vancouver and Acapulco workshops, and had them printed in an 107 page booklet. They were distributed to active scientists and laboratories in developing countries.

The next activity of CDC was to organize a symposium on Present and Future Oceanographic Activities in Developing Countries, for the XX IUGG General Assembly, held in Vienna, Austria, 11-24 Augusr 1991. Katherine and I attended and I chaired one session. At this time I stepped down as President of CDC.

Developing Country Award

At the Acapulco meeting in 1988, the IAPSO Executive Committee established an award for the best paper presented at its meetings by a developing country scientist. The medal is called the "Eugene C. LaFond Developing Country Award", with my likeness on one side.

The Eugene C. LaFond Developing Country Award

The first of two LaFond medals was awarded at the IAPSO General Assembly in Vienna, Austria, in 1991, to Professor D. Satyanarayana of Andhra Universitry, India, for the paper entitled, "Geochemical Studies of Major Chemicals in the Cenrtal Bay of Bengal" by D. Satyanarayana and Y. Venkata Ramana. The second went to Professor Ye Longfei of the South China Sea Institute of Oceanography, China for his paper entited, "Preliminary Results of 3-D Modelling of the Circulation in the Northern South China Sea" by Ye Longfei.

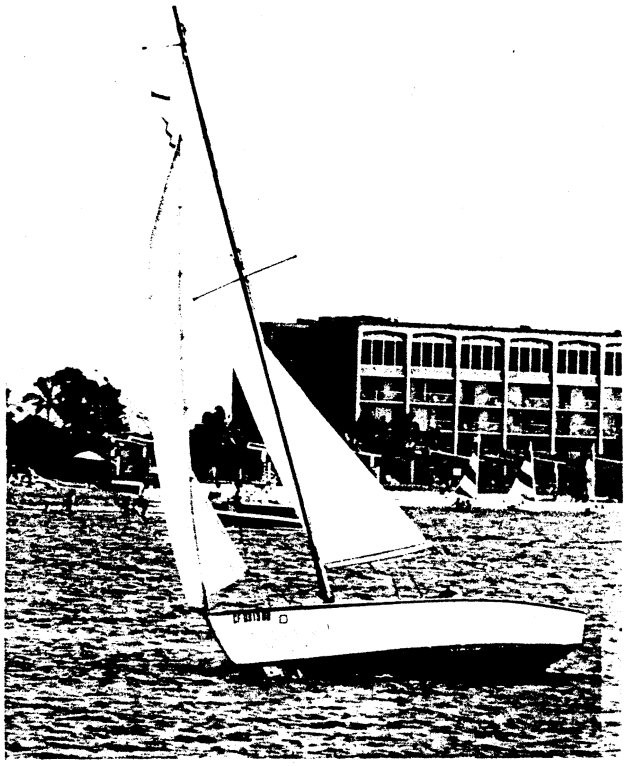
The third medal was awarded at the IAPSO General Assembly in Honolulu, Hawaii, in 1995, to F. Marsac of OSTROM, Mahe, Seychelles for the paper entitled, Oceanographic Research in Relation with Tuna Fisheries Assessment: The Regional Tuna Project of the Commission de l'Ocean Indien" by F. Marsac.

Non-Working Activities

Although much of this record has to do with my profession, my non-working life and activities have been full and satisfying.

Sailboat: When I was a child my father made me toy sailboats cut out of a shingle, with a stick mast and paper sail. Then when I was 13 years old my grandfather built me a shallow draft paddle boat. I also acquired 2 or 3 discarded row boats which I rowed around the southern part of San Diego Bay. In 1926 when I was 16 years old I bought half interest in a 21-foot sloop and on one occasion sailed to the Coronado Islands, before it perished in 1928.

I was always interested in boats and in 1953 my father gave us a rugged 8-foot inflatable rubber boat. We transported it on top of our car to Mission Bay where we



Lightning sailboat, SUZIEBELLE, in Mission Bay 1958

used it mainly as a raft from which to dive. It was stored, inflated, suspended from the ceiling of our double-car garage. It was lost in 1955, when the garage mysteriously caught fire and was gutted. Fortunately, Katherine was away with the car.

In 1957 a colleague of ours at NEL was transferred to Washington, D.C., and needed to dispose of his 19-foot Lightning sailboat, No. 1596, moored at the Mission Bay Yacht Club. It had a heavy wooden hull, retactable metal center board and 2 sails. At one time it had been swamped in San Diego Bay but had been refurbished. We bought the boat for $600, changed its name to "SUZIEBELLE", and joined the Mission Bay Yacht Club. This was the start of a new and enjoyable activity for the whole family.

We sailed around Mission Bay and short distances out into the ocean. At first it was difficult to get out of Mission Bay because of the shallowness before it was dredged. Later a favorite sail was to the kelp beds off Point Loma, where we would tie up and scuba dive for abalones. Occasionally, we sailed out to the oceanographic tower on weekends to check on the recorders. The longest sail was with Bob to the Coronado Islands where we anchored and sailed back the next day. Another overnight sail was to the La Jolla Cove area. We became members of the Lightning Fleet and raced a few times with them around Mission Bay but could not successfully compete with the newer light weight fiberglass boats. Lois and friends often joined us in leisurely sails around the bay.

Eugene sailing

We also acquired an 8-foot Sabot-class sailboat, No. 836, for we hoped our boys would take up sailing. I raced with the Sabot Fleet on several occasions but Bill was more successful, winning a martini set when he was 16 years old.

Bob sailing in our Sabat

The Lightning required periodic upkeep. Once a year we tipped her on her side on the beach adjacent to the Yacht Club in order to scrape and paint the bottom with anti-fouling paint, on which the marine organisms seemed to thrive. There was periodic need for new sails and canvas boat covers. The most troublesome chore was to occassionally bail the boat. At first rain seemed to go right through the canvas cover and fill the hull,

Bob painting Lightning bottom on beach, 1958

Later it leaked through the hull, too. Eventually, after 27 years, the hull became too porous and we had to remove it from the slip, bring it home and finally sell it. Although we had purchased a better hull in 1984, we decided against putting it into operation because of the chore of maintenance.

The 27 years of sailing "SUZIEBELLE" were pleasant and satisfying. It kept us, and the boys, close to the sea, an activity of which we were so fond. I also associated with sea-loving people in the Yacht Club. Though we had no boat after 1984 we continued as Senior Flag and Life Members, and enjoyed its many social programs.

Cars: My first automobile was a 1920 Model-T Ford roadster purchased by my parents for me to drive to college. After a few years it was replaced by a 1925 Ford coupe with a rumble seat. I drove it to San Diego State and for another 2 years when working at Scripps. In 1935, just before we were married, we purchased a new 2-door Ford sedan for $786 total cash price. This was our pride, our first substantial possession. We drove it to Colorado for our wedding, a year later to Canada, and afterwards to Berkeley, with all our earthly possessions, to school. We rarely drove it in Berkeley because of much school work and lack of money. We could sleep in the car by taking out 2 pins that hinged the front seats and tilting them back horizontally. The two back seat cushions were also adjusted with blocks so as to make a reasonably confortable bed which we used on camping trips, even when the boys were small.

Our next car was a new 1949 Oldsmobile 4-door sedan, which lasted 12 years. In 1961 we bought a new Chrysler 4-door sedan with high modern fins. This car had a large trunk in which we could sleep, tho not very confortably. In 1974 we drove the Chrysler to Columbus, Ohio. It lasted 13 years until 1975. For a while in the 1960s we also aquired Bob's Cheve coupe which was especially useful for me to drive to work. In 1975 we bought a new BMW 530i. It was a powerful, prestigious car. We drove to Washington, D.C., in 1976, and again in 1977, stopping in Tryon, N.C., and Plains, GA., and to Boulder, CO., in 1976. However, we had problems with the rubber hoses, tires and transmission. While driving to Las Vegas in

Chrysler 1961-76, BMW 1976-84, Cadillac 1984-

March 1984 the engine caught on fire 18 miles out of Las Vegas, possibly caused by a gas leak, and the whole car quickly and completely burned up including our luggage and clothes. This soured us on foreign cars so we acquired a new 1984 Cimarron (Cadillac) 4-door sedan. It was small but contained many convenient and confortable features, and nicely fitted our needs. We maintained our cars well and they lasted a long time (with the exception of the BMW).

Travel: Both Katherine and I enjoyed travel. Our oceanographic work offered an oppertunity for distant air travel but we frequently traveled together in our cars. Our first trip was to Steamboat Springs, Colorado, in 1935 where we stayed a few days with the Swinehart family and were married. The next trip was when we drove to British Columbia to attend a scientific meeting, afterwhich we drove down the Pacific Coast stopping every 20 miles or so to collect sand samples, to be analyzed when we returned to Scripps. This was a slow and tedious operation since, in many cases, it was not easy to get to the beach.

Although most travel had some connection with work, we managed to repeatedly visit Yosemite, Yellowstone and the Grand Canyon.

Trailer: We also enjoyed camping, especially in the desert, which led eventually to purchase of a 25-foot trailer in 1967 and permanently setting it up at Butterfield Ranch

Butterfield Ranch Trailer Park

Our trailer set up at Butterfield Ranch in 1967

Trailer Park, 85 miles east of San Diego. In 1974 a room was attached to the trailer for more space. For over 30 years we enjoyed the quietness, green vegetation, swimming pool and jacuzzi in a desert-like environment.

Ship travel: While courting Katherine we made a couple of cruises on the cruise ships SS YALE and HARVARD from San Diego to Los Angeles, changing ships and returning the same day. The next cruise was in 1952 on the

Eugene, upper left, and Katherine, lower left, on SS YALE with college friends in 1931

SS QUEEN MARY from New York to Southampton. We flew to New York with the 2 boys with numerous pieces of luggage (some was shipped by freight), where we were assigned a stateroom on F deck, the lowest. In 5 days we arrived in Southampton. After a poor connection in London we resumed our travel on the SS HIMALAYA on to Bombay, stopping only in unfriendly Port Said and the hot, barren Aden. In 1953 we returned to the U.S. on the SS ROBIAH, a slow freighter. With only 12 passengers we spent 36 days at sea stopping at Penang, Singapore, Manila and Honolulu. Another cruise in 1964 was from Algiers to Marseilles, and that same year we were on the SS FRANCE from Calais to New York. This was a French ship and the food and wine were wonderful. The next cruise, in 1974, was from Sydney, Australia, to San Francisco on the SS MONTEREY, stopping at American Samoa and Honolulu. This was luxury travel with super food and accommodations. Another cruise in 1978 was encouraged by Lois, consisted of a pleasure cruise from Aruba in the Caribbean to South America and

SS MONTEREY in Samoa in 1974

through the Panama Canal to San Salvador and Acapulco, Mexico. Also, in 1978, a second cruise started in Athens, Greece, and stopped at several Greek islands, Turkey, Yugoslavia and ended up in Venice. In early 1991 we again took a cruise in the Caribbean Sea. This time with yacht club friends and starting and ending in New Orleans.

Eugene on ancient sports field in Olympia, Greece, 1978

Real Estate: The first property that we owned was a canyon lot on Amherst street in La Mesa, sold to us by Kathern's mother, Amelia Gehring, for only $100. We cherished the not-to-useful property, dug eucalyptus trees, planted them on the lot and hauled water to start them. In 1980, a developer bought the lot, filled the canyon and built an apartment house on it.

Our next aquisition was 2½ acres near Imperial Beach which my mother encouraged us to buy for $500 in 1938. After a few years, when we had it paid off, the adjoining school forced us to sell it in order that the school might expand.

The next real estate was a gift of 8 lots on Palomar Mountain to Katherine from her mother. Though containing large pine trees, the lots had no public water and it is not possible to build on them. Even so, we purchased one additional adjoining lot, paid taxes and hoped some day they would be useful.

Our major purchase was the house at 4505 Santa Cruz Avenue on Point Loma. It was conveniently located near my work and situated on a corner lot, one corner of which was rounded off to accommodate the streetcar which once made a turn there. The then enormous price of $12,500 was too much for my mother and she discouraged the purchase. In 1947, when I left on a cruise to the arctic, Katherine bought the lovely, sturdy house.

4505 Santa Cruz Avenue, San Diego, 1947-

We lived happily in it for over 40 years and fortunately my continuing government salary and Katherine's frugal financing allowed it to be paid off in 7 years.

Back yard at 4505 Santa Cruz Avenue in 1990

In 1951, Katherine's mother was widowed and several years later she wanted to sell her Alpine home on 32 acres of hilly land, so we bought it for $9,000 with a down payment from the procedings of the Imperial Beach property. The Alpine house was rented and survived a fire, but after about 20 years a developer purchased it in 1971.

On the death of Katherine's mother in 1959, she inherited ten acres located in Alpine on old highway 80. A threatened lawsuit caused us to trade one acre for a road easement onto Midway Drive. Although the acreage is nearly all in a ravine we kept it with the expectation that it will become more valuable as the city of Alpine grows.

My sister, Lois, died 30 January 1980 and left 10% of her estate to me, which consisted mostly of interests in joint ventures in Travelodge motels. I gave 30% of my inheritance to Katherine, 20% to Bill and 20% to Bob. Some motels went broke and incurred considerable debt but some did fairly well, namely: Las Vegas Strip, Las Vegas Center Strip, Las Vegas Downtown, Grand Rapids, Santa Fe, Fort Lauderdale and Seattle Space Needle. All were managed by Travelodge except the Las Vegas Strip, where the partners hired the manager and met with him twice a year in Las Vegas.

Christmas Cards

Throughout our married life we printed our own Xmas cards. For the first few years we designed a picture and cut it out of a linoleum block, inked it in red ink and printed it on white rice paper in a heavy screw-down press. As our babies grew and the desire to include more pictures, we changed the format of our card. For over 40 years they consisted of a montage of 20-25 black and white prints of our family, its activities and travel during the years time. The 200-300 copies were commercially printed annually and served as a pictorial record of our year and have kept our friends and scientific colleagues informed of what we were doing. They have also served as a valuable record of events.

Summary

The previous pages present a summary of my life and activities, especially my working years. It was not an auspicious beginning. My family was poor and lived in a remote area. I was sickly. The educational opportunities were meager. However, I had a very happy childhood and a loving, supportive family.

My break from obscurity came when I volunteered for work at Scripps, where I became associated with academic people. The timimg was right. I worked hard, consistantly, and volunteered for any meanial job. I tried to be persistant and helpful. Opportunities to do and learn new things presented themselves and I not only grasped at the opportunities but also created them. I studied hard. At Scripps I learned to collect oceanographic data, analyze them and report on the results, an activity which I continued throughout my working years.

Probably my best work was concerned with thermal structure, internal waves, beach erosion and oceanography of the Indian Ocean. My association with Indian oceanographers stimulated their interest in marine science in their area. As a result, a number of Indian scientists earned PhD degrees partly through my guidance.

This led to international oceanographic work with Unesco, IAPSO and CDC. The 17 years as Secretary-General of IAPSO were a satisfactory climax to previous years of research.

The loving relationship with my supportive wife was my greatest reward, and we cherish our family greatly.

Fifty years of marriage

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BILL AND BOB

WHERE DID YOU COME FROM?

KATHERINE G. LAFOND

Eugene and Katherine LaFond

INTRODUCTION

This is a companion volume to the story of your father's life. Together these two will chronicle the lives and activities of your immediate ancestors and perhaps shed some light on the characteristics and personalities that you have inherited. We hope you will enjoy our efforts and the love we have put into them.

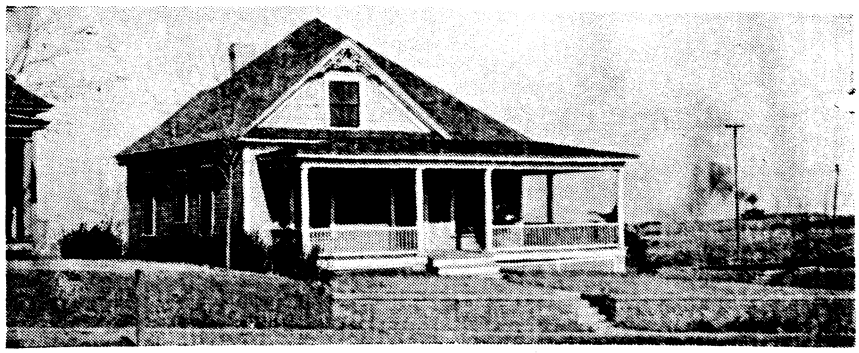
Katherine Wagner Gehring LaFond

Oklahoma Period

I was born in Oklahoma City, Oklahoma, on October 19, 1910, with Dr. Taylor officiating. The happy event occurred in a hospital where my mother, Amelia, had previously worked and her former nurse associates gave her the hospital records , documenting the occasion. Somehow the official record of the date of my birth certificate was erroneously entered as 1920, making me 10 years too young. However, the full hospital record made by the nurses and preserved with memorabelia was sufficient evidence to convince the Social Security authorities 50 years later that I was really born in 1910.

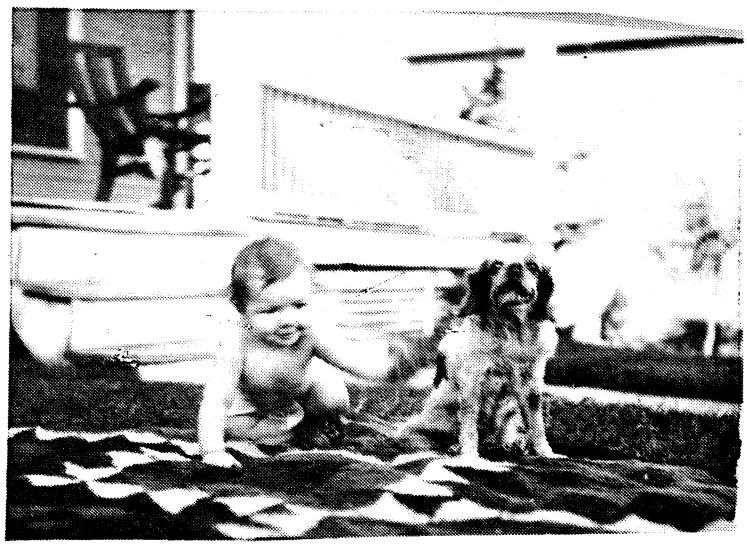
Katherine and proud parents (1910)

I was named after my paternal grandmother Catherine Wagner. The K in Katherine was preferred by my mother because KG made a better monogram than CG. My parents and I lived in Oklahoma City at 601 NW 16th Street for perhaps 3 years after I was bprn. The house, in a fashionable district, was still there when we visited in 1975 and 1976. The picture of me, at about 6 months old, in front of the house on an Indian blanket also



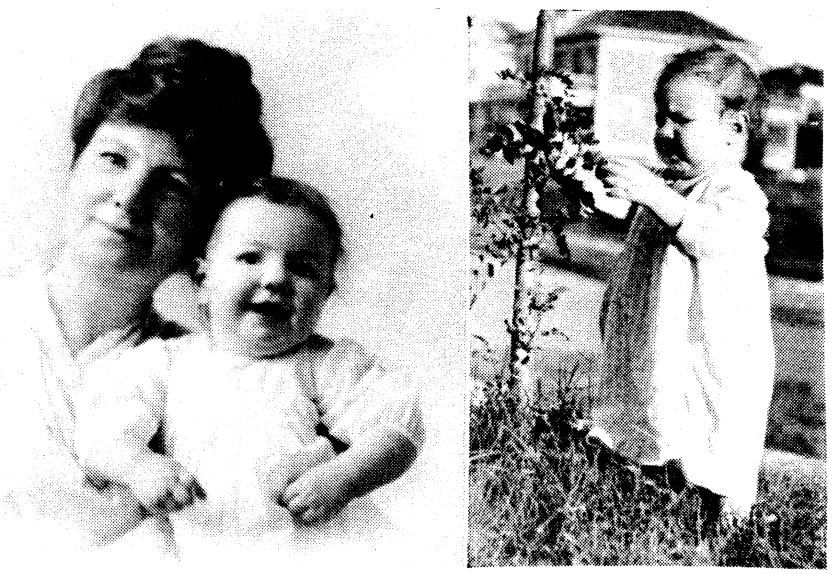
Katherine's first home 601 NW 16th Street, Oklahoma City

Amelia parading Katherine



Katherine about 6 months old on Indian blanket

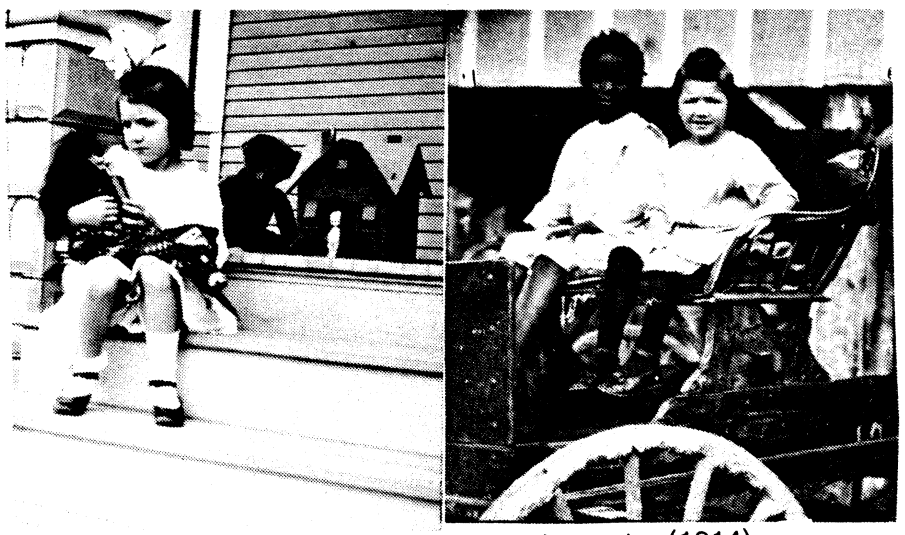
shows, in the background, on the porch a rocking chair made by my father from staves of an oak barrel. These pictures and others throughout my childhood were taken by my father with his new Eastman Kodak, the first daylight loading model. He had many talents.



Mother and daughter (1911)

Wichita Period

In my early years we moved frequently and I stayed with friends and relatives. From Oklahoma we first moved to Wichita, Kansas, for a period in 1914. A new



Katherine with toys and playmate (1914)

packing plant was under construction and mother had 4 houses built to house the expected colored workers.

Chicago Period

My earliest recollections, however, are of boarding at Elmwood School in Chicago, before I was five, for this was a period of parental separation. A Miss Bagley was kind to me. I remember daddy visiting me at the school when I had an earache. He brought me a toy monkey which was attached to the side of the bed and I enjoyed its convorting antics. He would also take me and a friendly teacher to the zoo.

Katherine and father at the zoo, and with Santa (1914)

But somewhat later, my parents were together again and we had a nice apartment in the same building as the Joe Wright family. Their first adopted daughter was just my age, and we both attended Elmwood school. The Wright's apartment was just above ours and we children were allowed to visit each other only on the invitation of the respective mothers. However, I once "ran away" to Mrs. Wright's taking my dolls and all. She was making cup custard at the time and welcomed

me to the family with open arms but said I would have to cut my hair, as her girls had short hair, whereupon I went back to my own home.

Elmwood school class (Katherine in front row)

My father frequently took me on walks and a favorite stop was the fire station to see the horses. I was very fond of animals and can just remember feeding sugar on a flat open hand to the big dray horses that brought coal to our apartment house. I was certainly not afraid of the large animals until Mrs. Wright took her girls and me to a circus. We were very close to the front row and a dancing horse directly in front of us became frightened and charged into the crowd. I still think it was the reaction of the people, certainly normal and to be expected, that scared me more than the horse itself, but whatever the cause, the effect was the same. I became afraid of large animals, or more properly of just seeing them. Once up close and reassured, I lose some of my fear, tho I am to this day not confortable at fairs, horse shows, etc., when in close proxmity of the unknown large animals.

After the Elmwood school, I attended a Catholic convent briefly but became too devout and mother, a life-long Episcopalian, took me out. It was at the convent that I posed a problem as we were being taught to write. I was left-handed and refused to change to my right hand.

East Lansing, Michigan, Period, 1916

My aunt and uncle, Louise and Herbert Grhring, offered to take me with them as Herbert went to East Lansing to teach. Their son Bill (my cousin) was slightly older than I. I remember the night one of the school buildings, catacorner from our house burned. Bill and I sat up all night in the baywindow to watch while Louise made coffee and food for the firemen. It was in the winter time and bitterly cold.

Grandma and Katherine
East Lansing, July 1916

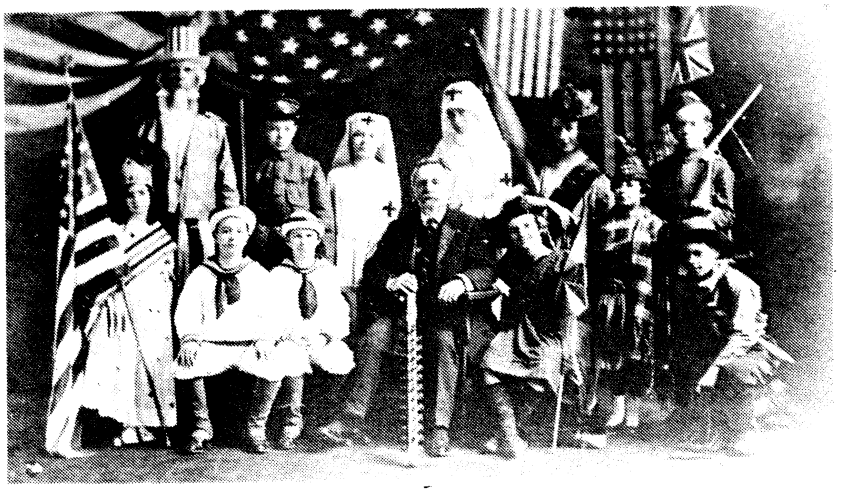
Bill and Katherine
(Grandma and Amelia can be seen through window)

Chicago Period, 1916-17

Back in Chicago when I was 6 my parents started me on violin lessons. I had a 3/4 size violin and first took lessons from a Mr. Simmons, but soon changed to Mrs. Sabatini, wife of a concert violinist and violinist of considerable stature herself. She lived some distance away across Chicago and it was a proud moment for

me when I crossed Chicago alone on the I.C. (transportation system) to take my lessons. Tho mother could not play herself, she was a good critic and helped me in my early practice periods. However, my father played the piano well, as well as the violin and also was a great help.

My mother encouraged me to participate in social activities. One of my early recollections was in a musical pageant. I was Columbia and was carried on a platform by 4 big boys as I sang "O Columbia the Gem of the Ocean".



Katherine (front left) and cast of patriotic pageant

On another occasion, pictures were taken of me to illustrate a magazine article on cooking. I wore a chef's hat and apron to make oatmeal and toast on a gas range.

Katherine as a budding cook

Archibald, Ohio, Period, 1917-18

Sometime between Chicago and Cleveland periods and during World War 1, we lived in Archibald, a small city in NW Ohio, where dad was practicing medicine. All I remember of WW 1 was knitting wash cloths for the soldiers. My aversion to funerals stems from this period, too. I was asked to play my violin (Abide with Me) at a little child's funeral and my parents said "no".

I guess so much fuss was made I have not gotten over being highly emotional at funerals, even tho I did not go to one until I was in my mid-thirties.

Armistace Day Parade, Archibald, Ohio, 1918

Cleveland, Ohio, Period, 1918-20

From Archibald we moved to Cleveland, my father's family home. These were my early grammer school years, probably 3rd and 4th grades. I remember how cold it was walking to school in the winter time and I wore a veil to cut the biting wind. I also wore long underwear and long white stockings.

We had a nice corner apartment (53rd and Cornell) and I was happy to have both parents, tho dad was not very well and was not working. Mother bought the antique spinet desk for $75 at this time. Many years later she gave it to me as a present for our first home of our own - 4505 Santa Cruz Avenue in San Diego - where it is still in use (1993). I remember taking huge bouquets of peonies on a street car across Cleveland to Lakewood for grandma Gehring who lived there with Louise and Herbert.
To avoid the cold weather we spent a winter in West Palm Beach, Florida, with Louise and Herbert and grandma Gehring. That winter I took violin lessons from a Hungarian couple and they invited me to spend the

night with them. But when dusk fell and I saw the freshly killed possum we were going to have for supper still moving, I changed my mind and they brought me home.

Katherine at Lake Worth, West Palm Beach, Feb. 1919

Later that year (1919) we spent a summer on Lake Michigan at a beach resort called Mentor Headlands. I remember watching the snake eggs hatch in a wagon seat, and the time I went to the movies to see Tom Sawyer and had to hold a hat over my face so I could not see the scarry parts.

Katherine at Mentor Headland Beach, July 1919

That fall, back in Cleveland, the first snow of the season was falling when we went to visit my aunt Alma, Norman's sister, who lived in a big house on Euclid avenue. She liked coca-cola and I had my first taste of it then. Tho she was only 42 at the time, she was in her last illness and died soon afterwards. This was the only time I ever saw her.

Trip to California, 1920

It was from Cleveland that we drove to California in the late summer of 1920. I had been hospitalized in Cleveland to find the cause of my delicate health and when calcified nodules showed up on my chest x-rays, the diagnosis of incipient tuberculosis was made. So we moved to California for my health.

The cross country drive at that time was an heroic adventure. Mother was especially adventurous. It was not clear why they chose San Diego as our destination for we knew no one there. Maybe it was the reputation of a warm sunny California.

We left Cleveland in a Chalmers master six open touring car loaded with camping gear, clothes, food, the Gehring family music box and even a canary in a cage. We had no previous experience in camping and long drives. Of course, there were no maps nor guide books and we navigated by asking questions from one and all. Even before leaving the city, we turned around and took the bird back to grandma. The music box remained strapped to the running board.

The plan was to camp along the way. For this we had a tent which was set up every night. The first night out we asked a farmer for permission to camp in his yard, which we did. On some occasions we were able to find campgrounds where the music box was unstrapped and played for impromptu musicals.

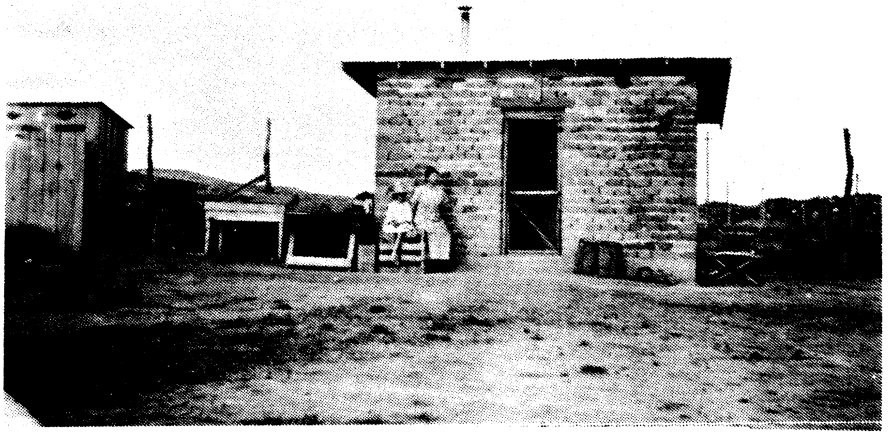
We carried a pennant attached to the back of the car saying "Chicago" although our departure was Cleveland.

Camping enroute to California with tent and food box on back of car

In some places we made a canvas lean-to from the car underwhich we slept on canvas cots. In the high elevations it was cold camping and traveling in an open car, especially when it rained. At one time we even wrapped a cot mattress around the 3 of us in the front seat to break the wind.

The car would occassionally break down and repairs not only slowed us down but made it an expensive trip. We left Cleveland with $500 and arrived in Denver broke. A banker personally loaned dad the price of a telegram to his brothers for an additional $500, against a gold coin for security. I remember having car trouble going up Pike's peak and the Garden of the Gods but we got going again and did fairly well until into New Mexico where the transmission broke as we were

traversing a wash. Dire predictions of flash floods following rains did not come to pass and we were not washed out. Instead, we were towed to an Indian trading post called "Old Laguna". We were able to get "accommodations" in a small adobe hut which we shared with 40 sacks of oats and a few centipedes. With the exception of the storekeeper and the railroad people there were only Indians about. A few were always sitting on the front porch of the store wrapped in heavy, wool rugs. They believed that "what keeps out the cold, keeps out the heat". The weather was sufficatingly hot.



Accommodations in Old Laguna

Indians on trading post porch

We remained at the remote outpost for 10 days until the new car part could be shipped from Cleveland. Once installed, we were on our way. From Albuquerque we once again wired home for another $500. Our route took us through the petrified forest of Arizona, which at that time was not a national park and large pieces of petrified wood were still free for the taking.

Petrified forest in Arizona

It was a long strenuous trip but the outdoor living seemed to agree with all of us.

San Diego

We arrived in San Diego on 23 September 1920, my father's 43rd birthday, and stayed in a small hotel on C Street near India. That evening we walked along Broadway which mother called "a disreputable street" until she learned that it was the main street in town. Of course, we were broke and had to wire home for money. The trip had cost $1500, a considersble sum in those days.

After a few days we moved to the municipal camp grounds located in Balboa park. I think it was Upas Street, the pressent zoo and near Roosevelt Junior High School. In a garage in Albuquerque I had befriended a mongrel dog. named Rags, and was delighted with the gift from the garage man who was glad to get ride of him. But in the campground he proved to be such an aggressive watch dog that daddy had to take him to the pound before he seriously hurt anyone.

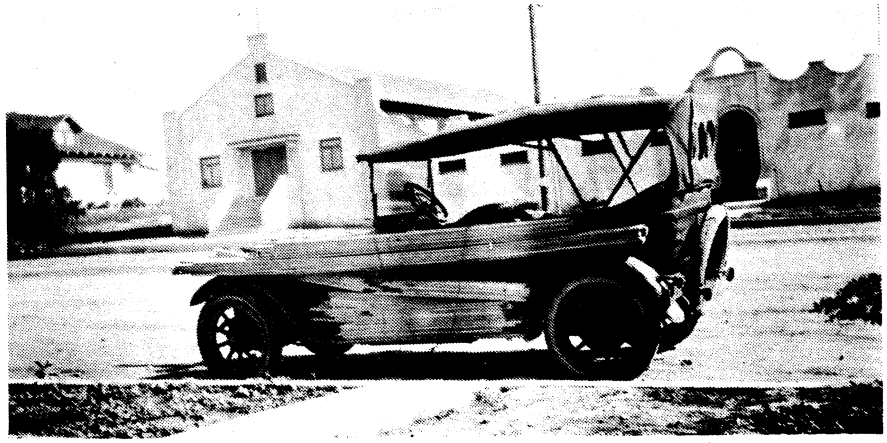
From the campground we moved into a house on Lincoln Street near Normal Street and rented it for several months. While househunting along Park Boulevard we stopped to talk to a woman hanging clothes in the yard. She had a girl my age and a little Boston Bull puppy. She told us that her daughter went to the Normal School and when I entered there in the 4th grade Monica Bartling was the only one I knew, and a friendship developed between us, my parents and her mother. Shortly thereafter Mr. Bartling died of pneumonia and my mother stayed with us girls while Rose, her mother and relatives attended the funeral.

Wash day in the campground

While living in the Lincoln Street house we renewed a friendship with the Charley Smiths who we had met driving across the country. We had camped together in the desert and Mr. Smith asked me to retrieve a folder of matches he had dropped between the seats in his car. It was a small space and I had the smallest hands in the group. We lost track of him until by chance a vegetable peddler in San Diego told us of his new neighbor recently arrived from the east. It was the Smiths and we renewed our acquaintanceship. Charley Smith was now involved in the chicken business. He would go to Imperial Valley and buy a truck load of chickens and subsequently sell them in San Diego. My father accompanied him on several occasions.

Normal Street House

During one such trip mother heard of a piece of property on Normal Street that was for sale and she bought it even before dad returned. She was a shrewd but spontaneous business woman and it was a good buy. The lot ran from Normal to Cleveland Streets and included 18 fig treees. The former house had burned to the ground when the woman forgot the iron, leaving it connected and sitting on the ironing board while she went to town. Only the half basement had been rebuilt and we again lived in a tent house in the back yard until the rebuilding was partially livable. Dad did not practice medicine during the early days in San Diego and he and a French Canadian carpenter, a Mr. Mansur, did most of the work of rebuilding the house. Dad was always thorough and only the best materials were used. The oak floor was



Hauling lumber for the Normal Street house

the heaviest grade and as he laid it put the nails so close together that the floor would never squeak. Mother incorporated her wishes for an old English fireplace, with swinging crane to support a teakettle. The fireplace opened into both the living and dining rooms. It was a lovely house at 4012 Normal Street. The fig trees gave bountifully and mother dried figs for everyone. We also sold them and I was allowed to keep the profits. I made $18 one year. We also raised vegetables.

That May, 1921, before the house was livable and the trunks of linens were still stored in the lower part, it rained - and rained some more. Of course the linens got wet. They also mildewed and for a long time after the unusual rainy spell the back yard was bedecked with bleaching, buttermilk soaked linens.

Dad nailing siding to Normal Street House

Katherine and mother in back yard by tent house

As the house was being rebuilt we had our furniture sent out from Cleveland and put in storage. The subfloor was itself very heavy and mother, wanting to surprise dad for his birthday, ordered the piano delivered from storage. Imagine our surprise when we returned from down town that afternoon to find all our furniture, except the piano, sitting in the front yard.

Roosevelt Junior High School

I continued at the Normal School at El Cajon and Park Boulevards and, by tutoring sixth grade math with daddy during the summer, was allowed to skip the sixth grade. I entered Roosevelt Junior High School at Park Boulevard and Upas, the first fall it was opened, even tho the building itself was far from finished. Blackboards had not yet been installed and gym classes consisted of picking up the rocks in the sports field.

Katy Edman

Soon after I came to San Diego I joined an orchestra taught by a Mr. Mills. His music school was located at the end of Upas Street adjacent to the old street car tracks. I enjoyed this activity very much and it wasn't long before I knew everyone and everyone knew me, including a Mrs. Katy Edman who occasionally took care of the Mill's young son. As soon as she heard my name she sought me out to ask where we had come from and when I said Cleveland, she wondered if I had ever heard of Alma Gehring, my aunt Alma, my father's sister. What a small world! It seems as tho Mrs. Edman and Alma had been childhood friends and playmates. Then Katy married and moved away and they lost track of each other. My parents and the Edman's became close friends and remained so as long as they lived.

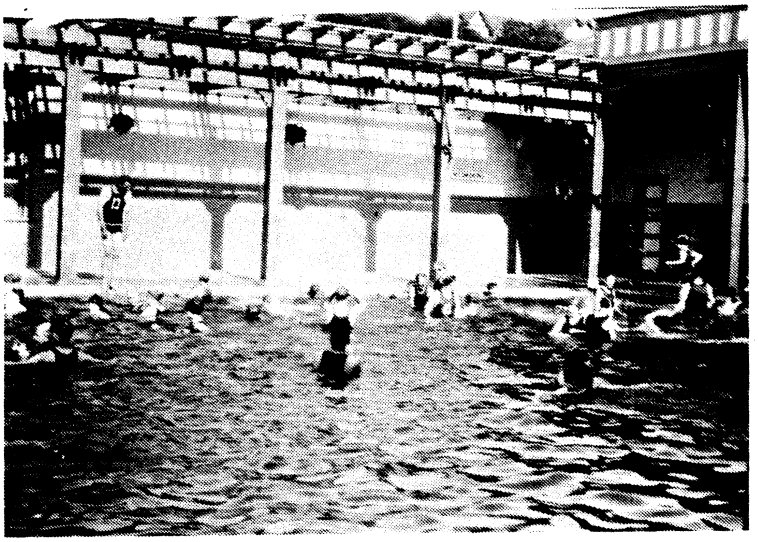
San Diego Activities

During these years life was not all work and building the house. We enjoyed taking Monica and her mother to the beach and swimming in the big Gunther's pool located at the foot of Sixth Street. With another family, the

Katherine and Monica on beach

Baumgartners, we took trips to the backcountry. I well remember the cold New Years eve and night we spent in Santa Ysabel. There was only one gas pump outside a small building, and operated by a deaf-mute. Somehow

my parents and the Baumgartners, conveyed our necessity to spend the night there and he let us use an upstairs room. It was a long cold night and we were all glad to get home and warm the next day.



Gunther's swimming pool

Warner's Hot Springs was a favorite spot. The Edmans would go up for a week and rent a tent house. The Baumgartners, with their daughter Esther, and ourselves would go up for the weekend. The large swimming pool was filled by the hot springs. When filled, it took several days for the water to cool enough for swimming. But sunburn was no trouble and Esther and I got real burns before we knew it. We all played rummy, using pennies as "chips". I can still see that Prince Albert tobacco can filled with pennies.

Family Problems

While these were happy years for me they were a period of increasing disenchantment for my parents. Eventually, in October 1924, they separated and mother moved out to "teach him a lesson". Continuing my lifelong admiration for my father, I chose to remain with him. For a few weeks I stayed with the Episcopal minister and his wife, then dad and I moved into the Casa Grand apartments on University Avenue near Park Boulevard. We had the Baldwin piano there, too. The Normal Street house on which dad had worked so hard was eventually sold.

San Diego High School

In January 1925 I graduated from Roosevelt Jr. High. Mother, in trying to please me, had gone to a lot of trouble to locate enough Cecil Bruner roses to make a graduation bouquet for me. Unfortunately, it was taken by someone else. But I have always appreciated her efforts.

After graduation I entered San Diego High School. It was a group of stone buildings crenolated like a castle and located at the foot of Park Boulevard almost downtown. Part of the school's indoctrination program was a meeting at which upper class girls chose "little sisters", and Marguerite Lucas chose me. A close friendship developed which has lasted throughout our lives.

About this time mother had rented a nice house on 3rd avenue and she invited me to live with her, which I did. The Baldwin piano was there, too. She had bought it from dad for $400 when that was all Thearles music store offered him for it. This well traveled piano was my pride and joy and I was disappointed when she later sold it.

This was a peaceful period for me. I enjoyed my high school classes, especially music and biology. The music was taught by Nino Marcelli, a well known orchestra conductor. In biology one of the requirements was to learn the names of 100 birds native to this area. I used to walk through Balboa Park early in the morning on my way to school trying to see and identify as many birds as possible, and also studied specimens in the Natural History Museum. My efforts paid off, for on the test I was able to identify 98 out of 100 birds. Our teacher, a Mr. Carr, brought an eagle's claw to demonstrate, by pulling the exposed tendon, how the claw tightened on a branch as the bird relaxed.

As I was under weight I was allowed to spend a free morning period in the nurses room to have a carton of milk and first choice at the sandwich cart that came around every noon. I soon gained 5 pounds.

It was sometime during my early high school period that dad and I lived in the Polhemus hotel, downtown, It was very close to the library and I spent a lot of time there. I loved it.

La Mesa Heights

By summer mother had moved from the Third Street house back to La Mesa. She had bought a lot next to the old Edman house and had a double garage moved on to it and made livable with a bathroom and kitchen. An additional room was built on to the front. The two of us did most of the carpentry and I put up the siding by myself. It wasn't long before Mrs. Taylor and her daughter, Ann-Catherine, came out from Oklahoma City to visit. She was the widow of the doctor who delivered me and they had been friends ever since.

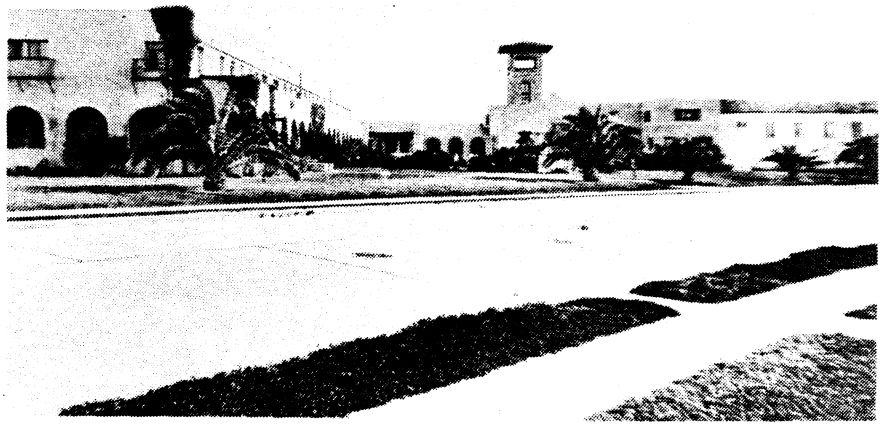
Amelia and La Mesa Heights house

Mother bought a new Ford touring car, her first car, and I was to drive it to downtown San Diego to pick up the Taylors at the Santa Fe Station. Back when I was still in junior high dad used to take me to Madison Avenue, a quiet residential street, and taught me to drive, but I hadn't done so for a long time till I was to meet the Taylors. So in preparation I drove around the block. The next day I picked up the Taylors.

One of the first plants to go in by this "house" was the Christmas tree we, mother, dad and I had bought that first Christmas in 1920. It was then a tiny cypress tree in a gallon can. By 1926 it had long outgrown its tiny container and once planted it grew very fast. It became, over the years, a landmark on El Cajon Boulevard, dominated the house and had to be cut down.

The Bishop's School

Through her business deals, mother had become acquainted with Miss Julia Pickett, a leading San Diego business woman. It was she who suggested to mother that she try to get me into Bishop's School and added that she would give me her recommendation. Mother and I had an appointment with Miss Cummins, the Headmistress, and apparently I passed muster for I was admitted for the fall semister of 1926. So in spite of my "building" efforts, I spent the better part of the summer getting ready for Bishop's.



The Bishop's School, La Jolla, 1926

The Bishop's School was a prestigious, girls Episcopal boarding school, located in La Jolla. The school maintained very high scholastic standards and the curriculum also included Bible studies. Every evening there was a Chapel before study hall and every week we memorized all the verses of a hymn. At that time there was no wall around the campus, but without permission we were not allowed to leave the campus.

Miss Cummins was a wonderful head mistress and it did not take long for me to blossom out in that serene atmosphere devoid of family problems. Sending me to Bishop's was one of the nicest things that my mother ever did for me.

Life at Bishop's was enjoyable. The campus and buildings and the beautiful St. Mary's Chapel were soon home.

The dining room was staffed with Philippian waiters. I will never forget the squeeky apple green shoes worn by our boy. One much enjoyed delight was an occasional "feast". Suite mates were allowed to order (from the local ice cream parlor) the makings of scrumptuous sundaes to be delivered to the school for our late night (10 o'clock) feast. How we survived all the concoctions we dreamed up I'll never know, but we did and it was great fun to be "slightly naughty with approval".

Thanksgiving and Easter were celebrated at the school. We knew they would be, and other vacation week-ends were substituted and delightful. The summer vacation of 1927 was spent with mother who was living in a friend's house on Amhearst Street in La Mesa Heights. I had done a lot of swimming at the YWCA and somehow managed to get pneumonia. Good care by mother, Dr. Parks and my father, who came out every day to see me, pulled me through. While convalescing I read Les Miserables by Victor Hugo, and embroidered a linen credence table cloth for the chapel. I had become a member of the Alter Guild and wanted to leave something permanent for the chapel.

Happy Bishop's days
Amelia and Katherine, 1927

Eva Johnson and Katherine
at Bishop's May Pole

1927-28 was my senior year. A few extra bedrooms had been created near the infirmary and we four, Eva Johnson, Dorothy Stever, Gwen Williams and I who lived there cemented friendships that have endured to this day.

The two years that I spent at Bishgop's were surely among the happiest of my life and the quality of the education has benefited me throughout my life.

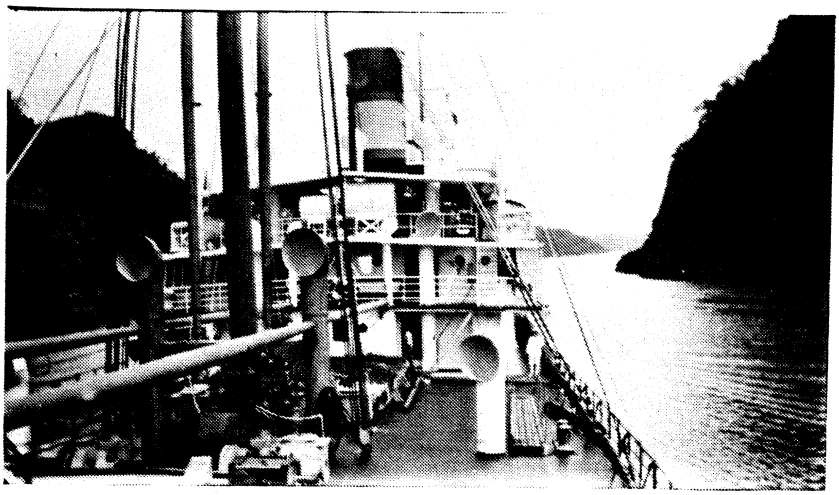
We 18 were graduated in June - full of plans to conquor the world.

Katherine's graduation picture for Bishop's High School Annual, June 1928

Germany, 1928-1930

The following fall mother took me to Europe. I had always wanted to go to Germany whence my father's ancestors had come, and mother could afford to take me at this time. We left from San Pedro on the M.S. Annie Johnson, a Sweedish combination passenger and freighter. We had a two berth cabin in tourist class and had an interesting passage through the Panama Canal and

Katherine off to Germany



M.S. Annie Johnson traversing the Panama Canal

across the Atlantic, landed in Hull, England. We stayed there a few days before taking a boat across the North Sea to Hamburg, Germany.

The decision to leave Hull was rather sudden and instead of checking out, mother simply stopped at a bank and sent the hotel a money order to cover our bill. This was typical of the independent way mother often operated. Of course, we were met at the dock by detectives and had quite a time explaining what we had done, especially since we had no receipt from the bank to back up our statement. Finally she convinced them, and we were on our way, but not until I borrowed a little money from a stewardess to pay for the detective's tea break.

In Germany, language was a problem for my high school German was of little help. In Hamburg I remember one large, posh, outdoor garden cafe by a lake. It was a beautiful Sunday afternoon and the place was crowded. When the waiter came for the order I simply led him to a nearby table and pointed to the fancy ice cream concoction the occupants were enjoying. Such an educated finger has stood me in good stead many times in the ensuing years, but this was its most blatant use.

Berlin

From Hamburg we took a train to Nurenburg. The stop there was short, however, as we quickly learned that the University was closed for vacation. Enquiring about the next train to Berlin, we learned it was leaving in 15 minutes and if we hurried we might make it. The porter threw our suitcases on the back platform, we jumped on, and the train pulled out. Our compartment was crowded with vacationers, but they soon left to go to other cars while a porter put our suitcases in a rack over our seats. As we neared Berlin the passengers returned. One man, a Mr. Stench, spoke some English and his wife was friendly, tho she knew only German. When the train pulled into the station he lowered the window and handed his luggage to a porter waiting on the platform. He also gave instructions and passed out our luggage, Somewhat apprehensively we followed the porter through a tunnel, emerging in a nice hotel lobby. We checked in and then walked around the block to see just where

we were. The room phone was ringing as we returned and it was our friend asking if we were confortable, and inviting us to have coffee with his wife the following day in a department store tea room. This we did, and tho conversation was limited, friendship followed.

Cecelia Wenk

Mrs. Stench had a friend who spoke English and had arranged for us to visit her in her apartment. This was our introduction to Mrs. Cecelia Wenk, my beloved Wenkie as I came to call her. She won my heart right away as she served tea and Hershey bars that first visit. There were three Wenk children still at home: a girl Gretta, four years older than I, a boy Donald, two years younger than I, and Phyllis, who was to be married very shortly. Mrs. Wenk was a widow and offered to let us rent a room becoming vacant with Phyllis' marriage. We were delighted and soon became part of the family.

Katherine, Gretta and Cecelia Wenk
and Lydia's children

The room was large by our standards and was dominated at one end by a high tile stove. It burned brickettes, and once the daily replenishment of brickettes was made, the stove gave off a wonderful, even, steady heat that lasted until the next refuelling. The massive stove was started in the fall and was never allowed to go out until the following spring. The other end of the room had two large double windows. Each window opened, and the space between the window panes was at least four inches. A double door could be opened to connect directly to the dinning room (next door). The opposite wall had twin beds, complete with big feather beds, and a large wardrobe. A dresser by the window and a table by the stove completed the furniture.

School in Berlin

Mrs. Wenk went with us to visit the Hohenzollern Oberlyzeum (girls high school) nearby and see about enrolling me. Dr. Zorn, the Principal, took me to Frl. Eva Beyse who spoke English and made me feel her friendliness right away with, "Hang up your coat", as she indicated a long row of hooks on the back wall. For six months I attended Hohernzollern Oberlyzeum and got a thorough grounding in German, I also made life-long friends with several girls in the class as well as Frl. Beyse. Tho the girls were not as sophisticated as their counterparts in the U.S., they had a wonderful education and were more advanced in mathematics, languages, and of course, European history and literature. Generally speaking, the German high includes our lower division college work. Graduation is preceded by, and is dependent upon, passing an "Abitur" examination. Entrance to a German University or Technical Hoch Schule is thereby assured. It is a good system. I soon found that their math was more advanced than in U.S. high school's and arrangements were made for me to make up the difference by tutoring.

Discipline in the school was good; there was really no need for it, for everyone knew better than to do anything that would require it. Good manners were also evident. Everyone stood up when a teacher entered a room. Only once did I see any shenanigans. The first class after recess was singing and the teacher was a character, so

during recess a few girls made snowballs and on entering the class ahead of the teacher threw them against the ceiling above where the teacher would stand. She never did see where the dripping came from but it was very hard to hide the snickers and mirth we all felt.

Katherine (white cap) and her class in Flinsberg

The class also went on long walks in the woods, singing lustily all the way, and in the winter there was the annual outing to Flinsberg, a small ski resort. Skis were rented from the school system and several teachers accompanied the class. It was clean wholesome fun. The second year I was good enough to take the all day trip and we helped a girl pull a loaded sled most of

Cross-country skiing with class, 1930

the way up a mountain side. We just happened on her and the girls helped out as a matter of course. There was a small hut at the top and never has lemonade tasted as good as it did then. We just whizzed down the mountain.

Katherine

After mother and I had been living with Mrs. Wenk for about two weeks and I was well settled in school, mother returned to the U.S. I can still feel the thrill of being alone and independent in Europe before I was 18. Of course, there was Mrs. Wenk in the background, and for two years she was as good a mother as anyone ever had.

Her story was interesting, too. Caught in England during the first world war, she sent her 5 children to the best school available, a nearby Catholic convent, tho it so happened that she was Jewish. Gretta and I became very close friends and remained so throughout life. There was a period for years when we did not see each other, but once together again we picked up just where we left off as tho there had been no separation. Sisters could not be closer.

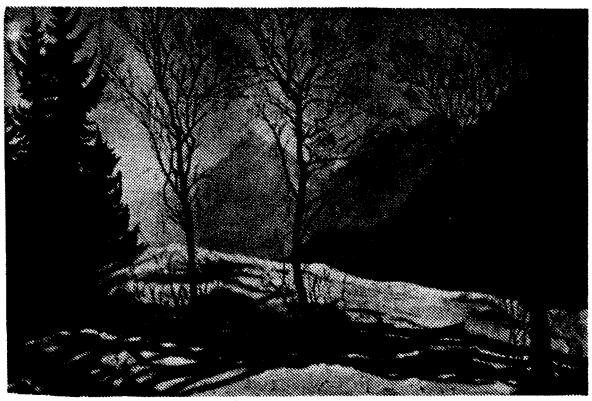
Wilhelm Schroeder

On mother's trip home she met a Herr Wilhelm Schroeder who was coming to "America" to sell his patent for a cooling drum which is used in manufacturing of margarine. She helped him with his contacts in New York as it was his first trip to this country and language was a great problem. The following year I met him and did considerable translation in connection with his cooling drum patent.

The Schroeders lived in Arfrade uber Lubeck in northern Germany. Mother spent several pleasant visits there with them and the friendship lasted for several years after we returned home. Even after Herr Schroeder's death mother continued to keep in touch and during the war years sent food packages to Mrs. Schroeder and her sister who lived with her. At first the two women had their home to themselves, then as the refugees began to stream in from the east they were forced to relinquish more and more of the house, ending up with just one room. We lost contact with the family after both sisters died.

Vici Brüning

My seat mate in school was Vici Richter, a gifted artist even then. She later married the artist, Max Brüning, and Gene and I visited them several times. On one of these visits to Lindau he did the portraits of us which hung in our home for many years. Other pictures, an etching of Lindau, using a special coloring process, and another mountain scene are Max's. Vici did a larger, misty, mountain scape which also decorated our home.



One of Vici's paintings

Berlin Activities

The Wenk's apartment was on the fourth floor (our fifth) of 33 Friedrichsruher Strasse in a suburb called Halensee. I was within walking distance from the upper end of Kurfurstendam and I frequently crossed it on my way to latin lessons, shopping, etc. The main elegant shopping center of Berlin was at the other end of Kurfürstendam, headed by the beautiful Godächtsnis Kirche (the bombed shell still stands as a memorial). The main big department store was KaDeWe, an acronym for Kaufhaus des Westens, but the boulevard was lined on both sides with elegant specialty shops. I loved it. My bank was also here and I felt so grown up on my monthly visits to cash and deposit the $100 check that my dad sent me.

Katherine by Berlin theater signpost

The first Christmas was lovely. Mrs. Wenk took me to a relative's party and the big tree had real, live candles burning on it. Tho I was afraid of fire, it was a beautiful sight. German holidays are celebrated for two days, a good idea.

Mrs. Wenk was a good cook and we ate well, tho not expensively. She made suet pudding with raisins, called "spotted dog", and red cabbage with chestnuts. The German apples were the best I have ever eaten and I ate them by the bushelful. Grocery shopping was a store by store process, each one carried but one product. Shops were located on the street floor (our first floor) of all the apartment buildings.

Mrs. Wenk's eldest daughter, Lydia, was married and lived in Halle, where her husband was a cattle broker. I visited them several times and Lydia used to bring her two little boys to Berlin, too. Ludwig had a car and chauffeur and once let me drive through the countryside as he went from farm to farm on his business. At that time and place a woman driver, especially a young one, was a rarity.

Doing laundry in apartment in 1928

Katherine on new stair carpet in apartment

University of Berlin

After six months in the Oberlyzeum I had a pretty good grasp of the language. I had also heard of the

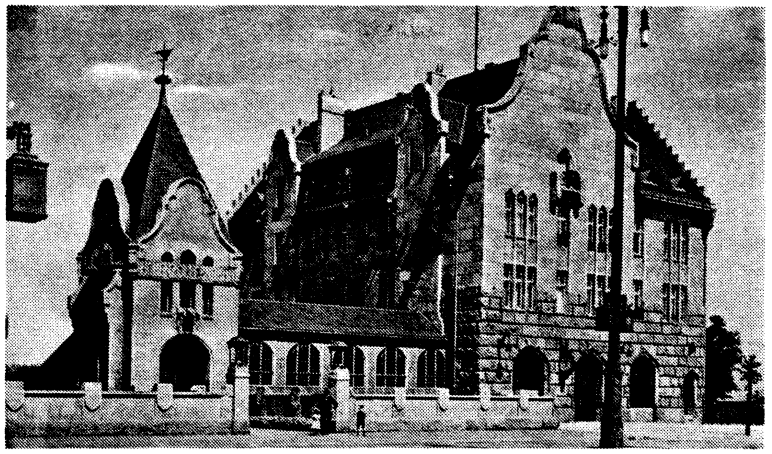
University of Berlin's Institute for Foreigners and applied for admission. The language interview offered no problem and I was admitted. My excellent Bishop's School background stood me in good stead and when my Bishop's credentials were evaluated I was assigned the subjects of German literature, geography, history, latin and physics. The first three subjects were taught at the University by a Herr Stiefenhofer, a marvellous teacher who made

University of Berlin, 1930

the German ethic and philosophy come alive for me. I drank in every word. Latin was a challenge. I tutored with a teacher from the Oberlyzeum, Dr. Hans Wazinsky, and in the process improved my German considerably. A graduate student at the University helped me with the physics requirement. After 1½ years I took and passed the written and oral two-day examination which now entitles me to full matriculation in any German university or Hochschule. During this period I also audited a few classes at the University, the most notable being one taught by the famous physicist Nernst. I still have his autograph on my enrollment card.

The best way for me to get to the University of Berlin from our suburb of Halensee was by train from the Hohenzollern (station). The station was close to our house and the trip to the University took about 20 minutes.

This was the spring of 1930. I had just arranged a summer job with an American family to teach their daughter



Hohenzollern (railway station) 1930

and had anticipated matriculation in the University of Berlin in the fall when it became painfully evident that there would be no more money and I would have to return home. Reluctantly I bought a round trip Berlin-to-Berlin ticket, and after a short trip to southern Germany, mother and I sailed home on the Cunard Line's Berengeria arriving in New York on May 30, 1930, Memorial Day, with practically no money and all the banks closed. I did pick up a letter and a check from my father and the next day presented it to a bank officer whose only question was "How did you come by this check if you just arrived from Europe?" My answer must have satisfied him for he initialed it then and there.

These two years spent in Germany have had an influence on my life all out of proportion to the span of time involved. Throughout my whole life I have profited from, and been influenced by, these experiences and the people who made them possible.

It was not until 1983 that I made a return visit to Berlin. We were in Hamburg for a meeting and I could not resist the temptation to revisit the old neighborhood where years before I had been so happy. I had no trouble finding the district tho my street had apparently been bombed and had been rebuilt with an entire block of apartment housing. By this time the city of Berlin had been nicely restored with only a few bomb scars remaining.

Back in the U.S.

Immediately after arriving back in New York, I went on to Cleveland to visit my uncle Herbert, while mother went to Chicago to visit Mrs. Wright. It was during this visit at Herbert's that I hand-copied the Gehring genealogy compiled by Albert Gehring, Ilsa Reed and others. Louise said they did it to trace the Gehring connection with the famous German philosopher Friedrich von Schelling, whose life story occupies five full pages in my 1910 Encyclopedia Britannica. I stayed there a few days, then took a bus to Chicago to join mother. It was a 24-hour ride and a group in the back of the bus kept things lively by singing all night. It was a fun trip.

There was a mixup in meeting mother for I got off at a suburban station near the hotel where she was staying, while she went off to the main station. At any rate, the taxi went through dark streets till I became alarmed and told the driver the hotel couldn't be here, whereupon he turned the cornerto a brightly lit hotel. What a relief!

I hadn't seen my friend, Peggy, in many years, and thoroghly enjoyed our visit with the Wright family. After a few days I took the train alone to San Diego, stopping briefly in Pasadena to see my Bishop's school friend, Eva Johnson, and her parents, the Cash's. Then I came home to a long anticipated reunion with my father. It was immediately evident that he was not well. We went for a drive in his little Whippet car, and while he was driving he had his first stroke. Fortunately, there was no oncoming traffic and I managed to get the car back across the street to the right hand curb and stopped. Someone called an ambulance and he was taken to the county hospital where he remained several days. Rose was visiting her relations in Los Angeles at the time but came home immediately. Dad was unhappy in the hospital and left before he was released. But the two of us took good care of him and he recovered with no paralysis.

Mother returned to San Diego shortly and rented an apartment on Fifth Avenue from Mrs. Katie Gamble.

San Diego State College

I cast around for something to do. Dr. Pickard, a well-known pathologist, suggested I see Dr. Leo Pierce, head of the Chemistry Department at State College. This was another turning point in my life, for Dr. Pierce allowed me to register as a "special" in his department and it was here I met Eugene Cecil LaFond. At that time State College was located at the head of El Cajon boulevard, and the building where I had gone to school in the 5th grade was just across the campus.

These were busy days. I loved the classes and was the only one who could read the German reference books that Dr. Pierce had in the chemistry library.

That December, 1930, I had my first date with Gene. It was a fraternity dance given by his friend, Ed Mac Gregor's fraternity. Gene borrowed his father's car, drove clear in to San Diego from Imperial Beach to pick me up, then back to Chula Vista to the Women's Club for the dance. All too quickly the evening passed. When we left, the car would not start. One by one all others left. Finally we were the last car. Still it would not start. We walked over to a friend's house (Donald Johnson), and while I waited outside Gene climbed in the window, woke his friend, and he drove us back to San Diego to bring me home. The boys then returned and towed Gene's dad's car home. Thus ended my first date with Gene.

The first car Gene drove was a Model T Ford. The first time he drove me home in it, he had a beaker of TNT in his hand, so it was only natural that he ask me to hold it while he drove. Fortunately nothing occured to disturb it and we arrived at my house, and he at his, all in one piece. Soon afterwards he bought a Model A Ford coupe with a rumble seat. It served him well until we were married and bought our new Ford tudor sedan.

In college I must have been an object of curiosity in an almost male environment, and when I came to class wearing a beautiful salmon colored sweater blouse that mother had knit, there was some guessing as to what was underneath, for the fancy pattern of stitches alter-

nated small holes and solid knitting. It was not until much later that I learned about this little game.

The following year the college moved to its "new" location on College Avenue -- way out in the sticks, for the area at that time was still mostly vacant land and farms. Everyone pitched in to help move the Chemistry Department, and while it was lots of work to pack and move all the chemicals, apparatus and books, it was lots of fun, too.

Katherine as a San Diego State College student

Katherine and Eugene in park

The five years from late 1930 when we first met, to September 1935 when we were married, might be catagorized as our courting years. Even tho money was scarce we managed to attend many happy events and outings. While we were still living at Mrs. Gamble's Gene and Ed MacGregor, who was dating Gene's sister, Lois, planned to take us to the Easter sunrise service atop Mt. Helix. We went to a show the evening before, then spent a short night at our place, leaving before dawn for Mt. Helix. Lois, mother and I slept in the bed, the boys on the sofa, and mother made a good breakfast before we started out. It was a memorable weekend.

Another of many happy recollections was a cruise to Long Beach and back aboard the cruise ship S. S. YALE with college friends. Also, when Gene collected mussels to sell at his service station I occasionally accompanied him. At that time the beach cliffs 2 miles south of Rosarito contained scenic arches. With the proceeds of selling the mussels for fish bait we were financially able to attend the olympic games in Los Angeles in 1932. About this time I bought a lovely camel's hair suit at the summer sales at Ballard and Brocket and wore it for the first time to the 4th of July fire works at Glorieta Bay in Coronado. The set pieces and aerial displays were spectacular and we have not seen another to match it. I will always remember that beautiful evening.

Katherine on
Rosarito beach

Eugene and Katherine
onboard S. S. YALE

Washington Street House

Shortly thereafter mother bought a partly furnished two story house on the corner of First and Washington Streets. The house was purchased from Dr. Nielson, a San Diego physician. His wife was a Merril as was her sister who lived with them as a housekeeper. I saved the last of the hand spun, hand woven linen dish towels which in 1992 must be over 100 years old.

Also in the house was a cane which supposedly belonged to George Washington. It can not be authenticated but it was in the Merril home in Bar Harbor, Maine. The cane is in several pieces that screw together.

The Washington Street house

It was a lovely house, and I lived there until I moved to Scripps Institution in La Jolla in 1933. After mother sold it about 1940 the house went through many "alterations". The down stairs was partitioned into several stores, even including a massage parlor. One day in 1979 I drove past and the house has been demolished. It was a sad moment for I loved the house and had many happy memories attached to it. The area is now commercial.

State Poultry Laboratory

In the summer of 1932 I took a class in bacteriology being given at Mercy Hospital, and in the fall I went to the State of California Poultry Laboratory which was housed in the San Diego Zoo Hospital and headed by Dr. Carl Wallen. It was patronized by local poultry farmers. The lab's main functions were to test chicken blood for pullorum, an infectious disease in chickens, and also diagnose other ailments in the sick birds brought in. Samples of blood were treated with pullorum antigen and a positive reaction was confirmed by aglutination. I was paid a very small amount for each blood test done

and my first check was $14.00. Considerable bacteriology was also involved, consisting of culturing tissue samples and trying to identify organisms causing the disease.

For the fun of it in early 1933 I took a State Civil Service Examination in animal husbandry and to my amazement came out 5th in the state. The job offered me was in a poultry lab in Petaluma, California, but by then I had started to work at Scripps Institution of Oceanography and also I did not want to leave my parents and Gene in San Diego.

San Diego Zoo Hospital

Working in the poultry lab was not a full time endeavour and I soon spent every available moment working for veterinarian Dr. Charles Schroeder. This "work" consisted of helping him with postmortems done on every animal that died, and with the surgery necessary on the living. The surgery was the most enjoyable part and I will never forget some of the spectacular operations undertaken, like removing cataracts from the eyes of a big bear, working on a tiger's paw, and the repetitious smaller jobs of sewing up monkeys after family altercations.

Zoo hospital staff
Katherine 3rd from left and Dr. Schroeder center front

When Martin and Osa Johnson, explorers and wild animal collectors, were about to embark on another expedition to

Africa they shipped their pet cheeta "Bong" to the San Diego zoo because they knew he would receive the special care he was used to. Bong had the run of the upstairs floor of the zoo hospital for he was afraid of the big staircase and would not venture down. He was a pet in every sense of the word and we all enjoyed him. All, that is except Gene, who came to get me one day and was greeted by Bong at the head of the srairs. Gene waited below and could not be enticed to come up. A certain amount of immunology was carried out at the zoo, too, as Dr. Schroeder tried to develop vaccines for various animal diseases. I loved every minute of it and would have stayed forever had I not been offered a paying job at the Scripps Institution of Oceanography.

Local newspapers occasioally carried pictures and stories of the work at the zoo. One caption was, "Quick Katherine the needle", another said "Bong has a new girl friend".

"Bong has a new girl friend"

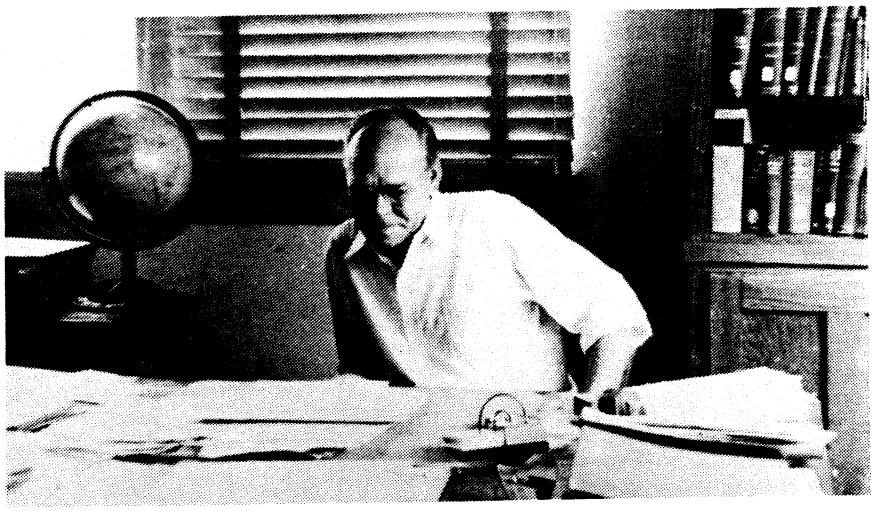
Scripps Institution of Oceanography

In connection with the zoo work I needed to make tissue sections for microscopic examination and I consulted Catherine Feltham at the Scripps Institution of Oceanography who was a pro in this field. While working with her at Scripps I met Dr. Erik Moberg, head of the Chemistry Department and Assistant Director of Scripps. His graduate student, Richard Fleming, had just returned from a cruise to the Gulf of Panama and had collected several hundred water samples in citrate bottles, which needed analyses for salinity. Dr. Moberg offered me $100 a month to do it and as my zoo work was essentially volunteer, and these were depression days, I could not refuse. Reluctantly, in May 1933, I left the zoo for S.I.O.

Katherine on pier with S.I.O. in background

Although Dr. T. Wayland Vaughan was the director I had little to do with him until he asked me to translate parts of G. Wust's new German oceanographic text book.

Dr. Moberg taught me the technique of determining salinity. It involved a delicate and precise procedure since the results needed to be accurate to one thousandth of one percent. At this time, salinity determination was a titration method whereby measured samples of sea



Dr. Erik Moberg in his office

water were titrated with silver nitrate, using potasium chromate as the indicator, to a precise delicate salmon color. The color developed in the sample was compared with that developed in an accurately known standard of chlorinity. The determined chlorinity was converted to salinity through a linear relationship.

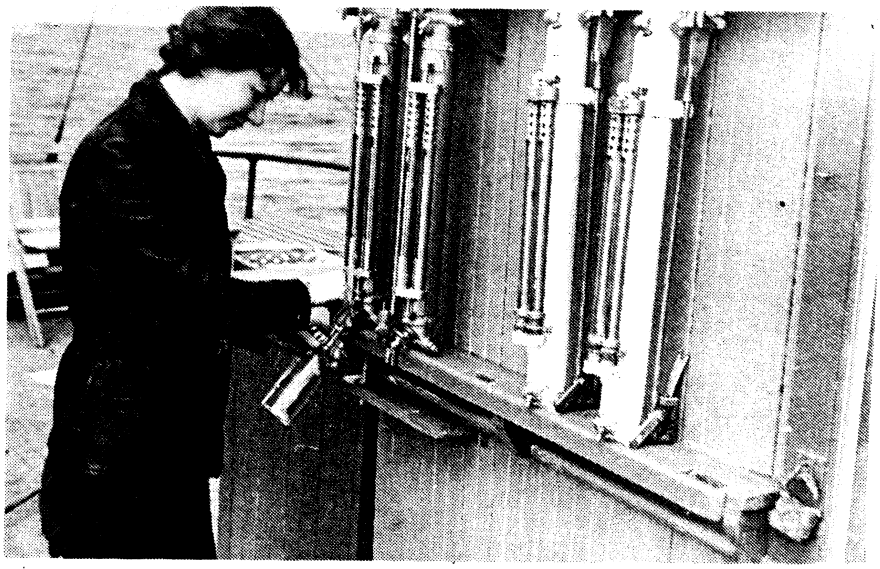
Katherine conducting analyses

I had a room to myself on the north side of Ritter Hall. It was used exclusively for sea water analyses as a northern exposure is more suited for colorametric work. A large chemical laboratory on the NE corner was where other studies were made.

The work was fun and it wasn't long before I was exposed to other chemical analyses. Weekly water samples were collected at the end of the Scripps pier. It soon became my responsibility to analyze these for pH, phosphate, silicate, salinity and carbon doxide. The chlorometric analyses were carried out with home made equipment, some of which I made and/or repaired myself.

Sea Work

Scripps had acquired a large purse seiner and named her SCRIPPS. She was being fitted with winches and a laboratory for sea work and I was asked to set up a chemistry lab onboard. Also, shortly after starting work at Scripps, Dr. Moberg asked me to make a list of provisions to feed 8 people for a 10 day cruise. Of course, there was no refrigeration. It was an easy going, friendly place to be.



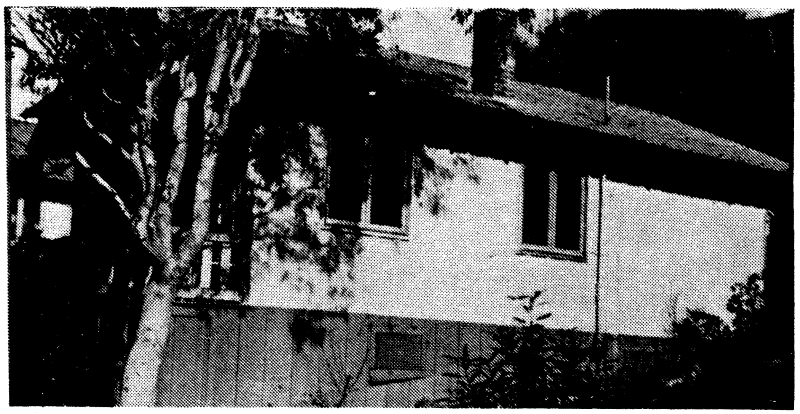
Katherine drawing water samples from Nansen bottles onboard SCRIPPS

I participated in short cruises doing chemical analyses onboard. In fact, I was the first woman at Scripps to go to sea, for in those days women were persona non grata on boats. On the longer cruises of the SCRIPPS, oxygen content of sea water was done onboard, but water samples for other chemical analyses were brought back to the lab for my attention.

Life on Scripps Campus

The academic environment was enjoyable and I urged Gene to come out and try to get a job, for he had been unsuccessful in finding anything since his graduation the previous year. In September he came for an interview with Dr. Moberg and soon was working at Scripps, too. Albeit at first it was just volunteering, but eventually small amounts of money were found.

In the beginning I commuted from San Diego but later rented one of the "temporary" cottages (no. 12) on the campus. Alice Holland, a family friend, joined me in sharing the $12 per month rent. Gene also moved into a Scripps cottage on the hill across the highway.



Scripps cottage no. 12

These temporary cottages were never designed to be permmanent, but they soon became so. The walls of our one-bedroom cottage were built of 1x12 inch redwood boards with $\frac{1}{4}$x2 inch battens over the space between. Over time, the boards had cracked allowing light to show through in every room. At first when the wind caused the eucalyptus tree limbs to rub on the roof,

It was scary, but we soon got used to it. It was home, the first independent home for both of us. But the greatest advantage was that Ritter Hall was just 100 yards away along a direct path across a well kept lawn and by the tennis court. The lab was so close that I could easily come home for lunch.

Life on the campus was mostly work related, but we frequently played tennis afterwards. We swam in the ocean and hunted grunion in season. We went to La Jolla for movies and shopping. All the campus residents were friendly and this was an enjoyable period. We saved our money and bought a new Ford tudor car.

After work tennis

Through Gene my roommate, Alice, met a Scripps chemical physicist. After a short courtship they were married. Gene and I stood up with them in the St. Pauls Church in San Diego. Wally and Alice moved to Salt Lake City and I was left alone in No. 12.

Marriage

Tho Gene and I were anxious to get married, this was a depression period and he was not secure in his job. The primary stickler, however, was the UC nepotism rule in which only one person in a family could work in any university department, thus one of us would lose his/her job at Scripps. We finally decided to get married away from the area and not tell anyone, hopefully preserving our employment. Together we had saved enough money to buy a new Ford 2-door car.

We took our vacations (1week) at the same time and went to Steamboat Springs, Colorado, where Gene had friends, the Swinehearts. We arrived late on the third and on the fourth of September, 1935, we were married. Of course a church wedding was out, but I had wanted to be married by a minister. At that time Steamboat Springs was a very small town, as were most of the communities in the area. They all shared a minister who traveled the circuit. We tried all day to reach him but by nightfall had still not been successful, so Wanda Swineheart suggested the local judge, who was a family friend, and we agreed.

Earlier in the day we had obtained a license and bought flowers for a bouquet, which Gene made for me. To keep it fresh it was put in the refrigerator till needed. We invited Bob and Wanda Swineheart to a wedding supper, then went to her mother's house to await the judge.

He arrived shortly and had us stand before him. "Do you, Eugene take Katherine to be your lawful wedded wife?" A meek "yes". "Do you Katherine, take Eugene to be your lawful wedded husband?" A happy "yes". "By virtue of the power invested in me, I pronounce you man and wife - two dollars please". It all came out in one breath and was over so quickly we were speechless. Then I remembered the ring which Gene put on my finger, and the flowers which were still in the refrigerator. Gene went with the judge who obligingly opened the courthouse and recorded the event. It could not have been a more simple ceremony, nor more effective and binding. As I write this 60 years later we are happier and more in love than ever.

The next day the Swinehearts saddled two horses and we went for an all day horseback ride. It was beautiful mountain country and the weather was perfect so our "honeymoon trip" was ideal. It wasn't until we got back to the house that the muscle soreness set in and I ate dinner with some degree of disconfort.

Katherine with horses and fishing 5 September 1935

The local paper wrote up a piece about the visitors and their marriage. Fortunately, we learned of it in time to request that it not be printed, for we did not want it to be known in San Diego that we had been married. Even our parents were not told, tho they had their suspicions.

The Swinehearts had a large ranch with horses and cattle. From my zoo experience, I was able to help with feeding and giving inoculations, and some advice.

The second day of our wedding we started back to California and our jobs. Enroute we stopped at the north rim of the Grand Canyon and spent the night at the lodge. Even in September it was getting colder but was still enjoyable.

Feeding calf in Colorado

It was near the north rim bridge that we stopped at an Indian trading post and saw a turquoise necklace that had won that years prize. Of course. at that time we just looked, but some 53 years later we passed through the same Indian locale and Gene gave me an elegant "duplicate".

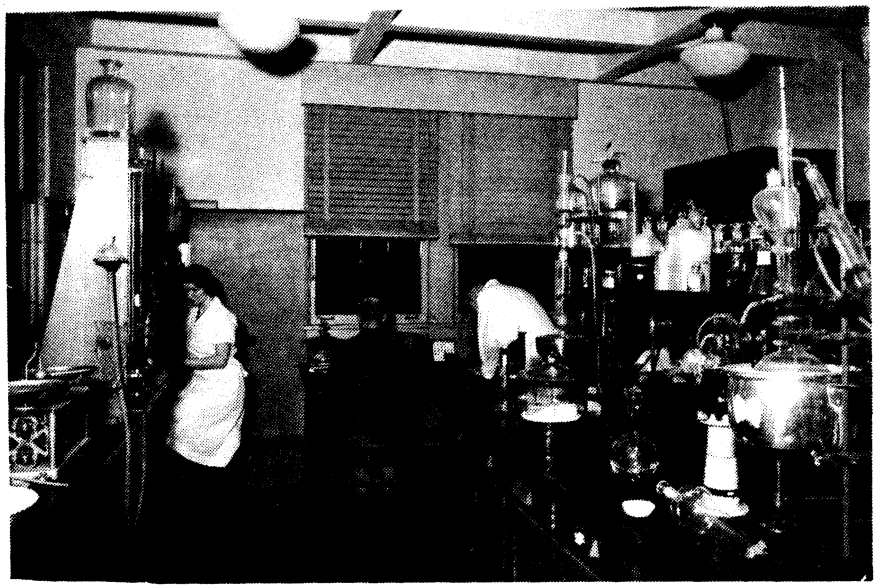
Back at Scripps I continued to do all the chemistry for the department and Gene went to sea often.

Chemical Research

Aside from the routine work. Dr. Moberg was interested in determining the boron/chloride ratio in sea water. and I spent considerable time on the problem. The procedure entailed entirely new techniques and very pure reagents. I was soon purifying mannite and distilling alcohol. In fact. it was at this time that I had my first and only accident. The alcohol being distilled caught fire and the fire hose down the hall was brought into play. No real damage was done but it did make a big mess.

The results of the boron/chloride work were so successful that in the spring of 1936 he suggested I go to Berkeley and give a joint paper at the meetings of

the American Association for the Advancement of Science. This was my first experience at presenting a paper at a scientific meeting and tho I was the junior author and he was there to back me up, I did my best. This was one of the many educational experiences that Dr. Moberg offered me and Gene.



Katherine in Scripps main chemistry lab

University of California, Berkeley

Dr. Vaughan was retiring as director and he encouraged Gene to take some graduate courses at UC Berkeley. I had planned to stay at Scripps till a chance remark by Dr. Moberg changed my mind. The night before we left we deposited the announcements of our marriage in the Scripps mailbox and by so doing, I burned my bridges, for I knew my working days at Scripps were over. No one really had proof of our marriage tho just before we left for Berkeley, Alice Marks sent me, through the mail, a letter whose envelope was covered with hearts and flowers and "ain't love grand" sentiments. Tilly Genter was the secretary who received and sorted all the Scripps mail. When this gem surfaced she was kind enough to call me to her office and give it to me personally.

Early the next day we were off with everything we owned in our new car we had bought prior to our wedding trip. Arriving in Berkeley we rented a studio apartment on Hearst Street across from the campus. But we had to wait 2 weeks before it would be available so we went to Tuoloumne Meadows in Yosemite Park. We rented a small tent and a single cot, and had a wonderful time.

The apartment proved a very convenient arrangement. We parked our car in the stall provided and moved it only once before Christmas, and that was to spend Thanksgiving with Gene's aunt and uncle, Helen and Frank Carrigg in San Francisco. For Christmas we drove back to San Diego and Imperial Beach with many tales to tell.

In Berkeley I immediately went to work on a WPA program and my paycheck of $96 per month supported us, with $45 for the apartment and the remainder for food, books and everything else. Because of my zoo background I was first assigned to the animal husbandry department until the department was terminated and I joined the botany department under Dr. Davis. The work was challenging and I enjoyed it. The idea was to build a closed system and measure carbon doxide produced by plants housed within the system. I built a fancy apparatus to measure the amount of CO_2 produced by the plants placed in this enclosed system.

Gene was busy with his classes. He spent 15 minutes a day reading the newspaper, all the rest of his waking time was spent in classes or studying. It was a common occurance for others in his class to come to our place to study. I usually called up from the intercom to ask how many extra weenies to buy for dinner. They would study late, and because it was a studio apartment with a fold-away murphy bed I couldn't go to bed until after they left.

I had arranged my schedule so that I could audit some of Gene's classes. His undergraduate major had been chemistry with a minor in math. Now he had a triple major of physics, chemistry and biology. The first two were just a lot of hard work but biology was a pre-med course and its contents posed real problems. By

auditing his class I was able to help for I had a pretty good medical background.

One incident is funny now, but it wasn't then. The week of a big exam Gene had a very bad cold. He kept going nevertheless, but by the time of Friday's exam, he really couldn't hold out any longer, but still wouldn't give up and nothing I could say would disuade him from trying. I solved the problem by taking a shoe with me as I went to his professor to tell him about Gene. Since he had only one pair of shoes he had to stay home. By the next week he was better and the professor let him make up the exam.

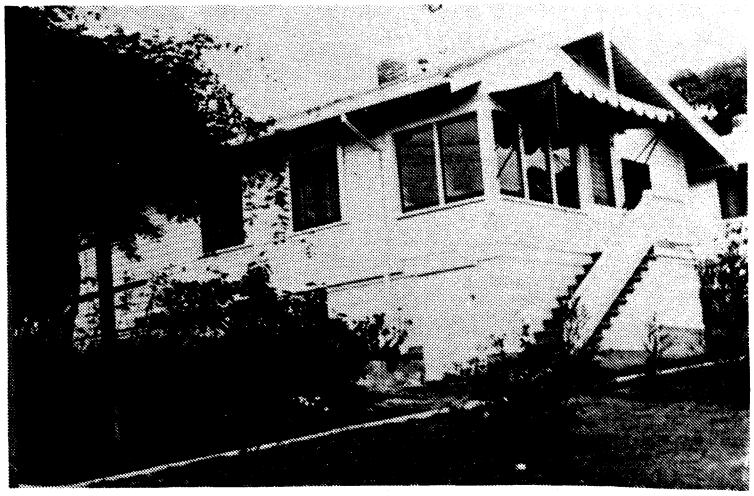
Towards the end of the school year the WPA office called me to tell me that the Shell Oil Co. had a vacancy for a chemical librarian and that I should go to be interviewed. I filled out the application and had a very encouraging interview. He even called the head chemist to come talk to me when he noticed that I had written my name as Mrs. He called the chemist to never mind coming down, I was married. Then he explained that all their women were unmarried "at least we think so". I felt at that moment I could have worked around the restriction somehow, but I didn't. Instead I returned to the WPA office to report to the astonished woman the Shell Oil Co. didn't hire married women. How things have a way of working out. Had I found good employment in the S.F. area we would most likely not have returned to S.D., nor would Gene have become an oceanographer. It has been so much better this way.

Back to Scripps

And the year passed. Gene left Berkeley 2 weeks before I could due to my work. I well remember the last early morning I was in Berkeley. I went to the roof to enjoy one last view of the campus and the poignant realization that this was the end of one chapter of my life and the beginning of a new, uncharted future. I returned to Scripps knowing that I could not work there. Gene would be the working member of our family.

At first we lived in a small apartment under cottage #24 - a temporary arrangement until one of the better

2-bedroom cottages, #26, was available and became our home until 1947. It had a sweeping view of the ocean. My aunt Louise Gehring visited us just as we were moving in. She helped clear the clutter and hung curtains and we had a wonderful visit inspite of the mess.



Our home - cottage 26 on Scripps campus

Once straightened out we began to improve our new home. Because all the campus houses were board and batton construction, we removed all the inside battons, tacked up heavy under paper, then papered the living room walls. It was at this time that Dr. Sverdrup, the new director, arranged to have new floor furnaces, water heaters and front and back porches built onto the upper cottages. We bought a secondhand refrigerator and a new Sears stove, laid linoleum in the kitchen and back porch and really settled in. During one of Gene's absences I built a book case in the corner of the living room.

When Gene was home he also built improvements, even a lath house. He cut bamboo growing in a nearby canyon, hauled it up the hill and nailed the poles over a frame-work of driftwood. A large towed airplane "target" washed ashore at the foot of Scripps ramp to the beach. We attached it to the car and hauled it up to the yard. For many years it served as an excellent ping-pong table.

One New Years eve we celebrated by buying a sofa

(convertable into a bed), matching chair, 2 bleached-mahogany end tables and a blond morris-type occasional chair. Some time later we added the guinea-wood bedroom set. We were becoming established as a family.

Katherine and Gene in bamboo lath house

This was a slack time for me as I could not work at Scripps. Roger Revelle tried his best to have an exception made, and even hired me himself, but after a month he was unable to work it and paid me out of his own pocket.

In late 1939 Dr. Schroeder of the S.D. zoo recommended me to Dr. Kilgore, a S.D. opthalmologist, who wanted some German research translated. For several months I commuted to San Diego and sat in his office translating. I loved the work and received $1 per hour for my efforts.

Scripps hired a number of WPA workers. One, Fred Falconer, became a close friend. He was almost totally deaf but could read lips and missed nothing. He was later employed in the library system at Stanford Univ. When he died several years later the biology library was named after him. He was truly one of the most remarkable people we shall ever know.

Baby

In the fall of 1938 I became pregnant - a joyful situation for we wanted a baby badly. Mrs. Sumner gave me a bay shower and I still use the basket. By using great care all went well until May, 1939 when I delivered a premature still-born boy. It was a great disappointment to us both. While I was still in the hospital Gene packed away the baby things and Mrs. Sumner came to set the house in order. I still see her standing at the back door to welcome me home as the ambulance drove up. However, I soon recovered and busied myself helping Gene and keeping house.

1941 was a banner year. We still wanted to have a baby even more and were delighted when on March 12, 1941, we received the lab report that the Friedman test for Proline was positive and that I was pregnant. This time I managed to go full term and on Sunday October 26, one week after my 31st birthday, our son William Gehring was born.

NAME William Gehring

DATE Oct. 26 '41

Just Arrived

PARENTS Mr. + Mrs. E.C. La Fond

Billy's birth announcement

Even tho I was unconfortable that Saturday evening we went to see the movie "Charley's Aunt". I went to Scripps Hospital afterwards. Bill was born at 1:52 PM on Sunday and weighed 7 lbs 2 oz. He was 22 inches long and had lots of dark brown hair. Gene wrote and mailed the birth announcements and even sent one to me in the hospital, even tho I was well aware of the event. After 2 weeks in the hospital we went to Gene's parents in Imperial Beach where Bessie and Grandma Imes used their expertise to our great advantage. It was a joyous time and we stayed 6 weeks. After the 6 weeks we returned to our home at Scripps. Fred Falconer gave us a months diaper service and Mrs. Krulish helped

Billy at
3 weeks

Billy at
3 months

Loving care

for a while. It was a glorious time. Bill grew apace and I chronicled his progress in great detail in his baby book.

My Bishop's classmate Dorothy Baker gave me a beautiful big mahogany crib she had used for her 3 daughters. Every time we visited in Imperial Beach or for the week my dad and Rose once took care of him, I dismanteled the crib and put it in the car along with diapers, formula and other necessities. We made frequent trips to Dr. Hough, a San Diego pediatrician, and Bill thrived.

Doting grandparents

All his grandparents doted on him. My father and Rose made Sunday trips to visit us. Rose even made him

Doting parents

a red corduroy suit and cap, which he wore at every opportunity, for he was growing so fast that nothing fit very long. By one year Bill's hair had lightened and became quite curley and the LaFond taint of red was very evident. A large colored picture captured this period.

WW II Years

This was war time. Gene and a few others at Scripps joined the newly created University of California Division of War Research, located at the Navy Radio and Sound Laboratory on Point Loma. All during the war years he commuted from Scripps to Point Loma. There was even double daylight savings, when the time shifted 2 hours; in winter it was dark when he left and dark when he returned.

Fortunately no trouble occurred in our area, however the military was prepared. Soldiers were stationed night and day along the cliffs overlooking the ocean. All houses obeyed the blackout order and had dark paper over the windows so no light could be seen from outside. The main, tho minor, inconvenience was the rationing of food and gasoline. Many products, such as butter, were frequently unavailable and those that were available were kept in the back rooms by the grocer. All three of us were issued coupons for sugar, coffee and gasoline. To be sure our baby had milk, the day after Pearl Harbor I ordered 26 cases of canned milk at our local A&P store.

Living over 2 miles from groceries and shops, the main inconvenience was lack of gasoline. We were issued a ration of 3 galons of gas per week. Thus we needed to restrict our travel and save for trips to San Diego, Imperial Beach and Alpine.

We had very little recreation during this period. If we wanted to go to a movie in town we needed a baby sitter. Thus it was necessary to go to La Jolla and bring the sitter out to our home, go back to La Jolla for the movie and finally make a third trip to return the sitter. This used precious gasoline. Fuel for Gene to go to Point Loma was available for his carpool. We did not use our own car for travel to work.

During this time one of Gene's colleagues came to UCDWR to work up data they had collected on a survey conducted on the east coast. He brought his wife and stayed 6 weeks. It was just natural that we invite them to stay with us. Billy was several months old, and tho the arrangement made extra work, we all adjusted well.

The only real problem was ration books, or lack thereof. Our two books did not go very far for four persons and when Lillian admitted she had forgotten theirs, I quickly realized the frugal menues ahead - but we managed. I admit that when we were shopping and she said, "Oh look, they have butter" - my terse reply was. "No coupons."

Billy took a lot of time and I had lots of diapers. Lillian tried to help by ironing the dish towels! Towards the end of their stay we had a dinner party for them. It was all the entertaining we could offer and I did try to do my best. Lillian retired for the better half of the afternoon, exclaming that she always rested to be fresh for the dinner hour. I could only hope that my frazzled state didn't show too much. But eventually the 6 weeks drew to an end and we all parted friends, but no parting was ever sweeter.

Daily chores

Second Baby

Now my days were full and time passed quickly. Bill grew apace and gave us much joy. But he needed a sibling, so on September 8th 1944, he was joined by Robert Eugene. He made his appearance at 1:55 PM at Mercy Hospital in San Diego. This time I sent out the announcements.

NAME Robert Eugene

DATE Sept 8, '44

Just Arrived

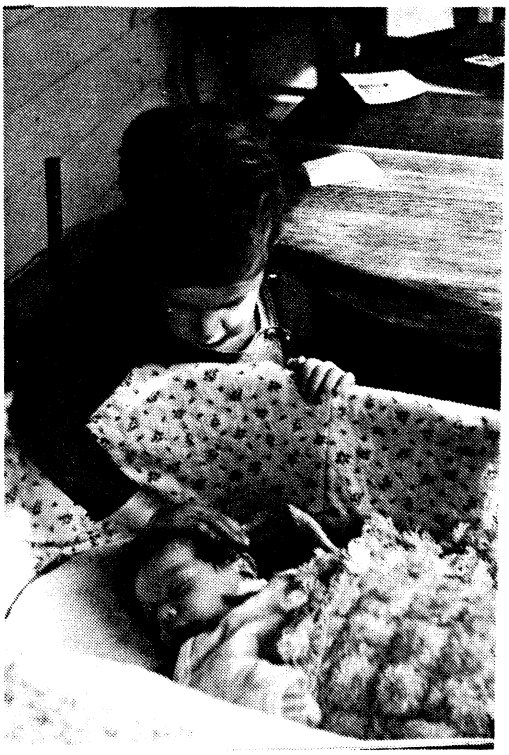
PARENTS Eugene & Katharine La Fond.

Bobby's Birth Announcement

He came a bit early but weighed in at 6 lbs, dropping to 5½ within a few days. As with Billy, I stayed in the hospital for 2 weeks while Gene's family took care of Billy. Housing was scarce during these war years and for help we let a young couple from Missouri stay in our lower "room" of cottage 26. He was a sailor at Camp Kearny and his young wife came to be with him until he was shipped out.

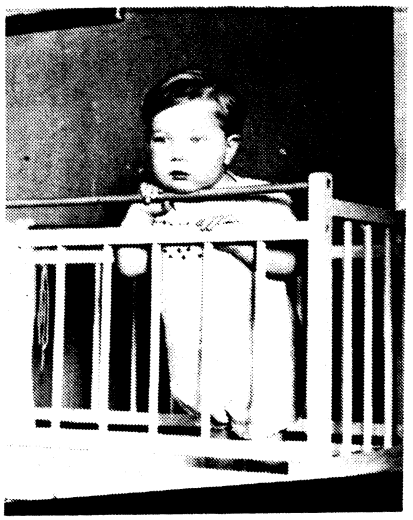
Bringing Bobby home from the hospital

Bobby needed feeding every 3 hours, which meant 1 hour out of 3 around the clock. Gene spelled me off during the night, which helped greatly, for it was 5 months before he could sleep the whole night through.. When I applied for Bobby's ration book the coupons for sugar and coffee were removed. These were beautiful days for both of us.



Meeting new brother

Bobby at 6 months

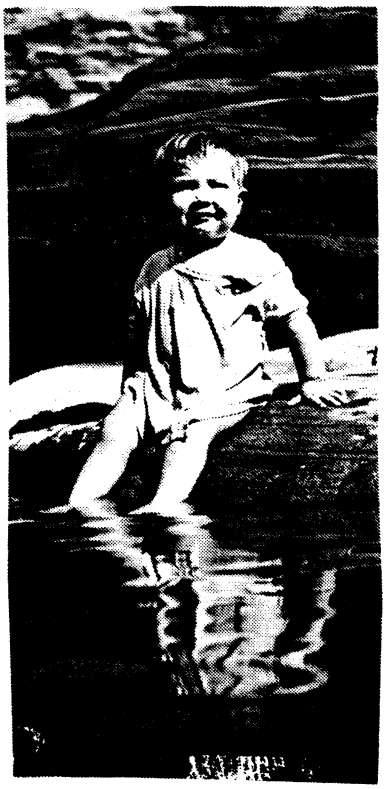


A brave new world

Bobby's first Christmas

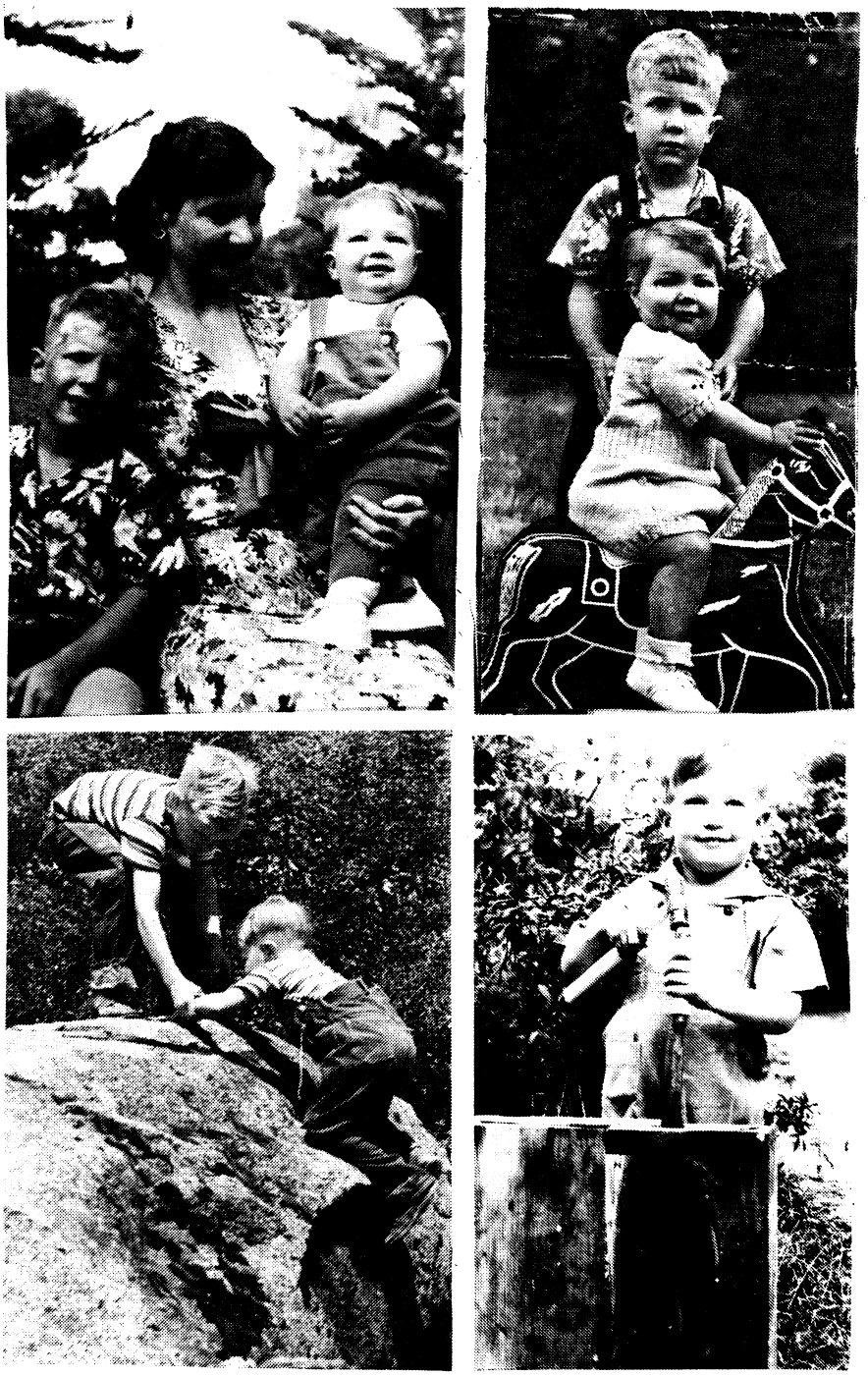
We now had a new member and welcomed him to the family. I recorded his every development in his baby book. With love and canned milk the boys grew and afforded each other companionship. They were provided with an abundance of toys. Gene's sister gave them a wagon and one of the first pot-metal tricycles produced after the war.

Gene's work required much travel but when he was home he built a jungle-gym in the back yard. We spent many happy hours on the beach where the growing boys became covered with sand and built sand castles. We conserved our gas coupons to visit our parents in Imperial Beach and Alpine. My mother and Clark McKee had a 32 acre ranch on which they planted fruit trees and raised a variety of vegetables. Bill and Bob especially enjoyed watching mother feed the baby chickens. Catching grunion on the beach was a favorite sport and soon the boys played at helping to clean them.



Bobby in tide pool

Billy building sand castles



Boys growing up

Billy on jungle gym

Post War Years for Gene

After the war Gene returned to Scripps but was soon offered a civil service position under Dr. Waldo Lyon at the newly named Navy Electronics Laboratory on Point Loma. After much soul searching he decided reluctantly to sever his longstanding ties with Scripps, join Dr. Lyon's Sound Propagation group at NEL. This also meant we would have to give up our house on the Scripps campus, but Dr. Sverdrup allowed us to stay a few months until Gene came back from the South Pacific. His first project on the new job was to go to Bikini Atoll and participate in the atom bomb tests. Gene was one of the few experienced oceanographers at that time and was needed there in the summer of 1946.

Brindisi Home

In the fall of 1946 when he returned, we moved to 4418 Brindisi Street in Azure Vista government housing project on Point Loma. It was a 2-bedroom duplex and we managed quite well. Rent was $25 per month and after a few weeks we had a telephone. It was close

to Gene's work and had a nice ocean view. Tho Billy had been sick with mononucleosis the previous summer, and had many colds, he started kindergarden in the nearby school. I joined the PTA and was soon elected president. Bobby was 2 and was busy discovering the world.

One late night Gene returned home from a cruise to announce"before you turn on the lights I want you to know that I look funny". He was right - light disclosed a swollen face, black and blue and green and purple. He explained that the shore boat had overturned in the surf at San Clemente Island and he thought it was an oar that had struck him on the bridge of his nose.

Cleaning grunion at Brindisi Street home

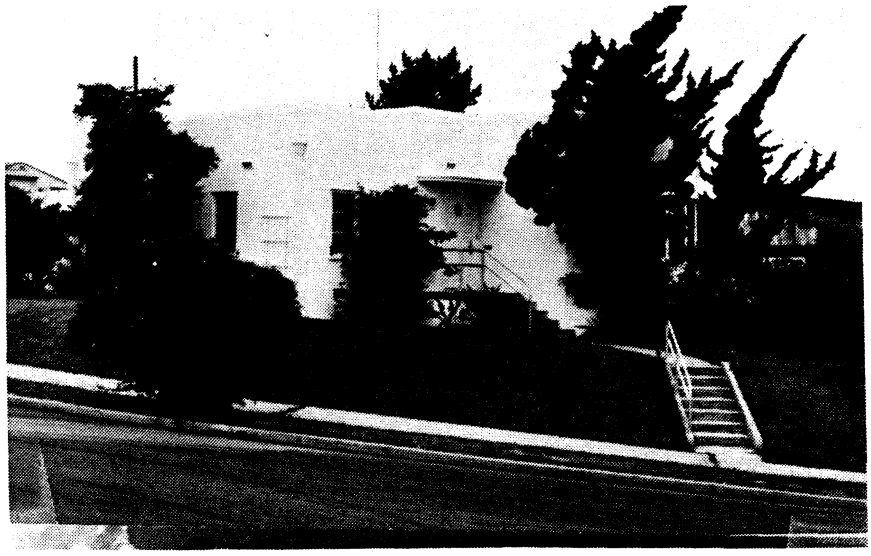
Bridge Group

Our wonderful NEL Lab bridge group started in 1946. Virginia Lyon, wife of Gene's new boss at the lab, invited a few of us to form a bridge group, and as I write this in 1994, 48 years later, we are still going strong and several of the original members, including myself, are still active. The group has been a joy and a bond all these years, for while playing bridge we have raised each others children and now even the grandchildren are producing great-grandchildren. It continues to be a joy in my life and I rarely miss our monthly meetings.

The bridge group

Our New Home 4505 Santa Cruz Avenue

While comimg home from a bridge afternoon we rounded the corner of Santa Cruz Avenue and Guizot Street and Ellen Sherwood said, "one of you should buy that house. The Follicks are moving to Los Angeles and it is for sale". This was the spring of 1947. We were still living in the Azure Vista housing project and Gene was getting ready to go to the arctic. I contacted Mrs. Follick and inspected the house several times, even had Gene's mother see it, too. Just before he left he spent about 15 minutes walking through the house and around it, then gave me his power of attorney and said good-by. It had taken a lot of talking on my part to come to this point but we have always been glad. I cashed our savings bonds and Gene's retirement funds from Scripps and bought the house, making a down payment of $6000 on a total price of $12,500. An FHA loan covered the $6500 balance, to be made in $60 per month payments. The documents included a table showing a breakdown of the principal and interest. I called the bank and said, "if I pay an extra $16 principal I save $25 interest?" When he said "yes" I was off and running. Many months I made 3 payments of principal and so the 20 year loan was paid off in 7 years.



4505 Santa Cruz Avenue

Bill started first grade in the Ocean Beach Elementary School and again I joinred the PTA. With the advent of school years our lives began their subtle change. I played chauffeur for a long time, making up to 6 trips a day to take the boys up and down the hill, to and from school. We were hardly in our house when the neighbor, Mrs. Edith Alverson met me at our rose garden, introduced herself and welcomed us to the neighborhood. Next to her lived Allen and Ellie Mutty. They soon invited us to the initial Sierra Club meeting. We have been friends ever since. When both Alversons and ourselves built our patios we shared the labor. It was fun for both families.

While Gene was still away, Walter Munk returned from the same arctic cruise and called to bring me a picture of Gene with a completely bandaged hand. Of course, he did not know what had happened, so I worried. I had to wait until Gene came home to find out it was not serious.

Christmas

Christmas was well celebrated. In addition to our own home festivities it was also celebrated at Imperial Beach with Gene's large family. As always, the elder generation

had celebrated on Christmas eve so they would not have to get up so early on Christmas day. Usually some time before Christmas we would go down there and help decorate the house and tree which was cut from their cypress hedge. In the 3 living rooms long streamers of twisted red and green crepe paper were stretched diagonally from corner to corner across the upper part of the high rooms and supported by the drop electric light cord in the center part of the room. Silver icicles were draped over the streamers at frequent intervals. The effect was very festive and we all pitched in to do it. Smilax wreathes were made for the front and side doors and the tree was decorated with cherished old ornaments, as well as tinsel and strung popcorn.

Christmas at Imperial Beach

On Christmas eve the whole family gathered. Lois and Jimmy and their twins, Jim and Jeanette. Esther and Joe Elliot and their daughter Donna, and of course ourselves and occasionally my mother and father. Grandma Imes was there too, with Bessie and Willie as mainstays.

When everyone was there the children were taken outside briefly on some excuse and when they returned the bell was rung with the proclamation that "Santa had come". The gifts were opened and a fun time was had by all. During the depression years the problem of gifts was solved very nicely. Slips of paper each bearing a person's name were drawn and the value of the presents was limited to $1.

Travel

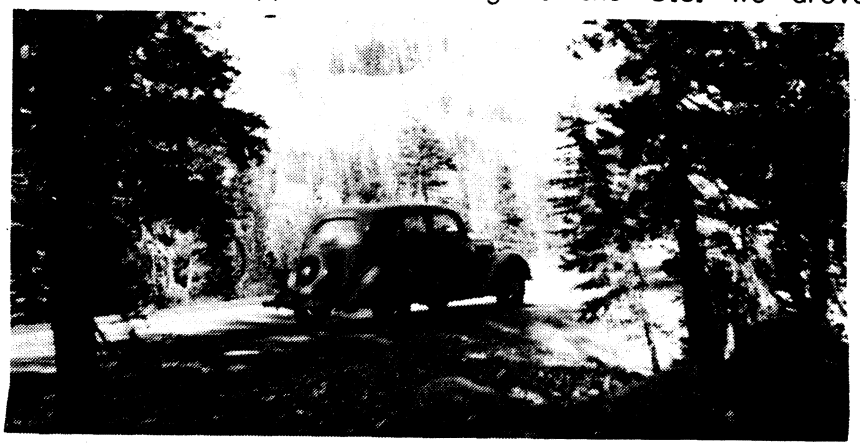
Both Gene and I enjoyed travel, both local and world wide. As a result, most of this document is devoted to my travels. We looked on it as exploring new places, and we come by it honestly, since our parents had been adventurous, too. Gene's grandfather sailed to Alaska in search for gold in 1898, and Gene's father shipped from Vancouver to Shanghai when he was a young man. He also drove a 1914 Ford from Oregon to San Diego in 1916. But probably the most adventurous member of the family was my mother. She rode a bicycle from Liverpool to London when she was a teenager, probably in the 1880s. Later, while still in her teens, she worked her way from England to America and made several subsequent Atlantic crossings. In the Spanish American War she served as a nurse, and in 1920 her trip with my father and me by car from Cleveland to San Diego has already been described. Thus, we too, had an urge to travel.

Locally, our travel included the Olympic Games in Los Angeles in 1932 and the San Diego Exposition, held in Balboa Park in 1935. Many new buildings were constructed then and have become permanent. We visited the many novel exhibits and at one police exhibit we had our fingerprints taken. Another exhibit was devoted to gold mining, where a brochure chronicling Gene's grandfather's adventurous trip to Alaska in search for gold was sold.

With our new Ford-tudor we toured several western states. We had very little vacation time but took advantage of holidays and meetings. We initally had a borrowed tent for camping. But soon discovered that by removing the hinge pins from the 2 front bucket seats it allowed them to tilt back. The back seat cusion could slide forward and the back cushion could be lowered to a horizontal position. With blocking, the 3 seats made into a reasonable bed. Thus we could travel and sleep in the car during inclement weather, but frequently slept on the ground.

Besides our wedding trip to Colorado, our first major trip, in the summer of 1936, was to attend meetings in Vancouver, Canada. From there we crossed on to

and drove up Vancouver Island. In the countryside we slept under beautiful ferns but the mosquitos were as large as grasshoppers. Returning to the U.S. we drove



Our car in Canadian woods

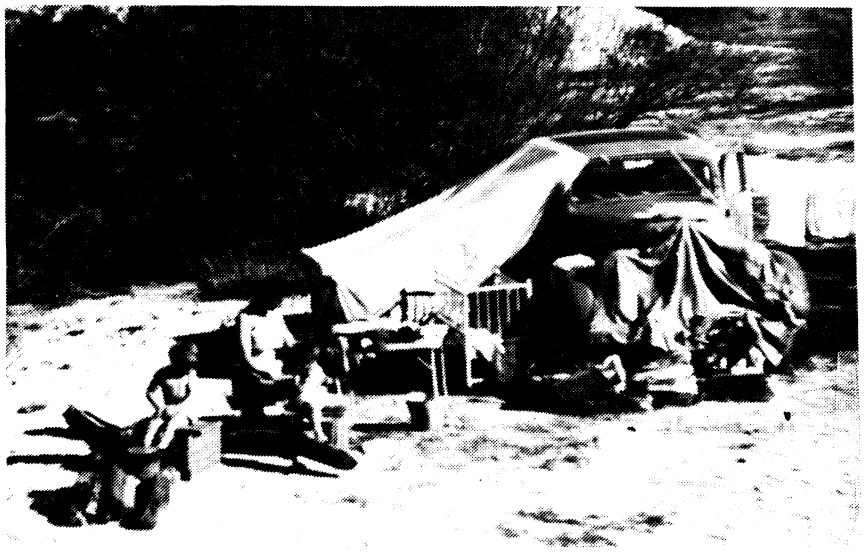
down the Pacific coast, stopping every 20 miles or so to get the beach where we collected a series of sand samples. These were analyzed back at Scripps. To get to the beach was difficult in some areas, but we managed somehow, except where access was prohibited. The precious sand samples were stored in Scripps basement since we were soon going to Berkeley. That was the last we saw them. I doubt that they were ever reported.

Following our trip to Berkeley, and Yosemite, we so enjoyed the park that we returned in 1938 and camped in our car on the valley floor.

The following year we drove to Yellowstone National Park and again slept in our car. Stopping near a bridge to fish, Gene caught 5 large trout. We bought ice to keep them overnight till we could get to a friend in Utah. We almost didn't make it, tho, for the cement food box in the campground had a defective latch and during the night a bear was trying to break in when Gene hit him with his boot. He turned, reared up snarled causing Gene to make a very hasty retreat into the car. The bear got the message and ambled off. The next day we arrived at ZoBell's and a fine trout dinner was enjoyed by all.

Catch at Yellowstone Park

During the War years there was neither time nor gas to travel far but soon after the end of the war we drove to the Imperial desert taking our 2 young boys with us. A favorite New Years camping site was Caliente Springs about 90 miles east of San Diego. Tho the nights were cold, the days were usually sunny and pleasant and it was a welcome change from the coast's cloudyness.



Camping at Agua Caliente Springs

With the two young boys camping was more complicated. We needed diapers, crib, folding cots, card table. awning, gas stove, along with food and clothes.

I well remember an early trip when Bob was still in diapers and on formula. Bill became car sick on the way over and up-swallowed all over the blankets. Agua Caliente at that time had a small, rock walled Indian pool and a piped water inlet, thanks to a nearby warm spring. After I got the washing and feeding taken care of we inspected the abandoned prospector's cabin, studied the stars and slept deeply.

Boys in Indian Pool at Agua Caliente

As the boys became older we again returned to our favorite camping place - Yosemite Valley. This time our friends, the Harpers and their children, joined us. Before they left they drove the 4 of us to Glacier Point on the south rim. With food and blankets on our backs, we bid them goodbye and for 3 days and 2 nights we back-packed around the base of Half Dome and down Vernal and Nevada Falls to the Valley floor. Bill was 6 and Bobby 3 so we paused frequently for rests and naps. Everyone carried his share, even Bobby had a tin cup tied to his belt. The first night we camped by a brook, the second found us at the foot of Half Dome. Gene secured the food well out of reach of bears but that did not stop them from smelling it and fighting under it. Gene and Bill watched, Bobby snuggled in my sleeping

bag with me. Next morning Gene reported it was a naturalists paradise. He and Bill started up Half Dome, Bobby and I ambled on down the trail towards the valley. In due time they caught up with us and we finished the hike together - a wonderful back to nature experience.

Again in Yosemite a few years later, I drove Gene and Bill to the head of Panorama trail for a similar one day hike to the valley floor. Bobby and I waited for them at the valley end of the trail. When they were several hours late in returning I called the ranger's office. He said "of course its because the boy is so young. Don't keep us wondering - let us know when they come down". Shortly thereafter a spry Bill and a limping Gene showed up. It seemed that Gene, in order to ford a stream, had removed his shoes, tied them together and slung them over his shoulder. Midstream they had fallen off and floated away with the current. He hiked barefooted all the miles home over the pine needles covering the trail. I quickly put the boys to bed and spent a couple hours removing pine needles from Gene's feet.

In 1948 the boys were 7 and 4 and we went to the Grand Canyon. From the rim we could see a distant green patch. It was the Phantom Ranch. We made reservations for a night's stay, talked the manager into letting us have a "drag out" the following day, and made plans for the hike down. Early the next day we started down carrying canteens of water and lots of salt. At the pumping station just below the rim a man advised us to put the salt in the water, "you'll never taste it". The trail was good and at frequent intervals signs on the various strata told of the age and composition of the layer. It was most interesting. As we descended it became increasingly warmer - much warmer - it was mid-summer. At the bottom, about a mile lower elevation, we cooled our feet in the Colorado river, then entered the Phantom Ranch. It had taken the better part of a day to get there but a swim in the pool was refreshing and a big family style dinner revived our spirits. We all slept well.

Mules, a friendly guide and box lunches were waiting for us as we finished a big breakfast. The guide went first,

holding the bridle of Bobby's mule. Bill was next, then I and finally Gene. We stopped half way up and enjoyed the lunches, then continued to the top. It was a memorable excursion.

We also enjoyed camping and fishing on the Baja California beaches. Fishing at Rosarita was fabulous. It was easy for Bill at 8 years to catch one perch after another in the surf and from protruding rocky headlands. Farther south we planned to camp on the beach near San Quintine. We found a nice spot, set up camp and the boys dug lots of large pismo clams which I cooked in my large pressure cooker. The boys climbed the sand dunes and we heard Bill say, "Bobby come here". Without a word Gene picked up a shovel and killed the rattle snake. I said, "where there is one there's two, and we are not staying here". I let the pressure down on the cooker, we broke camp and started home. Gene's only wish was that we hit the main road before dark, which we did. The restaurant at Santo Tomas was the late dinner stop. Bobby had a hamburger and was the only one who did not later develop Montezuma's revenge. By now it was very dark. I was driving when a light flashed back and forth across the road. As we approached Gene said, "better stop he has a gun". It seemed he was the sheriff, had a bandito to take to jail in Ensenada and his car had no lights. Would we light him to town? Of course we would, we had no choice, so off we started on a hair raising trip. He was apparently drunk and alternately followed very close or dropped way behind. Once in Ensenada he turned off and we breathed a sigh of relief. Crossing the U.S. border about 2 AM the only question was, where are you coming from with these sleeping boys at this hour?" Home never looked better - even the clams were good.

Growing Boys and their Pets

Our Ocean Beach home was convenient for growing boys and Gene's work, but he was away on cruises which left me to raise the boys. Although the school was only 6 blocks away both boys 'needed' a ride both ways, with different schedules for classes and lunch, it kept me busy driving them.

In addition to active boys there were their pets. At one time or another they had guinea pigs, birds (one parakeet loved to eat picture frames and wall paper), a chicken, hamsters, puppies and kittens.

Bill came home from school one day, to tell me that his room had a white rat to give away and could he have it. I like animals as much as he, and the next day our family increased by one. This state of affairs

Baby chickens at Alpine

did not last long tho, for Maggie soon had several babies. We were all surprised and Bill, especially, was elated. Baby white rats are like little pink pieces of velvet, and Bill loved them all. How the concerned city department knew about Maggie we never knew, but one morning a man appeared to ask if we had a white rat, and if so he would take her (to be destroyed). I was caught on the horns of a dilemma - should I tell the truth, as I was trying to teach the boys to do, or say 'no' and save Maggie? I told Bill and together we told him 'yes' but persuaded him to come back later so we could take pictures first. It was a sad lesson for Bill that life does not seem fair, but rats can escape and populate the neighborhood.

Poodle. When the opportunity presented itself to get a really good dog, we broke down and bought a standard poodle puppy from friends. She had a long pedigree

and was a cute ball of black fur when we brought her home. I well remember her first hair cut, from puppy fur to a typical poodle trim. When I picked her up she looked beautiful but felt devastated. It took all of us to reassure her that she looked beautiful and we still loved her, which we did. She grew apace, her teeth came in, with their need for something to chew on and her adolescent puppyhood energy became more than we could cope with. She chewed up the bedposts, made several pieces out of the garden hose, dug up the garden, scratched the paint on the car, ad infinitum. She really needed an army sergeant to train her. It took all my energy to handle the boys, let alone handle our prima donna. About this time Gene left for a cruise. His parting admonition, 'when I come back I want that dog gone'. With a kiss he was off. I advertised and finally, just before Gene returned, I gave her to the people who had bought her brother. The wife was very pleasant, reimbursed me, unexpectantly, for the puppy shots, showed me her bare backyard with its 6-foot fence and told me, 'some men play the ponies, some men chase women, mine just likes dogs'. I knew ours had a good home.

Trigger was Bob's dog. He was hungry and "followed" Bob home and when Bob fed him, we had a dog.

Bob's chicken

Billy's white rats

The name came from a book Bob was reading. The two, boy and dog, became inseparable. But time passed and Bob left home for college. When holidays came he returned home and one of the most heart warming moments was Bobs return. I'm sure the dog sensed 'something' and when Bob walked out the backdoor Trigger was truly overjoyed. In fact, I think Bob was, too. We had Trigger until we left for India in 1952. He found a home with a young woman who lived in the country.

INDIA

Gene applied for and received a Fulbright grant to teach oceanography in India. From August 11, 1952 to July 8, 1953 our family of 4 traveled to, lived in India and returned.

Although our friends and family discouraged the travel our adventurous genes prevailed. The experience, not without problems, was more far reaching than ever anticipated.

This section, the chronological sequences of my activities, is a reprint of my diary kept in 1952-53, the first year we were in India. It will have to serve as a nucleus of my Indian experience, at least from my perspective. A more substantial description of Indian ways is included in a fuller version of our trip. My diary starts as we leave San Diego on August 11, 1952.

MY DIARY

Aug. 11, 1952. Monday. American Airlines from San Diego. Stopped in L.A. to see Gretta and her family for a few minutes. Left L.A. for N.Y. on overnite flight. Boys really enjoyed everything, slept little. Passed through rain and lightning storms.

Aug. 12. Arrived N.Y. mid-morning after passing over Washington, D.C. Taxied to pier 90 and checked in 4 suitcases. Saw the Queen Mary come in. Billy is really excited, To Hotel Lathem for rest. Then to Empire State building. Visibility was 3 miles due to haze, but saw lots of buildings anyway. Met Joe Kahl and went to Lyman Lindy's for duck dinner. Saw Times Square by nite. Then to bed for 12 hours sleep.

Aug. 13. Walked up 3rd Ave. and then took a subway. Boys enjoyed it a lot, but Bob wanted to see more. To ship in mid afternoon - the thrill of a lifetime for us all. Sailed at 4:30 PM passed the famous N.Y. skyline and Statue of Liberty, etc. Our cabin is D-12 - all of us in one room - we are pleased and comfortable. Assigned to second sitting for meals. Breakfast is at 9:00, lunch at 1:30 and dinner at 7:45 PM - our ways are changing. Weather is warm and overcast, humidity is fairly high.

Aug. 14. Thursday. Became acquainted with ship. We are surprised how cheap things are - beer is 10¢, a glass of wine is 25¢ and a cocktail is 35¢ but bingo is 15¢ a game! Meals are fine.

Aug. 13-16. Played shuffleboard and pingpong and just rested - sea is smooth - saw flying fish. Bet on the horse races - lost all 3 times. Now we have some English money. Food is wonderful - two "sweets" at every meal. Boys see movies daily - read German illustrated paper - it was fun and very readable - had little difficulty. Went to sports deck late evening.

Aug. 17. Sunday. Went to Divine Services in First Class Lounge. A beautiful room - large as a church with organ and piano - a nice service. Many beautiful ships in foyer really sumptious surroundings.

Aug. 19. Monday. Saw a bit of Cherbourg, France, while some passengers got off. Had a visit with Bishop Rockey and wife (missionaries 40 years) - learned much. France looked green and beautiful. High on hill were remains of U-2 launching pads. Heavy fortification by breakwater - well shelled.

Aug. 20. Landed at Southampton at 9:30 AM - put our boxes in bond - no trouble with customs. American Express helped us through. Forgot pressure cooker given us by Kahl, at dock. In Waterloo station checked all but 1 of our suitcases and went to Welwyn Garden City. Lydia met us . Wenkie was so glad to see us. She looked wonderful. Spent nite at a hotel - Guessins Garden Court -very nice. Gene called Mr. Street of Am. Express - no bookings out of England. Lydia has a nice place and is as gracious as ever. Gave us flowers, etc.

Aug. 21. Left Bob with Lydia. Took Bill to London. Had a hard and disappointing day. Left both boys with Lydia and went back to London Am. Express and finally booked passage on P and O Steamship line's "Himalaya" leaving 2 September. Also received Indian visas.

Aug. 22. Moved to London to "Sunbeams". Have a nice place - one balcony room and one front room. Gene brought luggage fron Waterloo station.

Aug 23. A sightseeing day! After a quick visit to check on lost pressure cooker we took a bus to the British Museum of Natural History. Gene saw Dr. Weisman. Boys and I saw fossils, etc. etc. Then to Buckingham Palace - saw guards, buildings, etc. and Victoria's monument, the Mall, St. James Park, many public bldgs. Then to Westminister Abbey. It is a shrine to the memory of all British hold dear - all her famous men and women are buried or memorialized there since about 12 to 1300. I took a 1 shilling special trip - saw the Coronation chair, etc. Then to the Houses of Parliament which was open Saturday afternoon - went through House of Lords and House of Commons - saw Queen's Chair in House of Lords, etc. etc. The murals on corridor walls reminded us of mom's big pictures. Home in a subway and bus to rest and have dinner. Later we walked back to have a glass of beer in a pub. Saturday nite it was crowded.

Aug. 24. Sunday. Rested and went to Victoria Palace and grove nearby. Restaurants all closed on Sunday. Went to Finsburg to a greasy spoon. A rather trying day.

Aug. 25. Gene out by himself to see George Deacon. I took clothes to launderette - back to Couvel Hill for ration cards - back to launderette - then home and ironed. Gene back at 6:30. We both had satisfactory days.

Aug. 26. Tuesday. Gene to Cambridge for 2 days. We started out for a day of sightseeing - went to Whitehall for Changing of the Guards - ate at a restaurant on Trafalgar Square - fed pidgeons there - then home all tired.

Aug. 27. Wednesday. Boys and I to British Museum for Scott's Diaries then to Science Hall and Aviation bldg.

A fine time - home midafternoon tired. Gene was waiting for us. He had a nice visit with Dr. Sewell, too.

Aug. 28. Thursday. Saw Tower of London. Walked along the Thames Embankment - saw the "Discovery" - tho did not board her, saw Cleopatra's needle, Foyle's book store - then took bus home.

Aug. 29. Friday. Bill and I stayed home. Bob and Gene to town again. Gene looked up a firm making new reversing thermometers.

Aug. 30. Saturday. To town to get a room near Kings Cross but it turned to be slum area so decided to stay put until Tuesday.

Aug. 31. Sunday. To Welwyn Garden City to say goodby to Wenkie and Lydia - met her 2 boys - had a nice visit. Also talked with her sister Phyllis.

Sep. 1. Monday. Packed and took bags to boat train.

Sep. 2. Up early - By boat train to Tilsbury, then to the boat Himalaya. She is a beautiful ship and we are very happy. Himalaya is a nicer ship than the Queen Mary. Little difference between the 1st and tourist class. The cabin is very nice. Gene is happy and that makes us happy, too.

Sep. 3. Wednesday. Passed through the Bay of Biscay. The swells were pretty large and we rolled some but we are very confortable.

Sep. 4. Thursday. Our 17th wedding anniversary! The sun shone bright and the coast of Portugal was beautiful -very much like Calif. cliffs and all. The weather is warmer - had champagne for dinner at our table - Gene is so good!.

Sep. 5. Up real early to see Rock of Gibralter. It was quite hazy but we got a good look anyway. The deck games were organied and tournaments begun. Gene won his ping pong, lost the deck quoits. Visited the bridge in the afternoon - very interesting. Weather in evening was wonderful. Balmy and nice.

Sep. 6. Weather warming up - Mediterranean quite blue.

Sep. 7. Sunday. A bit rolly but Bill and I went to Service anyway. Bob also felt queezy for a bit but straightened out with a swim. Had a shampoo and set so feel better.

Sep. 8. Visited engine room - enjoyed it a lot.

Sep. 9. Visited Port Said, Egypt, and passed through Suez Canal.

Sep. 10. Red Sea - blueish green in color - very different from Mediterrenean. By afternnon water was blue. Temp warm and pleasant and climbing - it is about 90° now.

Sep. 11. The hotest day in cabin 96° - Water was 94°, as was the air on deck and the humidity was high. Gene made a bet with the engineer that the water temp. would not go above 95°. We stood the heat very well. Water is calm. A fancy dress party was held for adults.

Sep. 12. Temperature down a bit 94° in cabin. Gene won his bet - 94° was the highest water temp. Sighted land in the afternoon "The Barren Rocks of Aden". A volcanic landscape devoid of everything, rains every 5 years. To shore about 4:30 PM - went through native quarters - a dirty place - goats in the houses, etc. Stores small and unattractive.

Sep. 13. Childrens fancy dress party. Bill dressed as a shipwrecked sailor - wore Bob's sailor suit and pillow case for dufflebag - cardboard parrot on shoulder - many tattoos. Bobby was Hilo Hatti in crepe paper shirt and lei - paper carnations over ear. Bill won second prize, Each child was given a present. They played games and had fancy dinner. A good time was had by all. The 3rd engineer invited Gene and me up to officers mess for a drink and pay off his bet. It was very nice up there. This evening its windy on deck. He said we are going through a cold current - water now 72°. Its been cooling down since Thursday - air in cabin 86°.

Sep. 14. Sunday. Nice day.

Sep. 15. We are excited about landing in India.

Sep. 16. Tuesday. Up early for glimpse of India and Bombay. Saw nice bldgs. from ship. Sydney and Pat ate at a table for 8 with us. We then filled out long forms for the immigration people. Changed 3 pounds into rupees and came ashore. The customs were most cordial until it came to the top man who had to O.K. the great value of Gene's gear, and said no! We were there about 4 hours - finally left the stuff in customs and checked in at the Ambassador Hotel. The city itself impressed us a lot - many large modern bldgs. Walked around the corner to the U.S.I.S. offices and met Mr. Wilson and got our check and returned to the hotel. Dinner bounced in our stomachs a bit, but we got through it and to bed.

Sep. 17. Met Lydia's friend Dr. Wachmann, who came to the hotel to us and gave us an hour of his time - also took us to a big drug store and bought us Bobby's thyroid medicine, then took us to the Am Exp office where we cashed Gene's first check. Left Dr. Wachmann and went to the Imperial Bank and sent Rs 2000 to their branch in Vizag. Later learned that we should ask U.S.I.S. before doing anything. They are sending dispatches to New Delhi to clear the gear - but we are not going to get out of town very soon. We are learning that things move more slowly here. In the afternoon Gene bought a suit to be made overnite. Mr. Munce of the USIS is taking him to a meeting and He is to give an informal talk.

Sep. 18. Thursday. After newspaper interviews and pictures of all of us, we went to lunch. The salads looked good but we just ate soup and spiced hamburgers and stewed apricuts. After much worry the suit arrived in time for Gene to wear it to the meeting, but he and all of us were upset over it. An appointment was made for Gene to meet the Deputy Minister of Scientific Research on Saturday.

Sep. 19. Friday. Returned to the tailor to have Gene's pants altered by 3 PM, and make a new pair. No sign of pants by 9 PM, learned their agreed time is not always accurate. A jeweler near the tailor agreed to cut out a new crystal for Gene's watch (broken in Aden). Returned in an hour and were surprised to find it finished

and cost 32 cents. He actually cut down a larger piece of lucite to fit. Then returned to bank to try to get some rupees that we had sent to Visakhapatnam (Vizag). Expecting to go there "right off" we sent Rs 2000 rather than carry them on the train. Being delayed we needed some of the money. After 30 min of brain huddling, they said they would have to dispatch a request to Vizag and ask permission to return Rs 500. Since this was Friday and they were closed Sat. afternoon, we gave up. Returned to USIS and borrowed Rs 150 from Munce - will pay him back when settled in Waltair. He has been very cooporative and so has Mr. Wilson. Then to Am. Express and pick up Lobo, the man who helped us off the Himalaya. Armed with Lobo and a telegram from Olive Reddick of the Fulbright Headquarters (which said the Finance Minister had telegraphed instructions to Bombay to enter our gear duty free) we spent 2½ hours of high level discussions. Then a letter was typed for Gene's signature, to the effect that it would be duty free but he must export it within one year or else duty, fines, etc., and very bad consequences would ensue. The boxes were finally out of customs! Lobo and his crew and 2 taxis took the boxes to the hotel. Of course, they could not use the hotel elevator to our 5th floor room but those poor porters had to carry those heavy boxes up the 5 flights of stairs. I complained to the management but should have saved my breath.

Sep. 20. Saturday. Gene met the Deputy Director of Scientific Research. In the evening we went to Munce's house for dinner. Met all the Consular Officials and wives, and a lovely Indian woman. It was a very interesting party and I learned a lot about Indian ways of doing things, etc. The Indian had 2 bits of advice (1) developing patience and (2) there is no word for "no" in Indian language. They say "yes" to everything, whether they know the answer, or understand or not. The boys are not feeling very well.

Sep. 21. Sunday. Boys sick with diarrhea. Gene and I, too. Called the Vice Consular Barnes office to phone for a doctor and got Dr. Weinberg and what a surprize. He is Lydia's friend, not the other man we thought, and who visited us! What a nice person he was. We are now taking carbo-guanicil and have cancelled this afternoon's train trip. We all feel lousy so its just as well, but we are disappointed.

Sep. 22, 23. All recovering from dysentery - first felt lousy then better then weak. Besides from the pills the diet consisted of mashed potatoes and egg yolks with butter and milk, weak tea, dry toast. Today I added mashed bananas, oatmeal.

Sep. 24. Feeling better - made reservations for tomorrow.

Sep. 25. Thursday. Finally made it out of Bombay! The train left at 5:30 PM. We left the hotel about 3:30 PM. Mr Lobo, the Am Exp interpreter came at 3 and brought his coolies to walk the 24 suitcases and boxes down stairs, into a taxi, on to a native 2-wheel wagon - pushcart affair for weighing (for extra charges) and stowing in the train compartment. It cost Rs 50 extra for baggage plus Rs 3 bribe and Rs 20 tip. We finally settled down and waited an hour for the train to leave. These trains are interesting. The first class compartment is a section of the train from side to side, with a connecting toilet and shower. The windows have 3 sets of shutters, as well as bars: glass, screen and metal so people can't see in. Soon as we started we bolted both doors, opened only for tea which the lunchroom attendents brought. We were short of water so drank strong tea till we hated it, then drank some more. The coach was really quite nice but we had a feeling that everything was dirty. It wasn't long before we knew that the dirt was flying thick and fast. By A.M. everything was as sooty as could be. We didn't sleep very well - motion and excitement and weakness - but we did enjoy seeing the countryside.

Sep. 26. Rode all day - it is hot but the fans made it confortable. Weather is warmer than in Bombay. Changed trains in Raipur. A simple job, for all our dread with 24 boxes. The local was not as nice a train, stopped every half hour or so. Scenery beautiful - many rice patties - lush green growth - primative farming methods - water buffalo, palm thatched villages - water wells - trip sooty but exceedingly interesting.

Sep. 27. Saturday. Arrived at Waltair early morning. Met by a delegation from Univ. Ate breakfast (prearranged) at station restaurant, then to Univ. guest rooms. Back to station for luncheon, then settled down for a rest. We

have 3 rooms, hotel style until our house is ready. Also have a cook/bearer, Thomas, and a sweeper.

Sep. 28. Sunday. Just rested and took in our new surrondings - half day off for Thomas. It's warm around 86° or so - nice upstairs on balcony.

Sep. 29. Moved to our own home in afternoon. Borrowed 4 beds, dishes, 4 big almiras (wardrobes) and set up housekeeping. The house is unfurnished - no kitchen yet. The windows must be locked at nite against burglars, so it is quite warm, but we are more settled than in the guest rooms, and can leave the soap in the shower and paper by the toilet - latter is flush setup as in England. Shower handle is across the tub directly behind downpour - awkward but we will get used to it. All doors have enormous bolts - go through 2 bolted doors to get to the bath room. It is the opposite end of the house from the bedrooms. The building (called bungalow) was a hospital store room and has been recently whitewashed inside for us. The room we call a sitting room has a wash basin. Drain is a trough and hole through the wall to a ditch which runs length of house. Bathtub ditto, also wash basin in that room. Windows are doubly shuttered, hung in the middle of each shutter so they project in and outside the walls - no screens, no glass. They are secured on the inside by small wooden knobs.

Sep. 30 - Oct. 14. Settling in period. We are adjusting to many new things.

Oct. 15. Wednesday. Reception at Science Bldg. for the four of us. We sat in front at a long table facing the others, who sat at long school benches. We had a table cloth and paper flower decorations. Had tea already with milk and sugar, poured from the biggest tea pot I have ever seen. Also British cookies and little frosted cakes made in Vizag and very good. Boys went home and I went to Gene's first lecture. He spoke very well and said "my wife is more of a chemist than I am". The "Wisconsin" man said he would like to coordinate science with home economics somehow. I shall try to help. A memorable day.

Oct. 20. Womens Club. Mrs. Mahadevan and Mrs. Savur

called and invited me to join. Meets Mon. and Thur. 5-7. - went and played rummy - women very friendly - all can speak English but do speak Telegue.

Oct. 22. Boys tutor came for the first time. Gene left at 5:15 AM to go to sea for first time - a borrowed harbor tug. A large group went - most were sea sick even Mahadevan. Gene returned about 8 PM. Billy had high fever 103° so called the Univ. doctor, Dr. Gopalaswami. He said lungs were clear - did not need penicillin - give emperin and enema. Dr. Mahadevan called also Mrs. M. and Andy to see how he is getting along.

Oct. 23. Billy's temp early AM 102° - Dr. Gopalaswami came again and gave Billy a penicillin "injection" also a second one at 4:30 PM. By nite temp is dropping. I pulled my back again, Thomas still sick. Humidity dropped to 25% - temp 86-87°. Two fans delivered today - one burned bearing or something and stopped.

Oct. 24. Mrs. Savur called to see how Billy is getting along and inspected our house - wants to know how to use a pressure cooker. Bobby whining - cascara I think. Billy continues penicillin but temperature normal. Bob ate breakfast across the street at a local restaurant with a soldier! Gave him a Sedlitz powder at 5 pm - enema at 7 PM no results.

Oct. 24. Gave Bob another ½ tsp cascara before breakfast. By evening still no results, so gave another enema - no results so gave up.

Oct. 25. Dr. Gopalaswami called for the last time. Said Billy O.K. now. Bob also doesn't have dysentry or he would have had symptoms by now. Bill's birthday cake was delivered - a 2 lb fruit cake, Rs 7. We put 11 candles on it and had a premature birthday party.

Oct. 26. Bill's 11th birthday. Took his picture with half a cake. Bob gave him Rs 1 and Gene Rs 10. Worked on Christmas card.

Oct. 27. Monday. Gene to Vizag. Thomas returned - better but weak.

Oct. 28. Finished mailing 173 cards! Visited a scientific instrument company with Mahadevan to get casting of lead weights for Gene's snapper and corer. Heat for melting lead weight was charcoal fire on ground with bellows. Casting was in earth and thus allowed to cool. All operations were carried on out doors on ground under loquot tree. Methods were crude but results were excellent.

Oct. 29. Gene off on a 3-day cruise. I rented Univ. station wagon and boys, Thomas and I went to Vizag 4:30 - 6:30 PM. Highlight was to watch band repair by silversmith. Shop located next door was tiny and typical. Watch band break was soldered with alcohol flame using a blow torch pipe which he blew through. Polishing was done with wire brush soaped with a bean soaked in water. Bean is called "kunkidid", is also used in shampooing. Total cost for 4" chain, made to order and put on band, soldering broken eye and polishing = Rs 3, -8 (75¢). Bought boys each an apple from Australia (cold storage and real cold) for 6 as a piece, at Moshan Bros. - then home. Streets were really crowded - so much humanity. Dr. Dasa Rao, the chemist, called in PM. and arranged for a peon to sleep on porch during Gene's absence. He came at 8 PM, brought a flashlight and cotton sheet. Also spoke to 2 Gurka guards for first time. They were very friendly. Bill bought chisel, saw, wood, etc. He is very happy and satisfied.

Oct. 30. Thomas to Vizag for groc. Bought dahl, small round oranges, flat beans $\frac{1}{4}$" diameter, look like tomato seeds - also eggs = 2 as each, green coffee beans - 4 as for 1 chetuck (about $\frac{1}{4}$ cup) costs Rs 7 per pound. He will roast the beans, then pound them to a powder. Beans are wrapped, cornucopia style in a piece of newspaper and tied with a hemp string - meat mutton, came partially wrapped in green leaves.

Oct. 31. Halloween. Wrote Mary Saur, knitted and rested, also read. Native women cut weeds in front yard with an 18" long iron bar flattened to a 3" blade at one end. They stand up and lean over mostly - occasionally squatted. Beautiful twilight - full moon, too. A night to remember. Gene arrived home 8:30 PM from his 3-day cruise - a successful trip - all happy.

Nov. 1. This twilight time is lyrical. Air is balmy. Light is tinged with a yellow cast - the lush green growth is very green - the water buffalo graze lazily and peacefully - its a tranquil scene to calm a troubled soul. I imagine it hasn't changed since Biblical times. In the background is the Indian music from a bicycle stand, lending an eastern atmosphere. Its as I imagine the Paradise of Adam and Eve to have been. Watched a group gravel a road. Women carried big loads of very coarse gravel on their heads: loaded by a man. At the proper place to dump it, she transfers it to the head of another woman, who threw it down and spread it with a combination flick and turn of her head and lowered the basket with her arms. - Went to the Zoology Department with Gene at 2 PM to help them set up equipment and standarize the sub-standards they brought back. A happy time. I enjoyed seeing the lab and was very surprised at the variety of work going on.

Nov. 3. Typed most of day - ran into the teacher who was in Wisconsin and had a nice visit while we watched road building. Three people lift a load (40 lbs) tray to girl's head - she carries it a short distance and transfers it to another girl's head. Other girl dumps it giving the tray a twisting motion to spread the gravel which is big chunks of rock 1½ ins to a side. Our talk concerned improvements of these people's relationship to our countries. how to develop understanding, etc. - Gene is appreciated for his friendliness, is not haughty or superior as were the British ruling classes. Typed again this PM then walked to Waltair P.O. for air letters and stamps. To woman's club 5-7 PM - played anagrams. These people have analytical minds and are very good at that sort of thing, like games. There are very many small children, the patience and loving attitude of the adults was very noticeable.

Nov. 4. Got things ready for Kakinada trip.

Nov. 5. Wednesday. Major Nair took us to the train station and got us on the train to Kakinada - a 4½ hr run. Lieut. Murdy met us at Samalkote and drove us (driver was P. Subbarayudu) to Kakinada. Passed along a canal that goes at least 300 mi - has locks and all. Boats are poled and pulled the entire distance. At Kakinada

we were first taken to a Traveler's Bungalow - had tea with Prof. Muthuswamy - then to the University for a short tour then later reception, tea, followed by Gene's speech. I was asked to sit on the stage, too. We were both given beautiful leis (garlands) and bouquets, and later asked for autographs. P. Subbaryudu took pictures. After lecture we visited theatre for Telegu picture - then back to the bungalow. Dinner was served about 9 PM, was over about 11 PM - then to bed.

Nov. 6. Tea at 6:30. Murty and Muthuswamy came at 7:30 and took us to the Principal's house and garden for coffee - gardens were very nice, interesting plants - vanilla vine, tumeric roots, arrow roots, etc. Then took a drive around country side - 60 mph and skidding around corner on 2 wheels - pretty country - wild ride - a hurried breakfast - at station train waited 2 min for us. Transferred at Samalkote and Murty put us on mail train for Waltair - home in taxi from station - the oldest car we have ever ridden in. Glad to be home. It was an interesting and tiring trip.

Nov. 7. Rested. Have diarrhea from spicy food - we are all worn out.

Nov. 8. Friday. To Vizag with Gene - bought considerable material - drill pants, also underwear for me and my first sari to be made into a dressing gown. Gene picked me up later and home. Mr. Hart, Baptist Minister called.

Nov. 9. Bob sick. Thomas says too many nuts, probably right. He has fever and diarrhea - gave pills anyway. Miss Hellyer of Baptist Mission called and invited me to visit school and send the boys.

Nov. 10. Visited the school, was impressed with the cleanliness and general good looks - was originally an Episcopal school but had to discontinue so Baptists took over. Had a dinner guest - an American lecturing for the State Department.

Nov. 11. A pleasant day - all of us together at home and busy. In the afternoon Mr. Hart called on us and we went to his house for tea. It was very nice. A beautiful location. Miss Hellyer acted as hostess - tea,

sandwiches, cake, cookies, choc. and butterscotch icecream made with buffalo milk. On returning a caller invited us to speak at a Christian Students meeting.

Nov. 12. Billy started school at the Baptist Mission school. The Univ. bus takes him down and back. I rode a man-pulled rickshaw for the first time! It was rough and bumpy as the wheels are solid wagon wheels - no tires. I felt terribly sorry for the man who pulled me. He had agreed to take me to Vizag for Rs 1 but after going to the Harbor Bldg. to see Reynolds and back to the P.O. I gave him Rs 2. My back is black and blue in areas where I bumped against the back of the seat. Going down a steep hill and around corners was something! Reynolds could tell me nothing about Java Bengal. Back at the P.O. picked up Billy by the school and to Bulchands for drill for Gene's white pants. Back to bus stop and waited half an hour. It was 5 PM by the time we got home. I was exausted and frustrated. Bill likes the school. The ride apparently strained my back again.

Nov. 13. Thursday. Took it easy most of the day. In the evening Gene and I went to the Students Christian Movement meeting at the engineer's home, a Mr. Abraham. I think it is a St. Thomas Christian, also present were 11 students and one has an especially fine voice. It was a church meeting - Hymn, prayer, my little talk on Christmas in the USA and then another hymn and prayer. Mr. Abraham told us a lot about Indian customs, English rule, etc.

Nov. 14. The oven is finished. A mason has been working 2 days on it, earns Rs 3 per day. The 2 women and a 10 yr old girl who carried the bricks and mixed most of the mortar get 8 As a day. The supervisor who stands around and watches gets Rs 4. I gave each of the women Rs 1. The stove looks like a Nat'l Park stone stove but has 2 beds for pans and a wider one for the oven, which is not yet installed. Bob has stomach cramps in evening.

Nov. 15. Bob has real dysentary again. I a little bit too - both taking carboguanicil and entero-vioform. At 3:30 pm went to Territorial Army Week display with Mahadevan, thence to Science Club after detours to ivory shop -

big ivory boxes are nice. At Vizag town hall Gene gave a talk "Look at the Ocean". Men's toilet = hole in the wall of somebodies store room. I was asked to judge the fancy dress and mono action. Former had 2 entrants - 1st an ascetic, 2nd north Indian medicine man (quack). Former won. Of mono-action a reader from Faust was best. Skits were selections from Shakespeare, "Lend me your years" and from Henry V, "Captain my Captain", a muscle man and a conversation in 2 dialects - six entrants. Prizes are books in English and Telegu. In PM I told Thomas we would loan him Rs 100, also give him a raise of Rs 10/mo. = Rs 70/mo. - 30 for 4 mos.

Nov. 16. Sunday. Rested Bob still sick. Gene and Bill went swimming at Lawson's Bay. I stayed home with Bob. Bill got chilled after coming back from swimming.

Nov. 17. Monday. Gene packed for his upcoming trip to Madras some 400 miles south. Took some equipment to CICARS Naval Base to load on the "I.N.S. Madras".

Nov. 18. Tuesday. Walked around the campus and watched the construction of a new building. Rec'd invitation from the Vice Chancellor for dinner on 21st but declined since Gene will be on his cruise to Madras.

Nov. 19. Up at 5 AM as Gene left for the week's cruise to Madras and back. The day went well. At dinner time the Whites, friends of Dr. Bullard in England, came to call, were most friendly- are with Burma Shell.

Nov. 20. To Vizag via Univ bus at 8:30 AM. Visited school briefly, then to P.O. mailed letters and newspaper roll to mom L. Then to Moshan Bros. Christmas toys are out. Typically Indian celluloid and metal toys - many colored cut paper streamers are lovely, as are Indian Christmas cards. Took 2 bicycle rickshaws uptown and home. Met young woman in Guptas - mother Italian, father Irish, lives near Baptist minister. Rode rickshaw home, more confortable than the man pulled, but hard work for the men. Paid each Rs 2-4-0.

Walked to Mrs. White's home in Waltair for morning coffee. The house is 200+ yrs old, was built for Rajahs - a suberb yard goes to beach, lovely view. Big steps by front door for mounting elephants. Ceiling at 20-24'

high. Nicely furnished - saw crocheted doily, edged with weighted beads over cream pitcher. Backyard had huge banyan tree - fine for boys. The nicest bungalow and setting I have seen. Tailor returned all work nicely done. Nine pair of drill pants, 2 shorts, 9 napkins, 2 p. cases for Rs 24-8-0. Had beef for dinner - first time since Bombay.

No. 21. Nainama showed me how to put on a sari. Thomas brought several of hers over. They all laughed and had a good time. Bob has dysentary again. I do too a little. Just enjoyed the sunset and grazing cattle. Its beyond words. Was surprised and happy to receive a letter from Gene - all is well and food is good.

Called on Mrs. White in AM, had coffee and nice visit. She had invited others, but they couldn't come. The house is interesting. Built for Rajahs 200+ yrs ago - had elephant mounting steps in portico. Wonderful banyan trees in back yard - branches 12" thick drooped almost to ground. Yard was lovely, leads to sea. By far the nicest house I have seen.

Nov. 22. Saturday. Home all day.

Nov. 23. Took horse cart to Vizag boys and myself plus Thomas, Naneama and Sankra, and to a movie.It lasted 9:30 - 12. Was very good. About 4 or more news reels, a middle weight boxing match and a So. African jungle animal picture. Very good. The theater was interesting, too. Chimes rang 1st warning - 2nd time show starts. Each film had a censor's certificate. Room 8 exits on either side. We had 1st class tickets - no center isle. One hour and 10 min of news, Donald Duck and fights, 15 min intermission, coffee passed and added milk. Seats in 1st class were individual cane chairs. Bldg was large - 5 ceiling fans were mounted from each side wall, also propeller type fans near ceiling - Am. jazz records during intermission. Home in 3 rickshaws. Theater is in different area of Vizag.

In afternoon the milkman brought water buffalo and calf and milked her in front of us. Calf got second sitting - interesting way of getting milk - never thought we would come to it. Thomas spent a good part of

his afternoon off in Vizag waiting for fish for us. After he cleaned it. I sent him home. Had boiled fillet and fruit for dinner. Bill feels better. Bob's dysentary has stopped too. I'm about O.K.

Nov. 24. Rec'd nice letter from Gene, Mom LaFond, my Dad, Lydia and Am Express. Also light bill Rs 21-0-0 for Oct. All elec. bills were mimeographed on 1 sheet, so everyone can see all bills. Oct. bill is coming thru at this late date. Billy to school. Very tired in afternoon. In afternoon a delegate of 4 girl students, representing the "Ladies Assoc." - the 68 women students here. Called to ask me to speak tomorrow - they chose as subjects "Duties of a Student for Welfare of the Country" and "Part Played by Students in Politics" - 20 min. with questions. Wrote a few ideas and to bed early.

Nov. 25. Billy sick. At 7:30 AM temp = 101° at 9:00 = 104° almost. Called Dr. Gopalaswamy. He was away on a 5 day leave - sent his woman assistant. She is quite young, very new at it all. He seems to have same thing he had Oct. 22nd so I insisted on penicillin. He is also getting benzine inhalations and an alkaline mixture.

Nov. 26. Wednesday. Billy is better today - temp down but has cramps and dysentery badly, too, so am giving the usual pills of carboguanicil and entero-vioform. Gene arrived home mid-morning and we were so happy to see him. It was a successful trip. A gorgeous silk saree for me, also brocade for a blouse, gloves and seed bag. For Bill a German slide rule - a beautiful job, and for Bob a teak wood washboard and for both bead bags made of seeds sewn together. Also little notebooks for each.

Nov. 27. Thanksgiving Day. Bill still improving - Bob beginning to develop signs of dysentery again. Thomas says too many macaroons. Gene gave a lecture on next cruise in PM. At club a tailor taught how to cut a little girl's dress. I left early - hope I didn't offend by doing so. We all gave thanks at the table for all our blessings - Thomas put the two beds together and sewed the nets together, so now its like one big bed. Mrs. Savur told me that little girls begin to wear saris when they first menstruate.

Nov. 28. Began to give Bob Sulfa as Thalazole tablets. Took stool spec. to exam. - is mostly mucus.

Nov. 29. Gene went to sea for the day with about 50 students, most of whom were very seasick as the day was very windy and quite cool, 76°.

Nov. 30. Sunday. Gene and I took a walk on the beach - went down by the hostels and staff houses, along to Waltair and up the main road to home, A nice day.

Dec. 1. This has been a sad and worrisome day. Bob's stools showed amoebic dysentery. Dr. Ganapati also ran a spec. on it - showed very clearly. I waited and saw them too. Feel very badly about it. Whites called and took us to the Waltair Club for the movie.

Dec. 2. Dr. Gopalaswami came this AM and gave 1st emetine hypo in late afternoon - ¼ gr. Mrs. Tindle called to see how things are going. Billy's stool was neg. - but may be due to carboguanicil and entero-vioform. He is feeling better. 1st Life mag. from USA. Todays sea cruise cancelled, too rough -cyclone below Madras.

Dec. 3. Wednesday. Gene to Vizag to extend visa and get liquor license. Bob had second shot of emetine, ½ gr, shows no ill effects, tho is kept in bed. Rec'd Life magazine.

Dec. 4. Thursday. Gene's 43rd birthday. Thomas made pancakes but were rather heavy. Bill and I to Vizag in 3-wheeled rickshaw. Gave Gene a dhoti. In evening Pornachandra Rao came over and showed Gene 2 ways to drape it. He looks fetching! Bob got another ½ gr emetine, Thomas took a spill today on way to Vizag - ran into a car which stopped suddenly. He got off lucky - cut chin, bumped eye and sprained ankle, but is still able to work. Third Life magazine arrived.

Dec. 5. Gene to sea all day. Home at 7:30 - tired and brown. Bob had another shot.

Dec. 6. A big day. Gene played cricket on a special festival to commemerate the Vice-Chancellor's reelection. I went at various times as did Bill. He played very

well. He had lunch at the Faculty Club. I had tea there. We both took sal hepatica for supper. Bob had another shot -4. Rev. Hart brought 2 Canadian doctors over. They invited us to use their hospital if necessary. Seemed very nice. We appreciated their coming. They give the same treatment so all is well.

Dec. 7. Sunday. Packed Gene's clothes.

Dec. 8. Gene got everything ready for the trip. Dr. Gopalaswami ran a second stool ex. on Billy and it was negative (first was done Dec 2) - after a week of carboguanicil and entero-vioform. Dr. Gopalaswamy did another stool on Bob and it was negative, tho he still has some looseness and stomach cramps. Last emetine shot today.

Dec. 9. Gene off at 7:45 for a 6-day cruise up by Calcutta. I hated to see him go - am glad it is the last one.

How to carry folding chairs 3 or 4 at a time on the head. Bill worked on making a coal chisel - guess did too much. Two women carried a big table same as chairs.

Dec. 10. Billy again feeling low. Dr. suggested Emperin, but $\frac{1}{2}$ gr sedated him a great deal. Guess he misses Gene too. Let Bob up a little. It rained hard last nite. Thomas said he had never known it to rain at Christmas time. It has been a long hard day with both boys not well. Bob started auromyecin.

Dec. 11. Bob up a bit more. Bill feeling better. Christmas card from King Couper.

Dec. 12. Bill better - believe his start to sickness was due to Gene's going away. Mailed the colored film by registered mail at Waltair P.O. Wrote and mailed 7 letters. Bob is better, too, tho he had a bad time at noon because he didn't want to eat and both boys were silly. Saw a woman coming with a morter box complete with pan for cement and shovel on her head. Two boys brought prints of cricket game. Started to teach our boys bridge.

Dec. 15. Gene was due home today. The first intimation that he would not come was a letter from him from Calcutta. Someone had chicken pox and the ship was going to be quarantined! Later an official letter from Savur confirmed the news, added it might be the end of the month before he got back!!!

Whites came and invited Bill and me to movie at Waltair Club "Cinderella". Decided to let Bill go and Thomas stayed with Bob. Mrs. White asked me for Tuesday afternoon, which I accepted. She was to let me know definately later. Bob is better - a second dose of castor oil today, also results. Dr. Gopalaswami comes daily. Visited Registrar and arranged for station wagon for tomorrow. He, too, invited us to the Waltair Club.

Dec. 16. Tuesday. Still no word from Gene. Mrs. Savur came over in the late afternoon and told me that Mrs. Ganapati had a wire from her husband and all is well. Thomas's boy had a holiday today. The station wagon failed to show up. Thomas inquired and it was due to the holiday and all shops closed. Dr. Dasa Rao called in the PM to tell me that the holiday was due to agitation for an Andhra State. A politician had died last nite from a hunger strike for a separate state, precipitated the agitation. All shops closed, Univ. bus not going, etc. etc. Dr. Mahadevan called in late afternoon and told me more about it. No newspapers either. At first I was perturbed, but now not so much so. Everyone hopes it will blow over in a day or so. I mailed our registration in to the Am Consulate General at Madras minus the pictures. The leader of the Student Christian Movement invited us to the carol singing at Rev. Hart's house Friday at 7 PM.

Several bits of local color: Thomas tells me that the dhobi rents out the clothes he takes home to wash @ 8 as/day. Dr. Mahadevan tells me the sweeper's father has 5 or 6 wives and about 35 children. There are not many morals in the cast and a wife is acquired or shed with great ease. Rec'd much Christmas mail. This has been a strenuous day!

Dec. 17. A bad day. The agitation has increased. Thomas went to Vizag in aft. at 1 PM - home at 5 PM said

there were 3000 people in town - out of town police are trying to keep order - 2 casualties - Madras mail took 4½ hrs to come last 4 miles into town. Yesterday's newspaper was delivered, but nothing today from Gene but M. N. Rao of the Technology Dept (who was in Wisconsin last year) was under the impression they would try to come by train. The tutor says the communists are behind it now - 20 came to town.

Dec. 18. Thursday. Rec'd telegram from Gene 9 AM. Mrs. Ganapati rec'd one yesterday, both sent at the same time but hers was express. They are at Berhampur trying to get the last 180 mi or so. About 11 AM a crowd started gathering outside the gate, which was soon closed. Thomas found out that the town students wanted to come in here. Nothing developed and crowd dispersed at 12:30. Dr. Gopalaswami called to see how the boys were and show samples of material. Its beautiful stuff. Rs 22 a yd 27" wide. Dr. Savur called, also, to see what I had heard and tell me one of the boys had wired home for Rs 50. Dr. Gopalaswami said that never in the history of the state had they had to use tear gas before, as they did at the Collector's office yesterday. This is an unprecidented disturbance, but agitation for a separate state has been going on since 1905. He said the gov'n is planning it and will do it according to plan,but will not be intimidated. It has, however, hurried up its deliberations, but the central gov'd has ignored it as much as possible. Dr. Dasa Rao feels the time is not yet right for a separation. Dr. Mahadevan is for it. Major Nair stopped by a minute this AM, too, is apparently very much for it, and feels that by granting it the communists would be finished in So. India. He thinks this is nothing but a student agitation, no commies. The tutor brought back some magazines and said the crowd was fired on by tear gas yesterday was mostly young boys 8-10 and a few students - also some girls. Major Nair thinks it may last another week before dying down. I am seeing history in the making. Mrs. White called to see if we were alright or wanted to come to her house. The Christian Student called to see if I would go to Rev. Hart's Carol singing and Dr. Mahadaven stopped on his way to the beach. About 6:30 PM a second telegram came from Gene that he may be home late tomorrow evening. His wording was choice "Might arrive late Fri. happily enjoying wonders of India". A mastery of under statement.

Dec. 19. Thomas arrived 30 min late - was up till 1 AM at the railroad station where 10 people were fired on and killed.

This Am everything is too quiet. Its a beautiful day as far as weather is concerned and for other reasons, too, for at 2:30 PM in walked Gene! He came down from Berhampur in a car belonging to Mr. Gupta, head of the ship building firm here. He had a nice ride and interesting trip but was worried that we might be sick. It was really a happy reunion - even Thomas had been praying to his Gods for G's safe return.

Dec. 20. Saturday. To Vizag to get invitations and party things. We are still excited about his return and people keep coming to see him and ask about it. The trouble seems to be over, for yesterday the Gov't announced it would give an Andhra State for the undisputed areas. The town looked the same as always.

Dec. 21. Sunday. Mrs. S. White took us to Lawson's beach. It was lovely. Later we stopped at her house a while and had a cool drink and Bill climbed the trees. On the way home she invited us to dinner. We walked down about 7:30 - a pleasant time, but the steak was like shoe leather and Mrs. White was apologetic. A big day.

Dec. 22. Groups of others are returning from Berhampur. Cooked for Christmas party.

Dec. 23. Mail is coming through - we are getting cards and letters. Working on party.

Dec. 24. Christmas Eve. Thomas and I went to Vizag. Attended childrens party at the Club. Bill was too big but Bob had a good time, saw Father Christmas and all.

Shopping in the AM. Found a nice cigarette case for Gene. In the afternoon made more date bars and decorated house. Tree went up in the AM. It consists of two large branches of a pine tree type, made a lovely graceful tree. Excitement mounting as the pile of packages under the tree mounts. We now have everything wrapped. Our presents include Thomas - white pants, flashlite, cigarettes: Nineama - sari, bracelets: Sankara - paints, book, suit, ball: sweeper - sari: one boy - Kashmier

carved boxes: mechanical pencils to Mahadevan's children and a pencil box to Aparao. the dhoti's boy.

Dec. 25. Thursday. Christmas day in India. We opened presents about 7:30 AM. We all had a nice time, Gene gave me carved book-ends. Cleaned up and got ready for the tea. They started arriving at 4 promptly, and came until 6. It was a very successful tea. I showed my sari and the girls helped me put it on, as I wore it. Some saris were very beautiful. Quite a few did not eat our food. There was lots and lots left. Gave away about Rs 50 to peons who came and asked for it - a regular racket.

Dec.26. I am quite tired after all the activity - slept in afternoon. but up for the opening of the India Coffee House function on the campus. The Vice Chancellor himself addressed us and later we sat at his table and had coffee. Later went to the I. N. S. Madras for dinner - arrived about 8:30 PM - ate at 9 PM. A large group. The officers were very nice. Left about 10:30 PM, took another navy couple to Capt. Somas's house and went to the Waltair Club dinner dance. All in tux and long gowns except ourselves. Danced a Paul Jones, had some supper and left about 11:25 PM and walked home. It took about 20 min - a beautiful moonlite nite - warm and balmy.

Dec. 27. Up with the intention of going to Ganapati's but Gene wanted me here so I stayed. Billy had a flare up dysentary. Bob's specimin was almost pure mucous. Bill not too happy and disappointed as he so wanted to keep well after Christmas. Later in the PM an English teacher dropped in to visit, followed by G. Mira Rani - we visited for a while - then asked her to dinner and she was delighted. Even tho a Brahmin she ate everything. It was her first fish. She managed a knife and fork very well, couldn't manage the toilet and used the floor in typical Indian style. First copy of Sunset arrived - am enjoying the Ladies Home Journal.

Dec. 28. Sunday. Up early and to Lawson's beach. It was lovely. Thomas took Bob on his bike. Gene rode me and Bill was by himself. Water warm and clear. Home and a big breakfast. I then did my weekly chore of putting away the laundry. At 4 PM went to a party for Mrs.

Krishna, the Vice Chancellor's wife.. First was coffee and "wanda" a spiced potato cake deep fat fried and betel nut salad. Then to the women's club house for a musical. Mrs. Mahadevan owns and plays a beautiful 7 string instrument called a "venna". Mrs. Savur played violin. Mrs. Venkataraman an "harmonium", a type of accordian, but stationary. Several women sang. It was all typically Indian music. The trio, and solos on the venna were very nice. I wouldn't have missed it for the world.

Dec. 29. Mailed film to Bombay and typed in AM. In afternoon to Vizag with Mahadevans. I bought underwear material and a piece for a dress on approval. They did their monthly shopping. I went with them for rice. They sampled the bags with a hollow pointed "canula". A small trough with the end sealed and pointed so designed that it will punch a hole in the gunny sack without cutting it. They use 205 lbs. a month.

To Waltair Club in the evening. Started to walk but a bicycle rickshaw came along so we rode in style. The movie was "Neptune's Daughter". I was too tired to enjoy it. The Mayor tried to promote a bridge game - another time. Glassups brought us home so we missed the walk both ways. It is full moon now and these nights are beautiful beyond description - warm. balmy and bright.

Dec. 30. Returned dress material. Filed application for visa - also liquor license.

Dec. 31. Wednesday. New Years Eve. Boys played tennis at Club in afternoon. In the evening Whites picked us up about 10 PM and to the Club to see the New Year in. Gene wore tux and I my black formal. He was a judge and made a very distinguished one at that. It was a lovely party, quiet but nice. We came home about 1:30 AM.

Jan. 1. New Years Day 1953. Up late and spent a quiet morning. Quite a few people came to wish us a Happy New Year. We all went with Gene when he made his daily beach measurements. 11:30 to 1PM all 3 went swimming and had a nice time, tho I got too much sun. To Prof. Sen's home for tea. He sent his car. It was very nice. Had plain loaf cake, fruit cake, spiced beet sand-

wiches, spiced fried "drops", casein balls made from butter milk and sugar, fried folded over pastry dough. There were several others there too, among them a deputy forest official who was also a palmist and read all our palms. Gene is a worrier, I am "well balanced". His hand was very unusual and I have a "good" one. Gene will die away from home. I will live a long time, only one marriage for both of us, we will come into money, but Gene will spend it, I will just have it. Bob will have a lot of money, Bill will be something related to an engineer, etc. It was interesting but I can't say we took it too seriously. Both boys were exceptionally good we were proud of them.

Jan. 2. This AM 2 men drove up in a rickshaw, came grandly to the house. I called Thomas and one man gave me a present of some almonds. The other explained he was a leather merchant, his daughter was getting married for the 3rd time today (2 died) and he wanted money for her dowry. I should give him 2 or more rupees. I was flabbergasted, offered 1 rupee, he wanted more - I said no so he took it . I figured I bought a rupee's worth of almonds. Such business methods! This afternoon I walked to the Waltair P.O. to mail a letter - ran into Miss Hellyer who brought me home. While waiting for her I watched the women draw water from a well. A sacred cow came and helped herself from the pots! Wished I had a picture. Gene visited the Vice Chancellor - we are all going to Delhi next week! Mrs. White stopped in after I wrote the above, and offered to take the boys for 1 week while we go to Delhi - we accepted.

Jan. 3. To Geology Dept. for the inauguration of the Geology Museum. The Vice Chancellor spoke. Later we went to the newly built and fresh white painted museum. Paint was still wet, glass not clean, etc., but specimins were interesting. Quite a show. In the afternon to temple at Simhachalam (the lion hill). Whites sent car and driver. It is located 10 miles from Vizag on a hill. We drove to the base of hill and walked 986 steps up! We saw the outside but not the inside. An adjoining building contained carved stone pillars (6x9'). Inside were gold and silver thrones for the Gods. Also images of cobra snakes, horses, ducks, and many images of modes of travel for Gods. The steps up were broad and made of large stones,

well kept up. Trees on either side were banana, papaya, coconut, mangoes, etc. Water ran down a stone ditch. The view over the valley was wonderful. The temple itself had a gold top and much stone carving. We were tired when we came down. A few beggars were on the steps but no bother. Bombay beggars were more persistant.

Jan. 4. Beginning to feel excited about the coming trip. Packed for boys, also ourselves. Married 17 yrs 4 mos.

Jan. 5. Big day for covocation - excitement in the air - throngs of people on campus. Murty's wife brought baby for Nineama to take care of. In AM I had gone across street to where girls live, had coffee and saris, etc. Dr. Muthaswami asked if the baby could come here, and I didn't say no. Gene is unhappy about it. Carl Potter came by and went in with Gene. I had to go to womens entrance. We both left through my entrance but Gene was criticised later for it. Parade of saris colored, wrinkled and moth eaten. Caps and gowns were interesting. The Governor of Madras, as Chancellor of the Univ., looked like an oriental potentate in purple velvet long coat - white tight trousers, etc., then only honorary degrees given today. Prof. Iyengar read a biography of several men. Each one stood up during his eulogy. The Chancellor then gave the degree, shook hands, then on to the next one. Several Telgu degrees also given - same process only in Telegu. All British colony in Vizag present. A big show tho very long.

Jan. 6. Ditto of yesterday, but degrees to students.

Jan. 7. A big day. Packed for boys and took them to Mrs. Whites after lunch. In AM Dr. Gopalaswami went down to meet Mrs. White. He stayed here in town just to be here in case the boys needed him. At 2:45 PM bus stopped to pick us up and take us to depot along with other departing dignataries. We are both excited as this is our third honeymoon.

Jan. 8. Thursday. Seen from train camels, monkeys - much different houses - adobe with tile roofs - neat piles of dung paties - fort bridges - oxen drawing water at wells - light colored soil (putty colored) and dry - big vulchers, cranes, storks, egrets, pelicans and many

birds - different pony carts -crops of lentils, mustard, guavas, mangos (20 guavas for Rs 1) - mud fences around new trees. Arrived in Calcutta at nite. Refuges in station looked ghastly in nite light, bad enough in day light.

Jan. 9. To 1017 Curzon Rd. Delhi in new dodge car. Dr. Reddick very pleasant, room ditto. A good hot bath was wonderful.

Jan. 10. Saturday. Gene to Defense Ministry. I tagged along as I didn't know how long he would be. Had breakfast in the room - grapefruit, coffee, poached egg, jam and toast - very nice. In afternoon saw Old Delhi shopping district, Chandani Chawk, to cocktails at Dr. Gales while Gene had a final word with Chief of Operations man, then to dinner at Dr. Reddicks (Indian food) in honor of Dr. Ralph Bunch! We were thrilled.

Jan. 11. Sunday. Spent morning at Gov't. Kashmir Emporium. Then to Red Fort, then to Mosque and dinner at Alps restaurent - European food but very spiced. Took train at 6 PM for Agra, arriving at !0 PM. New train coach was nice - even had monel metal Asiatic toilet which I appreciated. The Minister of RR was in the other compartment of our car and received continuous attention.

Jan. 12. Spent morning at Taj Mahal. Saw Red Fort from outside. It's larger than Delhi's Red Fort but looked similar. This country has surely a tumultuous history of war and conquest. Saw a rug factory for few minutes then to train.

Jan. 13. On train all day. Changed at Calcutta with good connection with only 1 hr wait. We are weary of travel and both have colds.

Jan. 14. Arrived home at 10 AM. Boys wanted to stay with Mrs. White - were thriving under greater freedom. Thomas, at Whites too, really had a work out 7 AM - 10 PM every day and no Sunday off. Its good to be home but we had a wonderful time.

Jan. 15. Boys making adjustment to home. We are relaxing and recuperating. To Muthaswamys in AM to invite them

to dinner to repay our Kakinada debt. Girls are vegetarians but we had a nice meal. Sister and girls ate with fingers. Thomas poured water over same after each course. Muthaswami told us Indian history. How bad Viceroy Curzon was, etc. etc. We had a very interesting evening.

Jan. 16. Gave Thomas afternoon off. Paid Mrs. White Rs 100 for boys board. Beach in afternoon.

Jan. 17. Glassups invited us to dinner. He loves tricks - had cigarette box with big spider. I screamed when I opened it and threw it away. Gene was sweet - was afraid I would be too scared but I took it fine. Glassup told us about Indian history and the mutany. A very fine evening.

Jan. 18. Sunday. Dr. Gopalaswami brought a tailor from Vizag 15 min after ours from across the street arrived. Now both are busy.

Jan. 19. To Waltair Club to see "Three Little Words" a musical comedy. Gene took his liquor license to club so they can send it to Madras for coupons.

Jan. 20. Boys to Mrs. White's children's party. I measured the beach with Gene, then we both went to Vizag to tailor. I bought beautiful Indian linen print for dress, Gene a wine set in brass and also ordered white goods for suit.

Jan. 21. Bob has light cold.

Jan. 22. Mrs. White returned Rs 30 of boys board.
Jan. 23. To Zoology Dept. to start chlorides. At noon walked to Whites to enquire about men's dress for tonight - hurried back and to work with no rest. To Reynold's "at home" at the club for some visiting fireman - a big sitdown tea. We were late as expected it to be a reception. Had a nice time anyway. I am too tired and threating a cold.

Jan. 24. At Zool. lab. It is fun but I am very rusty. Opened substandard and finally got checks - didnt work in PM - but rested. Thomas worked very hard to give us a dinner party - Whites, Mr. Hamer and Carl Potter. We even had drinks beforehand. Gene and Bill played

tennis at the courts here. Bill's first real game. He did well. Gene also had good time.

Jan. 25. Sunday. I feel poorly with diarrhea - better in afternoon. Both tailors worked all day on front porch. This week received bank book at last. Signed for a wax sealed envelope of a book of 25 serially numbered checks, after first signing that should we not have enough in the bank to cover the check, they could draw on the parent bank. We don't know a parent bank but signed anyway. Also, went to the library with Gene to return a book. Its as bad as banking, Then Gene had to sign me in and out!

Jan. 26. Republic Day, To formal dance at club. Gene had not signed for supper so when it was served at 10:30 PM we felt a bit conspicious - left shortly afterwards.

Jan. 27. To Zoology Lab. - The tip broke off the Knudsen burette where it had been fused on from a previous break so I am using a 50cc burette. Opened a tube of Woods Hole Standard Sea Water, standerized the substandard Gene selected and adjusted it by adding NaCl. On checking it proved to be exactly right. However, pipette showed some grease droplets so left it full of cleaning solution for recheck.

Jan. 28. Recheck of sub standard - changed from 19.38 to 19.42 ‰. I don't know why unless there was contamination or my end point reading was not as good. However, left it at that and thus ended my brief job as chemist. I enjoyed it greatly and was surprised how quickly it all came back. To Prof. Savur's for tea. So much, we didn't want any dinner. Gave Thomas afternoon off to go to a wedding.

Jan. 29. Shopping in Vizag. Bought material for 2 formals - inexpensive but pretty. Didn't buy wool as I want to plan $ to buy a diamond. Will wait a bit and see how much transportation home costs, then plan what to buy. Mahadaven encouraged us with stories of connections in Madras and the posibility of buying diamonds or emerals from declining maharajah.

Jan. 30. We were honored by being included in the 5th anniversary of the martyrdom of Mahatma Gandhi. Dr. Gopalaswami took us to his home. We tried spinning - Bill was really good. I had difficulty but hope to practise later. Saw his $2\frac{1}{2}$ yr old daughter badly crippled from polio. His brother has just paid the fare so Mrs. and the baby can come to America. It is thrilling to know people like this.

Jan. 31. Gopalaswami came while we were playing tennis. Sent Thomas to club and left literature on a new freighter company going from Cochin - sounds pretty good. Gene is beginning to worry about getting home. Rec'd good letter from my mom and dad.

Feb. 1. Sunday. The months are rolling along. This has been a big day. Early AM we all went swimming. For the 1st time Bob wanted to come out with us and was not afraid when we took him out. Bill rode the catamaran, then I climbed aboard - had several thrilling rides - was not a bit scared. Its fun. As we were ready to leave 2 zoology teachers invited Gene to go out with them for samples. He included me in and they didn't refuse, tho I was a square peg in a round hole. I did enjoy it, tho for the 2nd time was not a bit afraid.

Thomas is home with a cold but Nineama came. Tailor promised to come today but didn't show up as usual. At 1:30 PM went to Gene's department to show our Kodachrome slides of USA and London. Very successful. To club at 5:30 PM to see Mrs. Venkataraman and show how to crochet coat. No one came to cutting class so she sent tailor home, waited 30 min then took me to her house. The garden was lovely everything in pots against white ants. Her rose cuttings are fabulous - a slanting cut 2 ins in soil - seal other end with dung. She has great success. She gave me tea and popcorn balls made from vermacelli instead of popcorn. The house was nicer than any other Univ. ones. I liked her from the first time I met her and like her more now - want to send her rose catalog and knitting books. She does beautiful work. Home and put 2 tired boys to bed.

Catamaran - a native boat made of logs - lashed together - not water tight but unsinkable - they frequently turn

over - often have sails, sides infact its all tied together with line - is awash with several inches of water all the time. Seats are planks across the top, tied on one side with rope through holes in side board. Back is open, braced apart with a stick and tied with rope to keep it from spreading. Didn't see any sails up but Indian who owns one said we were too many for the sail. Saw schools of many small fish jump from the water.

Feb. 2. Monday. Before breakfast a student arrived with an invitation to his upcoming wedding. It will take place at 3:21 AM. Mahadevan says this is the time the stars are just in the right position. The invitation also includes relatives and friends. With free drinks and food what a crowd could develop, however we declined partly because Gene will be at sea.

Feb. 3. To Vizag with Gene while he went to Harbor Master's office. I went to Isthmainian Steamship office. They are mailing us a letter regarding passage home via steel ship from Vizag.

Feb. 5 Showed our pictures again for only 4 people. Borrowed projector and used it at home. I went to Vizag with Mahadevan.

Feb. 6. Friday. Boys and I to Peter Trinder's Birthday Party. I had a nice time, so did Bob but Bill was too big.

Feb. 7. Mrs. White's chauffer took me to Vizag to get us another cook while Thomas is sick. To White's party - dancing 7 - 8:30. It was nice. A pleasant and refined group and we enjoyed it a lot. Declined passage on Pres. Cleveland.

Feb. 8. Sunday. The new cook arrived early and got started but took a long time to get going. Gene thought he was going to get fancy things, but I know differently. This has been one hectic week without Thomas. Swimming at Lawson's Bay in AM - perfectly clear water, smooth sea - no waves - even let Bob ride the catamaran. Gene took pictures of us. At 5 PM I went to Faculty Wives club - gave Mrs. Venkataraman crochet hook and directions for white sweater and gave Mrs. Krishna, the vice

chancellers wife, the two dress patterns for her daughter. I believe I did a lot to foster good will - she was so pleased. This has been a busy hectic week - will be relived when Thomas gets back.

Feb. 9. Cook is having a hard time adjusting to us and we to him. To club for rummy at 5:30, didn't play but visited with Mrs. Sen. Later to Waltair Club to see "Little Women". It was a refilming and good.

Feb. 10. Bill and I to Vizag in rickshaw. Went primarily about export - controllers list of what we can take out of the country, but man there knew nothing - typical. Then to do some shopping, winding up at the market. Bought quite a lot of vegatables and meat - did pretty well on all except the meat but Rs 5 for a 4 lb mutton (goat) is not excessive. Also saw several yardage shops - bought material for a shirt for Gene. Billy bought 4 tops - a successful day for us both. Gene to a tea in the afternoon, but I didn't go to the following lecture on "Future of Indian Universities" by a visiting V.I.P.

Feb. 11. Big day for Gene - he worked in AM on paper. Billy helped him. At 2 PM he went to a lecture by head of fisheries at Madras. At 6 PM he gave a lecture to Rotary Club. I was not invited and did not plan to go until Mrs. White tried to fix things up. She succeeded and we both went. It was alright but the principle of her ring in was not good. Home in time for Gene to go to the Vice Chancellor's for dinner. His lecture was very good. Sent letters to both Vizag and Cochin for arrangements of passage on freighters. But inspite of so much doing he is feeling better. I think its because the cook problem is smoothing out.

Feb. 12. A fine day. Left with Mahadevan at 8:15 for some 2000 year old caves just beyond Anakapalle 22 mi south of Vizag. Origionally Buddist monastery. They were later desicrated by Hindus - now looked after by archealogical people (same as our Nat'l Parks). Erosion is taking its toll but they are well preserved for their age. There are rooms chipped in rock mountains. There are many beehive shaped rocks, called stupas, some very large outside. Walked about $1\frac{1}{2}$ miles from car across rice and milo maise paddies. This is sugar cane country.

On way back we stopped to see a press and big boiling vats. One native reached up to a banana tree, pulled a leaf, put a slug of the molasses in it and gave it to Mahadevan who gave it to us. Also bought a few stocks of sugar cane. Took quite a few nice pictures. Stopped in the town and bought shirt material and dress length. Jane White came up to us with a beautiful brass box - 100 or more years old. Gene laughed but we bought it for Rs 4/8. I think it's beautiful and am delighted. Mahadevan wanted it, too. Whites took us in their car and we throughly enjoyed it. Left Gene at the Navy headquarters and came home. During our rest period Bill and I talked about marriage, sex, etc. etc.

Feb. 13. Friday. Gene in station wagon to Navy Headquarters so Bob and I rode to Vizag and for 2 hrs. walked down the street and looked and looked. Saw lots of nice sari material, etc. Also saw jeweler for a diamond, opal, etc. - was disappointed at the selection and attitude but he had one nice old stone. Met Gene and others at 11:30 AM and home. Weather is warming up - sun is hotter.

Feb. 14. Bob made me a valentine. Thomas is still away - other cook working out pretty well. I really sailed into all of them, showed how to wash dishes, etc. Guess you have to check up once in a while. I find it hard. Wrote the first 2 checks, Spencers and Waltair Club. Bill and I started down to club - caught rides both ways. At 4:30 PM went to a spade turning for a new playground, Savur's pet project. After 4 speeches, the V. C. used a pick to start the work. I carried a pan of dirt on my head - only woman to help. Bill, Bob and Gene did a token amount. Moved Bill's bed into living room at nite. Gene and I sat in the yard and enjoyed the stars and each other. It was a lovely night - I shall always remember it.

Feb. 15. Sunday. Boys and Gene to Lawson's Bay. I was tired and stayed home. Later worked on income tax. At 3 PM White's picked us up in new Burma Shell car - a grey Chevrolet with a maroon top and took us to the Circars Naval Base for the ceremonial parade for President Prasad of India. Arrived a few minutes early but were seated by 3:30 when parade began. Everyone waited "at ease" for 30 minutes till the President arrived

about 4:30 PM. He reviewed the sailors in the front lines, then they all marched by the stand for him. Prizes were awarded, too. Our seats were on the platform near the President's overstuffed sofa. Then to tea. It was strong, but with cinnamon - good, cake good, too. Waited for a while for the President to again show up. He paid a token visit - then decided to tour the harbor. We came home along roads cleared for him. Every policeman at attention. Actually we were not supposed to leave before he did, but Mrs. White engineered it. The President spoke briefly in Hindi but we could not hear him tho he spoke into a microphone. A tiring day and we came back and had a drink. After dinner we enjoyed the stars.

Feb. 16. Gene's ship cruise was posponed due to the President's visit to the Univ. today. Gene was in the line of professors to be introduced. Boys and I with women out front, do not count. I made the mistake of almost entering through the men's door, but a soldier corrected me! The local scene was lovely. A small boy baby, bare bottomed, except for string of black beads with gold trim around the hips, was right behind us. During the President's speech the baby nursed under the sari, was as good as gold. The President spoke sitting down (arthritis). Earlier Savur approached Gene about staying in India longer. We talked but no decision. To bed very early, quite tired.

Feb. 17. Tuesday. Gene up and away to sea by 6:45. About 8 AM Savur came to see me about our staying here longer. I said wait until Gene gets back and let him say. Bill is sick with something akin to a cold. Gudulu says its from eating sugar cane - could be. Gave him 2 shots of penicillin. By evening he was better. Rec'd 3 more Christmas cards today! Lots of fun.

Feb. 18. Bob and I took the beach measurements, at least we got some values. I was pleased it turned out as well as it did, for we had no trouble at all. Gene arrived home between 6:30 and 7 PM after waiting 1+ hours for the bus at the harbor. A fairly successful trip tho he was a little irked at the lack of initative. We discussed staying and were unanimous against it. Accepted invitation to sports day at hospital for Saturday.

Feb. 19. Gene told Savur of our decision not to stay. Because I gave no encouragement, he was prepared. Bob and I went to Vizag in station wagon with Gene. He went to ship. Bob and I bought some green hand spun cotton sari material for Gene's pajamas at the Gov't hand spun Gandhi shop. Mrs. White came to say goodbye to the boys. Bill is much better. Bought an Indian version of monopoly and they enjoyed it lots.

Feb. 20. Cleaned and straightened up the house in the AM. Gudulu gave notice he is leaving today. I am glad - too much food is disappearing too fast. Went to bank here on campus for cash. Wrote check there, but made mistake so had to correct it and write signature for correction, as well as on the face of check, plus endorcement. Our account sheet #475 is in a big ledger 18" wide, 30" long and 3" thick. Took a package of 1 Rs notes as part of Rs 500. They were new, bound with a strip of gummed paper. A string passed through the band and all the bills, tying them securely. Gave up on Gene by 7:30 PM and was having dinner when he came - we were so glad to see him.

Feb. 21. Gene was perturbed about no cook, so Nineama went home for Thomas and he came back. Says he had had molina - face all broken out from too much medicine? He looks as tho he has been real sick but he went to Vizag for groceries and got a nice luncheon for us. Dr. Nanda was here but he got sick, too, gave him a paludrine tablet. (malaria ? for him, too?). At 3 PM a car picked us up to go to the Sports Day for the medical students of the King George Hospital. Enjoyed the events, some of which were new to us, i.e. slow bicycle riding. Had tea, too. About 6:45 they started the ceremony of giving the prizes. Comdr. Agate and I sat up front. A poorly read long winded speech started things off. After a long time it was over and I started to give the prizes at the rate of 1 every 15 sec. = about 180 prizes. I shook hands with each person. It was over and we were home by 8 PM - hurried to get the boys to bed and had to walk to Waltair Club for party by Glassup and Krishna, but arrived in time for some of it. Wore my new formal but the top is not good. Prizes were wrapped in newspaper and tied with string.

Feb. 22. Sunday. To the beach for sand measurements, then rode the lower road to Lawson's Bay and swimming. Home to find a jeweler, nephew of the diamond merchant waiting with some samples that he had sent away for. The 1 ct. was beautful, costs Rs 1575. Slept in PM - then to club for cutting class - waited half hour for Hindi class to finish - then for Mrs. Krishna to come home for material, then for her little girl. Finally found out the material was 3 yard remnants and no one piece was enough - finally worked it out only to have the tailor say he wanted to use cheap cloth for a trial. Bob had come and waited ½ hr outside for me and was in tears when I came out. Thomas came back this afternoon and waited, too - so everyone was tired. A full day.

Feb. 23. Another full day. After naps to Andhra Univ. Sports Day - arrived at 2:30 PM - everything in full swing. We sat on the platform - watched races, etc. Gene ran in the faculty race (an also ran). Towards dark the girls played musical chairs. Girls had lots of events - the broad jump and races in saris did look akward. After the usual speeches - too many and too long, I started to give prizes - Gene counted 75 cups - also at least 25 flash lights, ties, handkerchiefs, T-shirts, etc., etc., in all about 200. It all went some faster than Saturdays. We were all home by 8PM throughly tired and exausted.

Feb. 24. All up at 5:30 AM to go to sea. Thomas came, too, made a lunch and breakfast. Arrived at the ship in two buses - 55 in all. I felt faint going out the harbor but soon recovered and got a long fine. I was proud of the boys. We were not sick but the zoology girls were and so were some of the boys. . Discipline was poor and the boys were not briefed enough beforehand. Took typewriter along and Benny and I took turns typing - had tea with the captain. Gene asked if Billy might go on the Kakinada cruise tomorrow - yes. Home about 7:30 PM - Bob tired but all happy.

Feb. 25. Wednesday. Bill and Gene off early. Bob and I rested most of the day. Mailed pictures home to mom.

Feb. 26. Bob and I to Vizag this AM. Had nice trip - bought Bob dart game and topee. Brought back Gene's shirts - a few groceries from Mohsin Bros but it took 3

hrs. Mrs. Gopalaswami brought several saris she had sent to Vizianipore for Cuttack - they were fine. Called on Mrs. Mahadevan in the afternoon. Saw water buffalo with crown of bouganvilla. They love their animals - also saw the bouganvilla blossoms used as red flags at the end of rails in a cart. Felt low in the afternoon so not to club. Agreed to give the valedictory address at the Botany Group next week.

Feb. 27. Gene and Bill arrived home mid-afternoon after a good trip. Bill did very well - we are proud of him. Lots of people arrived about the same time - tailor here, too, but we got to bed early.

Feb. 28. The Zoo Group arrived early to ask Gene to give the valedictory address this PM as he will be doing it for the Geophysics Group, I was elected. Glad I had it already written out. I read my typed speech tho I know few could understand my English - was pleased to have Dasa Rao come to hear what I had to say. Attendance was about 50, guess. Wore my new dress just finished by the tailor. Its fine. Also had my picture taken with the group but glare was bad. I bet it is awful. Anyway I was a big shot. Gene talked to his group about opportunities, etc. I showed pictures. Didn't go to the Law Society functions. At our tea in the Zoo Dept. I ate potato chips and pastries and drank orange punch. Had a whisky and soda before dinner. To bed early. Every dog has his day -these are ours.

Mar. 1. Sunday. Wrote several letters and 1 testimonial. Went to Boys and Girls Hostel Association meeting (function), did not go to hostel dinner - just afraid of the food. I do not feel well - diarrhea from something. Enjoyed the speeches, too many prizes, and left before the entertainment. Gene and Bob sat with men, I with women. They left at 4 PM - waited a whole hour for it to begin. I went at 4:30. They left at 6, I at 7. As usual we went to Lawson's Beach in the morning. High tide and it was not too nice swimming, but this is the day Bob learned to swim!

Mar. 2. Gene to sea for one day cruise. Up at 5:30 AM - he came home about 7 PM. Although I did not feel too well, I went to talk to the girls association

- had a small attendance, about 10. Mira Lakshmi came early and asked me to speak, this being the last opportunity. I read my Zoo speech and a little about opportunities, etc. I didn't talk long. The physics demomstrator told me that she had received an assistantship in the USA. She would be a good person to go - I like her. To faculty wives at 5:30. At the meeting Mrs. Savur resigned as secretary. Mrs Gopalaswami came and asked for regular conch's buttons for a school in Vizag. Home to meet Gene and after dinner to Waltair Club for movie "Julia Misbehaves". Gene had invited officers from ship but they did not come. Home late a full day.

Mar. 3. Tuesday. Gene home all day tho to two functions - Geology and Math-Physics. He spoke to latter group - Jeweller came up with larger diamond - I am beginning to be very thrilled - he likes one of 1.75 ct- Rs 2786.

Mar. 4. Married 17 yrs 6 mos. Gene up early and to sea again. Bill with him. Bob and I had a quiet day. Bob's diarrhea seems better. Thomas to RR station for CARE package. It weighs 39+ lbs - consisted of 16 lbs rice, 10 lbs wheat flour, 2 lbs gran sugar, 5 lbs dry skimmed milk. Could be bought here for $7 cost her (my mother) $10. In late afternoon to Mrs. Savurs but not home so to Mrs. Ganapatis next door and had a nice visit. Learned about the string on children - it brings good digestion. A fine visit. I like them so much.

Mar. 5. Rested and wrote letters in AM. Tutor came and gave Bob 2 hrs, also some Telegu. Bob is playing store constantly. Rec'd invitation to faculty dinner tommorow. At 4:30 I was escorted to Erskine College for the Botany Valedictory function. First the group picture. They gave me a bouquet of caliopsis, begonias (fiberous), a daisy, plus assorted ferns, plus 1 orchid. I was thrilled. Then had tea, or rather coffee. to go with it spiced puffs, a greasy sweet, biscuits and betel leaves in cornucopia shape - brought 2 home to Thomas for Nineama. My speech went over very well. They listened intently, and I feel, liked it. Dr. Mahadevan was there and asked for a copy as the Botany Dept. did also. Rec'd an offer of a freighter passage for June 8 from Calcutta across the Pacific - sounds good. Have been lonesome today and time passed slowly. Wrote several form letters.

Mar. 6. Friday. Tutor came again in AM - Bob likes him very much. I practised Telegu with Bob some. No one from K.G. Hospital came to take me to the function, so I did not go. Gene and Bill arrived home at 4 PM after a successful trip and I was so happy to have him back. The Sec't of the Faculty Club saw Gene come home and came again to invite us to the dinner. We accepted but on Thomas' advice had our dinner, or most of it, at home. Arrived at Erskine Square 7:45 PM and a talented geology teacher was playing a miniture flute or piccolo. Later played a portable harmonium and sang. Typical Indian music. At about 8:15 dinner was ready and we were escorted to the head table. Had cane chairs instead of the usual wooden ones. Each place was set with a large washed banana leaf. On it were mounds of various things, cold. The rice and gravy, hot things were served to us. Waiters dished it out with spoons but we ate with our fingers. Didn't eat much but it set my mouth on fire. Across from us sat the head of the police department and another bigwig. Both were very nice in telling us how to eat. Curds and white rice would have taken away the fire but I was afraid of the curds. Afterwards spoke to the girls at one side of the table. The physics lecturer had just received the AAUW scholarship and was so thrilled. She was radiant. I was so happy for her. Mahadevan showed us Gene's new office. Some class! Didn't stay long but felt like I had a kick in the stomach from the food. But it was a most interesting party. Typed acceptance letter to the Am. Express at Calcutta.

Mar. 7. Saturday. Mailed ltr to Am Exp accepting Pacific crossing. Didn't feel very well from yesterdays hot food, so read H.G. Wells "Island of Dr. Thoreau" because Dr. Mahadevan asked me to. I disliked it because it left a bad taste in my mouth. I guess the theme of vivisection and transmutation of animals to humans. Ugh. The suffering, etc., got me anyway - I finished it and rested. Skipped dinner at home. Gene to Academic Council meeting in AM and tea in PM. Naval officers came to latter and we rode back to the INS Bengal in station wagon with them. Were invited to dinner at 7 - we were there a little after 6. At 7 the Sampsons arrived. He is Captain of the Navy Training ship in the harbor. At 9:15 we ate dinner - then just sat around talking and drinking weak scotch and soda. I had one glass of sherry. Dinner was nice - had chicken, peas and custard. Home about 11:15.

Mar. 8. Sunday. To Lawson's Bay in AM. For some reason there were lots of nice shells on the beach - I found at least 8 different kinds. One little boy brought some big ones. I like Bibini types and we bought them for 1as. Bob can swim a little now. Bill can manage a catamaran all by himself now but can't quite judge well enough to ride the waves in - misses them somehow - home and tired mostly from too many doings for past 4 weeks. Had breakfast and took a nap - slept 1 hr 45 min -I was so tired. Ganapati sent over a beautiful big papaya. Up and to the club but sewing class was cancelled. Gene picked blossoms from tree. They are in a cluster beautifully fragrant. This has been a wonderfully pleasant restful day with no outside activities.

Mar. 9. Monday. Did not go to womans club in PM but worked on income tax and got it all typed. Saw woman carrying 2 4x4x6 ft posts on her head.

Mar. 10. Mailed income tax Federal 1040 by regular air mail. Boys, Thomas and I to Vizag in Apparao's horse cart. Met Gene there and sent Thomas and boys home in station wagon. Gene and I had a wonderful time shopping and looking. Ordered an album binder in white leather (Rs 4-12). Also was given 3 old music books. Sent to binder for Rs 4-8. Something for nothing -(Gene teased me). Saw a pair of drums - maybe for the boys. Also saw a block printing place - very interesting. Saw a door key - biggest I ever saw - about 7 ins. long but was told that was one of the smaller ones. Went to jeweler and saw necklaces - they are lovely - will see if we can afford them. Had a lovely time just looking and learning till back home at 8 PM. During night Bob vomited all over the bed, etc. Just too tired.

Mar. 11. A quiet day for the most part. Wrote a letter for Gene to Chester Bowles. Also worked on a speech. At 4:45 PM Mira Lakshmi came for me and I went to Valedictory function of Girls Association. The Principal presided. There were only 10 girls there - rest of 68 were studying for exams and it didn't take very long. Mrs. Lakshmi who has an AAUW scholarship came home with me to get an American Express address. Mahadevan was here and we talked for a few minutes about her trip. I like her very much. Rec'd questionaire forms and information about passport from American Express. It looks real good.

Mar. 12. Thursday. Spent morning writing letters for Gene. In late afternoon to club to 7 PM. Waltair tailor came with Gene's 2 shirts and gave him other material to work on. Fisherman sand papered the turtle shell but not too good at it so paid him off and Thomas will get some one else. Boys and Gene to Lawson's Beach in afternoon. Bob swam 30 strokes. Weather still in low 80s but very windy and humidity is rising. Looks like we are all set to leave June 8 on the S.S. Roebiah from Calcutta. Looks like a good deal.

Mar. 13. Friday. The highlight of the day was a visit to the girls hostel. Took the 4:10 bus but the girls in the bus were not going to the hostel we did not get off at the right place - had to walk back and had a time finding it but once there the welcome mat was out. The location is very beautiful - next to Sen's place. Had a time refusing already peeled bananas but ate cakes and biscuits and had tea later. The house is just an old one designed for a family - not dormatory. Now houses 36 girls - 6 each in the large rooms - accommadations are poor by our standards - some have cots - some sleep on the floor - no closets and saris were over strings stretched between 2 nails - trunks served as dressers, etc. Illumination was terrible - 2 small lights in ceiling - no table lamps. I am sorry I did not get to see the bathrooms. Dining room has long wooden table - food served on leaves and eaten with fingers. Mira Rani, the dancer, uses a plate but has to wash it herself. Radio is piped to front porch so music everywhere. They have a telephone - no running water. Water must be carried from well way down the slope in the front yard or neighbors tap nearby. Kitchen was separate building - wood stove like ours but only 8 ins high with big skillet of cabbage cooking - burned wood - big brass bowl with gunny sack tied over top was draining rice. Water just drained on cement porch - very large stone mortar and pestle for making chutney. Tasted cabbage But it was hot spiced. They were so cordial but have no idea of sanitation. To clean spoon for Bill to eat cabbage she merely wiped it clean with her fingers. She passed out glasses for tea - put fingers in glass, etc. She peeled bananas for us but we were afraid to eat them - had a hard time declining. Met most of the girls and went through most of the rooms. Miss Naidu, the engineer's neice, is warden (house mother). Mrs. Lakshmani was

also present. It was a nice visit but we stayed most too long. It was almost dark when we came home. We walked along the beach. It was lovely. Boys had a nice romp. Met Mrs. Glassup and invited them to dinner but his mother is in last illness so they declined for a while. Stopped to visit for a while Narasinga Rao's house. She is very shy and very pregnant. I assume all the little ones running around were hers. Dr. Ganapati was also there. Stopped here on his way back to see about ivory to buy for us. Will also take care of cleaning turtle shell. Paid Dec. and Jan. electric bill by check - no trouble at all.

Mar. 14. Saturday. To Vizag - rode Univ bus down - got off way up by hospital and walked down. Bought Bob his special shirt material at Seamon's, then across the street to see paterns at the block printers -interesting but didn't see anything right off. Hot and stuffy on his porch. Walked further down the street - saw lots of things - a veritable kaleidoscope Put boys on the Univ bus and let them ride home. We went to jewelers and had my watch band soldered - no charge. Watched jeweler solder it. It's now stronger but not specially artistic. Watch repair delayed us. Home after dark, about 7:45 PM. I ate and went straight to bed.

Mar. 15. Sunday. Up and to Lawson's Bay. Tide very high so couldn't swim much. Took pictures of 4 or 5 yr old riding catamaran alone. We were afraid to get in it today. Bought lots of "cat eyes" from "Jimmy" or "Jackie" or "Sally". Walked along beach to take picture of temple, beating coconuts, etc. Then had to go through fishing village as tide had flooded skirting road. Got quite a few pictures anyway, tho the village is dirty, and to me not too pleasant. Home bushed and rested. About 3 PM Captain Sampson and wife came for us and we went to Anatagiri (giri = hill) - a beautiful drive but he went too fast. Saw two "chandis" community gatherings weekly for selling and buying - a type of market. Must have been 2000 people at one. The road was very good. The hills were real jungle, thick growth but rather dry. Saw hundreds of monkeys. Their footprints were all over the dry road. Saw many set fires - fingers of flame threading up through the undergrowth apparently it doesn't burn much more than just the undergrowth. After dark they they were just beautiful. Had tea at a traveler's

bungalow. Mrs. Sampson had brought dry tea, and kettle, and sandwiches, cakes and cookies, etc. - a real treat. Bill made a wood fire and tea was hot in no time. It was truly a nice place, quiet and peaceful. Left up there at 7 PM just getting dark. Home by 9 PM. Stopped to see fires and big owl. Most pleasant day, tho we were tired.

Mar. 16. Monday. Telegu New Years Day - a holiday. Gave Thomas, cook and tutor time off. Started to write Gene's seminar talks - No. 1 - Amer. Institutions. Gene to celebration of 25th anniversary of discovery of Raman effect - talks by his co-workers and students. In evening to club for movie.

Mar. 17. Worked on speech again. Bill is helping Gene at the office. Reported loss of chess men to Waltair police. Gene played tennis - was happy he could play as well as the 3 other partners.

Mar. 18. Had first mango - delicious. Guards brought a $4\frac{1}{2}$ ft snake caught in the botany garden - said it was poisonous, but I have my doubts. Both recent checks came back with corrections - in one I started to write Feb. instead of March and crossed out the F.
I had to sign for the correction. In the other one they could not read my word "nine" so I had to cross it out and sign for the correction.

Mar. 19. Thursday. To Vizag in afternoon instead of the club. Had a fine time. Took Apparao's pony cart - first to the jewelery store - ordered a big 2 finger ring to cost Rs 100. Saw a stone for mom LaFond, too. Had coffee at jewelers, too. Bought a set of drums for Rs 30 - caused quite a commotion as the boys carried them from the shop. Am happy with the old music book rebound and the white album covers. But for some reason neither of us slept - yes, it was too warm - was 1 AM before we settled down. Now Gene tells me Mahadevan wants a chemistry seminar! Gene is so sweet.

Mar. 20. Worked in AM on first seminar talk. Rested in PM. Shoeman brought Bill's new shoes looked so nice Gene and Bob ordered some, too. I'll be next. Went to the bank and deposited Gene's check - also wrote check for Rs 500. The big ledger in which accounts are kept

cost Rs 500. A friend came in at tea time and I offered him a piece of cake but he declined because of the eggs. He asked if the cake was an omlet. Took pictures of building methods.

Mar. 21. Saturday. Had Miss Hellyer, Rev. Hart and Carl Potter to dinner.

Mar. 22. Sunday. Up and to Dolphin's Nose - took Apparao's pony cart to the harbor, a ferry boat of sorts across the channel and climbed over rocks to a cave - quite a ways. Boys and Gene went to top of hill. I rested and waited by pathway. Watched a group of boys fishing. They reported to me 20 fish caught including a puff fish which they gave - blown up like a small baloon - 8 ins. across. It was covered with projections - felt funny to touch. The fish finally expelled the air. By the time Gene and boys came down and got a picture it was only half as big. Threw it back into the water and it dove like a plummet. Walked around to a grove called Valley Green. Remnants of a Maharajah's gate still standing. Bought 3 green coconuts and took ferry home. Drove through Vizag back street and saw more New Years stalls and images.

Mar. 23. Monday. Another big day. Gene to office, I to desk, as usual in AM. After naps took Apparao's cart to Vizag for New Years festivities. Also some shopping. Many stages set up along the main street, also small shrines with various Gods and Goddesses, monkey, lion, etc. Watched a magician, girl work through iron hoops, etc. Also, groups of dancers supposed to be tigers. Head dress of something painted yellow - face and all body painted yellow with real paint - then designs over that. They danced and shimmied to drum music - quite strenuous. To Bulchands - Gene was quite disappointed not getting the white suiting he so wanted, but he bought me a zircon ring - bargained to beat heck - priced about Rs 150 - got it for Rs 100. We are working on a topaz at the same price - also bought 2 pair of vases - plus 2 silk scarves for Wenkie and Lydia. Gene ordered gold cuff links at jewelers. Home, put boys to bed and we returned to Vizag to see the plays, but were disappointed as they did not begin till midnight, lasted to 3 AM (so we were told). Came back about 11PM - had a drink at the club on the way home. We're very tired.

Mar. 24. Tuesday. In the evening 2 Gurka guards came and played the drums for quite a while. We enjoyed it. Another student also came. He played a different type of drum but did pretty well on them. Gene felt tired and frustrated that he is not able to accomplish more.

Mar. 25. What a day! The student from last nite arrived at 9 AM and wanted to hear all about America in one easy lesson. I had to leave him to go to the P.O. for Gene - and also to the police station about the chess set - came back and told him some about the U.S. What he really wanted to know I said was "very private". I did tell him about marriage customs, etc. He was quite eccentric but he stayed for lunch to see how we ate, tho he would not eat beef. He couldn't resist a crum of cake even tho he knew it had eggs in it. We learned that there is only one time when a Hindu woman is equal to her husband, otherwise she cannot sit at his level when he is sitting down. After he left I was really relieved. We napped then Gene to his Wednesday progress meeting. Mrs. Gopalswami came to borrow my coat and dressing gown. He came about the same time Ganapati arrived with the ivory he had bought for us. It's lovely. Shoe man also brought my shoes. Thomas to Vizag with the police to get chess men. A late dinner after a too full day.

Mar. 26. Thursday. The jeweler brought up chess set. Constable came with him. I gave him receipt for the set. He gave the constable a note for Rs 18 to be paid 5th or 6th. I feel troubled, for I know he was in the wrong, he is still very poor and will have a hard time scraping up Rs 18. Dr. Gopalaswami gave us all shots in AM - used half a dose to be repeated in a week - the first TAB and cholera shots. At 12:30 PM they came back and had luncheon with us - vegetarian meal to practice using knives and forks and spoons. I loaned them 2 each to take home. I don't believe she had ever used any before. By 2 PM Gene was sick from the shots. We all felt badly - he most of all. I did not go to the club.

Mar. 27. Friday. Gene home most of AM - slept a good deal - we all feel a reaction to the shots. Packed up chess set and took it to Ganapati - he is to mail it to a friend. Beginning to feel better by nightfall.

Mar. 28. Saturday. A very nice commerce student, V. A. Chrishna Murty, called to learn about USA. Talked as long as I could then to P.O. Gene mailed colored films to Bombay for pocessing, also package to Wenke. At 10:30 AM Capt. Sampson called for us and we all went to his training ship "MEKLALA" for inspection, graduation and prize giving. In 3 months they transform raw recuits into very fine looking merchant sailors. We were very much impressed by all. The ship was very clean. Gene reviewed the ranks. I gave the prizes and certificates. In the evening to the club for the monthly dance. As we were rather tired we came home after supper. Sat with Capt. Soman and other Indians, not the Europeans. Mrs. S. looked very pregnant as was Mrs. Fuller. Home after a big day and week.

Mar. 29. Sunday. To Lawson's bay as usual. Only Carl Potter came with us. Had a nice swim. Rested and worked the remainder of the day.

Mar. 30. Monday. Decided to go to Vizag by Univ. bus at 4 PM but it was so crowded, John, the driver could not take the load. A frustrating half hour delay to get permission to run another bus. We did quite a bit in town - tho it was not pleasant as there was too much hurry - back in Univ. bus, supper, then to Waltair club for cinema. The night was beautiful - tropical full moon and warm. Gene met an American navy liason officer at the club.

Mar. 31. Tuesday. Another too full day. Lunch with Dr. Gopalaswami at his house. We sat on the floor and ate with our fingers, but did have plates instead of the usual leaves. They had gone to a lot of trouble, also no chili, so it was a good meal but the food was quite different. We had: plain rice and red gram, dahl on one plate dished had a pudding of rice and black gram and a green gram pancake. A third dish had a small eggplant partly quartered stuffed with spices - coumerin, ginger, etc., and fried, and a variety of chutnies - gooseberry, tamarind and mango, we can do without. Lemon and coconut were good. There was also sweet and dried pumpkin. Papalum was of 2 kinds - rice and black gram. Afterwards we washed our hands - went into the living room and had bananas and betel nut leaves and nuts. The nuts are flavorless, leaves

have a tart bite reminiscent of alum a little. We could do without them too. They gave us a plaster model of 3 lives - symbol of India and a camphor filled leis. Home for a short nap but up too soon to go to the temple near here to the cashew festival. Took a few pictures but it was too dark to get any of the fire walking. There was a small white altar out front where the bullock is slaughtered, a sharp stake for the pig. We were told it was against the law but they may have done it afterwards. The temple was piled with cashew fruit and nuts - a procession of 2 or 3 paper howdahs - carried by men not elephants, rode around several times and were pelted. Finally the fire walking - a 20 ft trench had a charcoal fire. When it was going well a woman stood at one end - was doused with water then ran the length of the trench 3 times then to the temple. Fire in that trench was immediately put out. A man used the next trench. We saw 2 and then came home with Ganapatis. Thomas took us and stayed nearby to help. A policeman also took care of us. We were the only foreigners. It was truly a native show.

Apr. 1. Wednesday. To Vizag for coat lining for tailor. Used Univ. bus both ways. Also bought diary and doll for Gopalaswamis and tortoise shell and ivory box for sample for Gene. Capt. and Mrs. Sampson from training ship came to dinner and we showed pictures later. Nice but Gene is too busy now.

Apr. 2. Thursday. Dr. Gopalaswami was to have given shots today but didn't come. To woman's club.

Apr. 3. Friday. Good Friday. A holiday here. As the Dr. did not come we phoned in the evening. Gene worked all day as usual.

Apr. 4. Saturday. Married 17 yrs and 7 mos today. While Gene to navy, boys and I shopped and accomplished lots of small things. Also bought Bill a watch band and Bob a ring. In the afternoon Gopalaswami came and gave us the typhoid and cholera shots. We gave him a doll for his little girl (now sick with measles), a diary and gave him Rs 100 as payment of the bill. I am glad to have the shots and get it over with. He is to have the certificates stamped.

Apr. 5. Sunday. Easter Sunday a lovely day, except we are reacting quite a bit to the shots, Gene especially. To Mrs. Lazarus for a lovely luncheon - a farewell to Karl Potter. Home and slept. Bill beginning to get sick.

Apr. 6. Monday. Bill quite sick - gave penicillin - one shot on general principles. He also has an infected leg with a large red area around a small place. In the afternoon his temperature "broke" and he feels better. To show in afternoon - a gangster picture and a stinker. This is the beginning of Gene's seminars. He gave 2 today - brought 2 men home for tea. On reading his speech today at 11:30 PM he discovered 1 page missing so had to rewrite it.

Apr. 7. Tuesday. Gene gave another speech. No tea guests but we were all tired in PM.

Apr. 8. Wednesday. Gene's last speech. I am having tailor troubles. The master tailor is good but he is a drinker and every day is an argument over prices. It's hardly worth it.

Apr. 9. Thursday. Gene to boat in afternoon so I rode to town - bought gold plated silver necklace. Came home with him also picked up my passport pictures only to discover they are not the right size.

Apr. 10. Friday. The passports came back minus the visa extension and I was really put out. Drafted letter to Dr. Reddick and phoned to get passport pictures of correct size. Gene took visiting men on first cruise on "Rajputana". The VC went too. All but the VC, Dasa Rao and Gene were sick.

Apr. 11. Saturday. Mrs. Gopalaswami came to say goodby and bring back innoculation booklet - she is so excited. To Vizag to Imperial Bank to see about changing Rupees into sterling. Typed letter to Dr. Reddick and in PM mailed it requesting her to get our Indian visa straightened out as well as get us the Philippine visa. Poor Olive.

Apr. 12. Sunday. Swimming at Lawson's Bay. High tide but fun anyway. Bought a turtle from a native boy. They carried it to the house and butchered it. Turtle soup

for luncheon - was very good. Rested then took a taxi to the Select Theatre for Jahnsi Ki Rani - the Indian version of the seige of Lucknow. It was in technicolor and very beautiful but very noisy - lots of fighting - lasted 3 hours. Met Mahadavan afterwards and to basket makers behind the market. I was tired and thirsty a poor combination. Weather is warm but rather humid. A full day.

Apr. 13. Monday. Tamil New Years. The Univ. closed down but not the bazaar and there was not much celebration here.

Apr. 14. Tuesday. To Vizag in afternoon to have health certificates signed by the district health officer. I was second in line but being white I was admitted first. I said to the man waiting, "That is not fair, you were here first". He said, "I know it but that's the way it always is". The booklet was first taken to another room for the official stamp and entry in the registration book. Twenty minutes later they appeared. The proper signature was affixed and I left. I feel very happy about having this chore done. Started packing in AM.

Apr. 15. Wednesday. To P.O. in AM. I just made it by 10 AM closing time. I find it hard to hurry so, in this warm weather, 86- or better and the sun is very hot. Asked our police friend about the procedure for leaving the country, but he does not handle that - shall have to go to the district superintendent. Boys to Andy Mahadaven's birthday party.

Apr. 16. Thursday. Pay day. Next to last one. Helped tailor cut out muslin for Vice Chancellor's little girl. Then rushed to Gene's office to read another paper for him - it was a dilly and I worked hard. Bill also worked. At noon Gene tried on his new white pants - not quite large enough. On opening them the tailor cut the cloth a little. Mira Rani to tea again. Gave me some red dye for my feet. Gene took our picture in B & W. I to club - was the only one there for quite a while, finally one other came - a rousing game of rummy. Two adults, three little girls. What a day this has been. Typist worked all PM so that the report could be mailed but just missed the post anyway. It's a beautiful evening, new moon and bright stars. Thomas bought railroad stamps and the P.O. could not change a Rs. 5 note.

Apr. 17. Friday. Gene and Bill to sea. Dr. Savur has invented a current meter and wanted to try it out. Bob and I had a very restful day. The tailor just didn't come - guess Rs 5 was too much for him. Bill's leg is healing.

Apr. 18. Saturday. Thomas has been having trouble evicting "John" from his house. Yesterday he disturbed Ninema taking a bath. Today he scratched her arm with a knife - in an attempt fight Thomas. After tea we 4 walked to police to our sub-inspector friend. When he heard that Ninema had been scratched he took action - gave Thomas Rs 5 for tetanus, antitoxin and iodine. Two constables are to spend the night there and keep peace. Also gave him Rs 20 for medical certificate.

Apr. 19. Sunday. The sub-police inspector said Rs 17-8 was too much for certificate so Ninema did not get shots and he will go back tonight. Gave him Rs 5 for bike for constable. Took Apparao's jetka to Lawson's Bay instead of bicycles as it is getting warm pushing up the hill. Half way there the horse faltered and a little further on he fell down in a tangle of harness and cart poles. We thought he was dead but in 5 minutes he came to. Bill and I rolled out the cart forward. We landed on the horse. Gene and Bob did not fall but got out the back. Fortunately none of us was hurt but the horse is definately worn out and sick. Poor beast and poor Apparao. The tide was low and we had a fine swim - Bob and Bill in catamaran. Gene and I in another one. Bob ran splinter under his toe nail separating almost all nail from flesh. Bits of splinter left under nail - space filled with murcurichrome.

Apr. 20. Monday. To Vizag in AM to see about police permit to leave the country. Picked up Gene's gold cufflinks and studs and my zircon ring at the jewelers. Home in taxi for Rs 5. To Waltair Club for movie in PM. Gene looked nice in white shirt with studs and cummerbund.

Apr. 21. Tuesday. Gene and boys played tennis at the club. I watched and visited with Mrs. Soman and other pregnant English women. Gene's game was quite strenuous.

Apr. 22. Wednesday. It's quite warm today, 89° in the office at noon. The Waltair tailor has proven quite good and is now doing lots of odds and ends for all of us.

Apr. 23. Thursday. I feel the heat some. Shower water was 96° in the afternoon. Called on Mrs. Mahadevan to urge her to come to the reception Saturday night. She is coming. We walked to the club but no one was there so she went her way and I started to go to Mrs. Ganapati's but met her on the way. She can't come since he will be coming home that evening.

Apr. 24. Rec'd letter that the S.S. Robiah has been substituted for the Rajputana. At 6:30 to a party given by a geology professor who is leaving for another job. Same food as we had at the faculty club reception and we can't eat it. I didn't see the women at all. I must be a problem to them. Where do I fit in?

Apr. 25. Saturday. Went to a reception on the INS Rajputana with Mahadevan and Savur. He looked wonderful in long black coat and tight white pants. She wore a 10 yard sari. It was her first time out - a big occasion for her. We both drank lime squash. An officer passed tid-bits and noticing I had a soft drink said, "That's alright the food is vegetarian". Thence to the monthly supper dance. Took them too. Both men ate heartily but Mrs. said she did not eat Saturday as a religious fast. I think she was afraid of the food but let it pass. She did have mangapol and coffee. Saw us dance and now know what a reception and dance are like - and one drink doesn't make you drunk. But Glassup, high as a kite, wouldn't take no for an answer and poor Savur had a hard time not having a drink. We were glad to be able to take them. Bed at midnight.

Apr. 26. Sunday. Up early and to Lawson's Bay. Tide was high but low waves made it ideal. Bob is really swimming now. Bill paddles beautifully. Home and I slept rest of AM and part of PM. I am feeling the heat some.

Apr. 27. Monday. Pay day for Thomas and sweeper. Tho we had advanced Rs 30 for his legal troubles and to buy the medical certificate for Ninema he used it in bribes in an effort to get something done. I gave him his full pay anyway. Gene went to sea for the last time an overnight cruise. I took Bill and Bob and 2 of the Mahadevan children to the cinema at the Waltair club. It was a mediocre movie but being an Orson Wells prod-

uction - it stunk. Was sorry I had gone. Bill threatened to get sick but snapped out of it - disappointment of not being able to go on the ship with Gene.

Apr. 28. Tuesday. Gene home at 9 AM. Ivory came from Trevendrum though 2 were broken. It's a super job - clips are also lovely.

Apr. 29. Wednesday. As Mira Rani did not come in time to take pictures of her in costume, we took her to Lawson's Bay for a swim. Took a jetca = bad bumpy ride. Stopped at Waltair and took pictures of the entire police force in ceremonial uniform.

Apr. 30. Thursday. To Vizag in PM. Ordered ring for Bessie. Bought 18 yds of green print for more clothes.

May 1. Friday. Mira came at 2 PM and we took pictures for 3 hours.

May 2. Saturday. In the evening to INS Circars for the navy relief party by officer's wives. Coupon books were sold and there were stalls for ringing the duck, drop an Anna on a Rupee in a bucket of water, knock a cocoanut off the pedistal and roulette. A bar was set up. Supper was served at 10:30. We missed the fashion show and drawings for the doll and door prizes. It was too warm to dance.

May 3. Sunday. Too tired to go swimming in AM so went later in afternoon and it was fine. The principal invited Gene to a dinner honoring 2 visiting firemen. It was at the faculty club. Banana leaves and spiced food, ate with fingers. I read Mahadevan's paper in the evening waiting for Gene to come in.

May 4. Monday. To Vizag on university bus. Went by myself bought bulbul, drugs and trim for dress. Jewelery not ready yet. Cinema in evening.

May 5. Tuesday. Water temperature in pipe = 100°. Mango rains have started - very spectacular displays of thunder and lightning. Chased june bug, also killed first tarantula today.

May 6. Wednesday. A fairly quiet day. Gene is frustrated by all the excuses cooked up by helpers, i.e. the typist, who blames everything on the man below him - usually the poor peon, etc.

May 7. Thursday. Went to town on Univ. bus and did a little shopping then started to go swimming but turned back when the weather suddenly changed. The sky became black, and along the ground was a red dust cloud. Then the rains came. For an hour it was a spectacular show of rain, thunder and lightning. The boys got very wet but after drying out enjoyed the Gurka guards playing the drums and my new bulbul. Bill is fast learning to play and can spin like an old pro.

May 8. Friday. Gene upset because the typist is quitting - is trying to get another one. Later to Vizag to the bank to get some of our Rupees changed to sterling, or other foreign currency. The bank president, our friend, said to relax - he would try. Then to Bulchand's where bargaining is a fine art. Gene is good at it, too, so they have a good time and final price comes down 40-5-%. I am not good at bargaining.

May 9. Saturday. I help Gene as much as I can -type, edit, etc.

May 10. Sunday. Gene and boys to Lawson's Bay. I couldn't go so stayed home, figured finances and edited a paper. Gene to vice chancellors for dinner. I had warmed up turnips, carrots, potatoes and fresh opened corned beef but felt sick during the night. Something just poisoned me. Andy invited boys and me to a children's sports day at the principals. They were not enthusiastic but we went anyway and stayed a few minutes. Women sat on mats in the back yard and then to the house for tea but the sports events had not yet begun. It was definately too early to leave, but I wanted to get some work done for Gene. He is pushing very hard to get all these reports done.

May 11. Monday. Really sick all day but boys are fine. Felt better in late PM but when I got up to go to the bathroom I fainted. Called Bill and he called Thomas and for 10 min or so held me from falling. Then I came to

and they helped me to bed. Gene had callers and was cross later when told what happened and he hadn't been called.

May 12. Tuesday. By AM I felt much better. Before I could get dressed though, later in AM, a group of "tiger" dancers and drummers came for a show, and what a loud and noisy dance. The tigers were the pony cart driver, Apparao and another driver. Apparao is not a dancer but he tried. Gene and Thomas and boys walked to Waltair for the festival in the afternoon. I am much better but still not equal to that walk. Corrected 2 papers during the day.

May 13. Wednesday. Tap water 105°. Boys were invited to Mahadevans for a view master show. They were not anxious to go but we insisted. Guess it was mostly bedlam from reports. Indian socials are too naive for all of us. This has been our hottest day so far. Temperature rose suddenly to almost 100°. Fortunately the humidity is low. Gene and boys have prickly heat and sweat profusely. I very little.

May 14. Thursday. Helped Gene in the office late in AM. Other boys have not seen a woman have such authority. They were polite but impressed. We all really worked. Gene is having hard time with typist. Guess he will just have to reduce his standards. To bank for Rs'. Will make an appointment for the banker to see Gene - I wouldn't do. When he came he had 4 questions. When did you enter? When leaving? What country visiting? Where did the money come from? In PM to take a picture of Mrs. Mahdevan and her vena. At 5:30 PM to the faculty club for their tea for us - a swanky affair. Food was better than usual. Biscuits, cake, cookies, bread and cheese sandwiches and a cooked dish of vermicelli, peanuts, onions and spices. Not bad though spicey. Women at one end of the long table and men down both sides. I at end. Took group pictures. Talked a few minutes and then home. A lovely gesture of friendship and we appreciated it. Today has not been as warm - just 92°.

May 15. Friday. Helped Gene some, then later while Gene and boys went swimming, I went to Mrs. Ganapati's and together we called on the deputy (prounced de'puty) registar's wife, Mrs. Najanaia Rao who showed me how

to tie a 9 yd sari with 6½ yds in one front fold. I looked pregnant. Had a nice time. Mrs. Ganapati showed me how to braid little girl's long black hair in a fancy way.

May 16. Saturday. Gurka guards came over and played drum with Bill. He can talk Telegu very well now and has a fine time with them.

May 17. Sunday. The carpenter brought back the big basket but the wire staples were impossible, so we had them pulled out again. Net pains = 0. We paid him Rs 5 which we said was enough but as usual there was a big discussion. This set a poor start for a last, almost last, trip to Lawson's Bay. We took a stock of bananas and 2 dozen mangos for the kids and a party was had by all. Went in a pony cart - the new one - it's high with springs and rides very well but the road is so uneven and it lurches so I am not very happy in it. The waves were big and swimming was not very good.

May 18. Monday. Gene and I took a bicycle rickshaw to the Waltair RR station. Made train reservations but couldn't buy ticket yet - not until 10 days before departure. Went into Vizag and caught the university bus back up the hill. These trips take time but more energy.

May 19. Tuesday. Gene working very hard. I am too. Bill helps all he can. Showed Indian pictures in the Geology theater. One girl there and was more interested in the U.S. Asked very good questions. What is wall paper? How use bath salts? When submerged in a tub, why doesn't the water get too dirty? Arn't high heels bad for health, etc.? Loaned her 2 Sunsets and Women's Home Companion.

May 20. Wednesday. Deadline for reports. Gene worked late but reached his goal.

May 21. Thursday. Stopped at potters and ordered a drum pot. For measuring it for size he used a broom straw. More relaxing day. Gene was busy but the tension is gone. Cleaned out some things to pack. In the PM Thomas and I to Vizag. Rode down in public bus to Gupta's book store. He to market and I did some shopping. Met at Mohans and took a taxi home. Bought a tin trunk to replace the old gray one of mom's.

May 22. Friday. Met Gene at 12:30 and we went to Ganapati's house to take pictures of his family. They took us, too. I deposited one last check which finally came. Dickered to have shell necklace made.

May 23. Saturday. To office to show Gene the cracked shells and then stayed to help. Dhobi and his mother did the washing. The sweeper brought back the bangle woman and I bought more gold bangles. It was quite a sight. Bought some for dhobi's mother. They are smaller than mine and are hard to fit over the hand. It hurt and tears came to her eyes - ditto sweeper.

May. 24. Sunday. Up early and off to Lawson's Bay on bikes before breakfast. It is now too warm for Gene to pump me. Fairly nice swim but wind makes big waves all the time now. We were too tired from walking up the hill. Slept both morning and afternoon. At 5 PM went to Ganapati's for tea. Boys were exceptionally good. Had a very nice time. She served fried banana rounds, biscuits, cashew nuts, fried tiny pieces of pie dough with chili powder, a sweet square piece of cake, and a nutmeg cake our kind. Later coffee and candy. Home about 6 PM and packed some in PM.

May 25. Monday. Rented station wagon both AM and PM. In the AM to income tax collector. He can grant exeptions but hadn't heard about us being exempted. He wired Madras. We wired Calcutta. At 10 AM to Waltair pay office and obtained drafts for the fare and mailed to Am Express so that is paid. The first PM trip was to the RR station - arrived just as the mail was in so had to wait 30 minutes, then bought tickets and reservation. The procedure - record reservation and get slip entitling to buy ticket; buy ticket and record numbers in registration book. Get ticket to pay extra reservation fee and pay it. Took about an hour. From the station went to the jewelers. Paid the bill and saw the 1 diamond stone he had. After looking at it for a while Gene decided to buy it and have it set with 3 chemical stones at ether side. It will be a beautiful ring. He offered to let us bring the stone home and take it back and have it set in our presence but Gene said he trusted him and to keep it there. The ring will cost Rs 2600. The other bill almost Rs 670. Then stopped at Gopala Swami's to pay for the spinning

wheel and say goodby. Home very tired but to cinema any ways. Wore topaz ring for first time. A beautiful moon-lite night.

May 26. Tuesday. In the afternoon back to the collector and he had received permission to give us clearance. He had also investigated us with the V.C. and the V.C. had given us a good recommendation - all ended happily. Bob is sick from too much yesterday. We stopped at district superintendent of police and checked out. Then home too tired for drinks party.

May 27. Wednesday. Last payday for Thomas. Also gave sweeper's sister Rs 5 as the original girl had used up all the salary in advances. Today was Gene's deadline for reports and he made it by working late. They have been a chore for all of us but they will be quite a contribution.

May 28. Thursday. Bill talks Telegu pretty well now and went to the shoeman, ½ mile away, and negotiated to mend a cricket ball, sew a strap on his shoes, - put a heel on my shoes, all for 12 As. When he brought them back Telegu flew fast and furiously as he wanted more. A flame tree nearby is in full bloom and is a beautiful cloud of red blossoms. Other trees are full of yellow blossoms. Beautiful.

May 29. Friday. To engineer Naidu's for tea. She is charming. Hated to leave Bob. He is quite sick with "heat boils". Bill played cricket in an interschool match. We stopped to say goodby to Mrs. Lazarus and tell her about Thomas.

May 30. Saturday. Called Dr. Satyanarayana. Bob has impetigo and is getting penicillin also aureomycin ointment. Bill also low with a little fever. Too much cricket yesterday. I rode to Vizag with Dr. and got drugs. Typed till midnight.

May 31. Sunday. Bob is better Bill is so so. About 10:30 jeweler came out and brought the ring. It is lovely. Took it to Mahdevan who x-rayed it and declared it good. Dasa Rao came over when the jeweler came back, but the nephew could not say about returning it should there be customs trouble, so his visit was wasted.

Jun. 1. Monday. Measured boys on wall. Since October they have grown: Bill 3½ ins, Bob 1½ ins. Packed in AM. To Vizag in PM in university station wagon. Got 75 in travelers checks and paid Rs 2500 for the ring. Dasa Rao and Mahadevan went with us - bought 3rd tin trunk. Our last visit to Vizag. To the vice chancellors for dinner. Mrs. was also present, tho very shy and selfconscious. She ate soup with spoon but rest with her fingers. We had rice and curry with fingers, too, tho used fork for all else. She gave me bangles, a red sari and long ivory box. I wore ring. To club at 10:30 PM for coronation dance. Had a good time but very tired.

Jun. 2. Tuesday. Mahadevan has advertised my diamond far and wide, then advised me to keep it safe. Packed in AM, rested and to function at 4:30 PM. Tea was nice, food sweet but good. Then group picture of oceanographers. Then to Geology theater for farewell function. First the principal told history of our visit and said "We understood the oriental mind". followed by Savur presenting the university crest, then "casket" which is a big stationary box and inscribed inside. Then Savur read the printed farewell address. That did it. Gene cried and I could hardly keep from it. Gene was so choked up with emotion and tears; I did my best for him - said we would never be the same after this trip to India, etc. Two copies of address were printed on silk cloth, 1 framed, 1 autographed. I just about cried saying goodby to Mrs. Ganapati and Mrs. Mahadaven. Murty and wife called and gave us their bridal picture. The whole group walked home with us. They left us to collapse in peace, which we promptly did. Bill is quite sick - Bob is getting better. Finished most packing in evening.

Jun. 3. Wednesday. **Big day!** Up for last coffee on porch. Lots of people here in AM. **Left Waltair!** Two double bullockcarts arrived at 8:30 AM - finished loading and off in late AM. I finished packing and had last lunch. Bengun took dishes to Mahadevan. Ninema took all other things. House will be bare of everything. Mrs. Krishna sent the tailor to get the sari she gave me to have the edge where she took off 1 yard. Finally the crowd dispersed, we had lunch and to the station at 2 PM. Bill still quite sick. Called the DR. again and gave him penicillin as he has impetigo, also cough. Waited first in station wagon

then waiting room. The university sent 2 bus loads of friends to see us off. Dr. Gopalaswami's uncle also came down. There were more presents, books, and flowers. Finally the RR car was coupled on. We got in and as we left they gave us 3 cheers. Thomas came down to the station, too, gave him Rs 100. We hated most to leave him. Ninema cried and said goodby at the house - we did too. Finally relaxed and settled down in train. Gave Bill a shot. All asleep by 7:30 PM. I slept quite well. It rained in the night and cooled down a lot.

Jun. 4. Thursday. Slept pretty well. Bill not well - gave second shot on train. Arrived Howrah 10:30 AM. Boys and I remained in train until man came to lock it up. Then put Bill in the shade - Bob and I under umbrella for good 30 minutes. Gene came. After an hour a man arrived with 9 coolies and a porter to carry our baggage to front of station - then an Am. Express man to get the stuff to the office. We took taxi to hotel. Checking in we had to produce a police registration, passports, etc. Hotel is nice. Rested, then to the Am. Express, then to commissioner for Malaysian (Singapore) visa. Gene and Bob to market later. I was too tired. Bill is all in, too. Dinner at 7:30 PM. Hotel is pretty good but nothing like an American one. Boiled hypo in hotel kitchen and gave Bill a shot.

Jun. 6. Saturday. Bill is getting better. Started out to buy drum. First to Bemens but they had none assembled, so to Old China Bazaar Street. After much difficulty, located the closed store - then to Am. Express for tickets, etc., all was so slow. Then to climax it all, they charged us Rs 75 for bringing gear to office, then to dock. Back to old China Bazaar Street to find the shop had no drums. Frustrating AM but at least we have the tickets, etc., etc. Gene to Geological Survey Office - boys to room and I went out to find a drum, which I did. Rangachari came to lunch - then we "hurried" back to the music shop but did not buy the drum. Hurried to another store - it was closed. A man from the market took us to a shop, or rather a hole-in-the-wall, where we bought one for Rs 20. Took rickshaw back to hotel - all worn out. All shops in New Market close at 2:30 PM. Gene got his watchband just in time. Let the boys have dinner first - then we went down together - pretty nice. Up to bed too tired for a walk.

Jun. 7. Sunday. To Geological Museum. Enjoyed tapestry section. After naps Gene and I to shanty shops across from the hotel. Bought 1 sari there - then got another one up some side street. All had dinner together - then finished packing after paying the bill. As we could not take money out of India or convert Rs back to dollars, the challenge of spending money and coming out even with nothing left was new to us but we did it well.

Jun. 8. Monday. **THE DAY.** Were called at 4:30 AM. Had breakfast and left the hotel at 6 AM. Went through formalities of checking health certificates and tickets, then to customs who were very nice - OKed the gear and our personal baggage - did not ask us to open anything. It couldn't have been easier after so much worry. We got onboard and collapsed. We were really truly out of India. The S.S. Roebiah was anchored in mid-stream. Went out on lighter - accommodations were nice and company is excellent. Seven passengers in all. Left on high 10:20 tide. In channel in PM to wait for tide to come in again. It was hot waiting. At 7:30 PM got going again. Gene taking samples of water all down the Hoogly River to the Bay of Bengal.

This ends my diary in India. However, it continues during our 36 day homeward passage on the freighter S.S. Roebiah, with stops in Penang, Singapore, Manila and Honolulu, finally ending in San Francisco. A train back home to San Diego brought to an end our momentus first odyssey to India.

Over the years we have made additional trips to India and I had planned to write a book covering these trips. We can now see, that in our mid-80's we will have neither the strenth nor the ability to complete such a task, so we have gathered completed reports, notes and miscellaneous material and will include it in a reference report. This will preserve what we have accumulated and maybe someday someone else may want to work it up.

Post India Period

Back in San Diego we soon adjusted to our former ways of no servants but we again had a refrigerator, car and the kind of food we were raised on. Because of the books taken to India and the tutoring, the boys were up with their former classmates and lost no ground.

A few months after returning Gene's services were requested by the Navy's Mine Defense Laboratory in Panama City, Florida, so again, as in many of his assignments, he left me at home with the boys since the duration of the assignment was not expected to be long. However, he wrote glowing letters from Florida about the clear Gulf of Mexico water and the abundance of fish he could spear while using his aqualung. Also, the nearby crystal clear fresh water springs received exciting accounts. This lead Bill to remark, "Why can't we go there too?" There was really no good reason. I called Gene and said, "We have the Chrysler packed with our large rubber boat and we are leaving for Florida, if you don't have strong objections". He said OK but the boat would not be necessary. I again took the boys out of school and during their 1954 Easter vacation off we went.

It was a long 5-day drive with 2 active boys. One sat in the back seat and the other in the front. The technique was to leave early in the day and stop early, always selecting a motel with a swimming pool to let off steam. The southern route provided new knowledge for the boys.

Gene had arranged for temporary housing and the boys entered public school in Panama City. Here, as in India, there was a cultural difference for the many blacks were looked down upon. At first we stayed briefly in a mobile home park and I mentionrd to the woman manager how differently the colored children were viewed here than in our California schools. When I said that a colored boy scout led the Pledge of Allegiance at the school assembly she was really shocked. Bill fit in the school system easily and did very well. Apparently our local San Diego school was more advanced than the one he was attending in Panama City.

The water, as Gene described, was warm and clear. We had scuba gear and became proficient in underwater searching for large groupers, brilliant colored fish, scollops, oysters, etc. Even Bobby who could barely swim doned a small scale tank and we followed him close behind. He became irratated when we brought him up to check on him and his gear. I, too, enjoyed the swimming and scuba.

Life in the south was pleasant, like a vacation, but Gene and his group needed to conduct tests off Norfolk, Virginia. It was more practical for me and the boys to return to San Diego than to follow him on a new assignment. He did arrange to drive with us as far as Texas, visiting New Orleans, the new Oceanographic Department of Texas A and M College and Carlsbad Caverns. From there I drove with the boys back home. It was an educational experience.

Norridgewolk

During this time Andhra University was actively making arrangements through high level channels to get us back to India. In 1955 all the hurdles were cleared and we made plans to return. The boys were given the choice to either come back to India with us, or go to Maine for a snowy winter and stay with my friend and former teacher, Margery Wilder. She ran a small boarding school in Norridgewolk, Maine. They chose to go to Maine and flew there by themselves, meeting my aunt, Alice Gehring in Portland at the transfer. Bobby was happy in there but Bill was not, until Marjory took him to Fryberg Academy, a boarding school in New Hampshire. Here he thrived, learned Latin, among other subjects, took up skiing, and was throughly happy. He would have stayed there forever. Tho heart wrenching being separated, their experiences were educational and character developing.

Second Indian Trip

Soon after the boys departed on 1st of September 1955, Gene and I flew back to India. The first leg on an over-night was through a thunderstorm to Tokyo. We were met by Dr. Koji Hidaka waving a reprint of Gene's. He and other Japanese colleagues entertained us lavishly all day

ending with an elaborate "state" dinner. Near midnight we fell into our seats and were asleep before the plane departed. We arrived in Calcutta on the 4th of September our 20th wedding anniversary. Breakfast was room service and exausted, I stayed in bed all day, Gene at least got up and dressed.

The next day to celebrate we had tea at Firpo's. This tea room is the best example extant of "the glory that was". One wall was entirely mirror and reflecting from several shelves in front of the glass were rows and rows of large empty glass jars, similar to the ones we used to see filled with colored water in fancy drug stores. In British days they held a variety and varied assortment of candies.

Waltair

Refreshed, we took the Madras train south to Waltair. This time we were quartered in two rooms upstairs in the Faculty Club. Thomas was again our cook/bearer, but he also had the responsibility of managing the several other guest rooms. Another difference was that Prof. Mahadevan had gone to Brazil on a geological assignment. We soon resumed our former ways, however much of our scientific and social activities during this period have been included in Gene's previous section.

Gene went to sea on cruises in the Bay of Bengal and I participated in campus life and helped Gene with his reports. The Waltair Club and its members also gave us pleasure. Because we were free we traveled widely throughout India. But by this time much of the newness had worn off. Tho we both kept diaries and notes with my intention of expanding them into a book, it has never come to fruition and at this late date (1996) a finished book seems unlikely. Several scientific papers resulting from the cruises were prepared by Gene and his university colleagues and were issued as Volume II of the Andhra University Memoirs in Oceanography. Volume III of the Memoir series is dedicated to him. These publications are a great satisfaction to both of us.

After this second academic year, 1955-1956, we returned home via Europe, with stops in Italy and Germany, before picking up the boys in Maine.

Diving

Home once again - and with our family all together we soon took up our former activities - one was diving. Early before Mission Bay was dredged we used our 6-man inflatable rubber boat to explore with snorkle, and later scuba, the carpets of sand dollars standing on edge. In 1951 our family acquired 2 of the earliest scuba outfits. Gene took scuba lessons and then taught the boys and me. As Bill Menard once remarked, "It's easy. In 5 minutes you can learn enough to kill yourself".

We explored the areas off Point Loma, Ocean Beach and Bird Rock by going out through the surf and diving from the Lightning in the kelp beds. At that time abalones were plentiful. I frequently paddled along on the surface with a surf board to watch Gene and Bill and check their bubbles as they rose and burst on the surface.

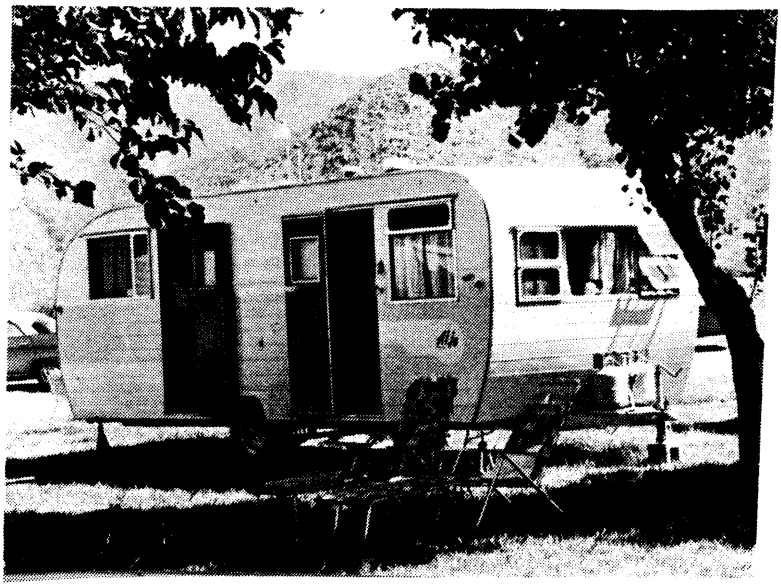
When we were in Panama City we had our diving gear with us and enjoyed the clear warm water. I well remember once at about 20 feet being surprised by several sucker-fish who were sizing me up for a permanent attachment. Bill came down and discouraged them. Occasionally we connected with stinging jellyfish, tho somewhat painful, they posed no real problem.

In San Diego it was almost necessary to wear rubber wet-suits to keep warm. Gene also did considerable diving for the navy from the tower. But the most fun was had diving with Gene and the boys as a family.

Trailer

Early on, even when the boys were babies, we camped at Agua Caliente, Borrego Springs and other places in the upper desert of San Diego county. In 1966 we rented a trailer from Rex, proprietor of the store at Agua Caliente, and had it towed to Butterfield Ranch, a trailer park situated in Mason Valley on county highway S-2, 12 miles south of Sissors Crossing. Once a rental trailer was not available, so we scouted the newspaper ads. When I called about one the man was about ready to tow it to a sales yard but he kindly waited till Gene could see it that evening, for it was just what we were

looking for. That same day I wrote a check for $1500 and we became the proud owners of a travel trailer. As prearranged, the trailer arrived Saturday and we became permanent tentants of the park. In 1967 a better space was available so we moved to its present space, No. 27.



Trailer as purchased in 1967

The Aljo trailer was 11 years old but in good shape when we bought it. It is 8 ft by 23 ft and has a bedroom with 2 single beds, a tiny bathroom and a kitchen/dining room. We are hooked up to sewer, water and electricity.

Two 4-gallon propane tanks provide fuel for cooking and heating. In 1974 we added a 14 x 17 ft living room. Most of the walls are clear plastic windows to preserve the view of the trees, lawn and mountains. A cement block slab was laid down in front of the trailer by Gene and Steven, and another in the rear by Bob. A second refrigerator helps with food storage and a swamp cooler was attached to the roof for warm summer months. Over the years a cottonwood tree by the front door grew tall and in 1992 a large limb broke off and punctured 3 holes in the living room roof which required extensive repair.

An outdoor fireplace made from the spinning tub of a washing machine provided an excellent evening fire. Old age has required replacement of some plumbing, which Bill has expertly repaired. Bob has added a storage shed in the back adjacent to the brick area. Even when Gene was still at the lab he had a radio link from the trailer via Mount Laguna to his office. Thus, part of the time spent at the trailer counted as work. He wrote letters and papers, and even took over a typewriter, thus allowing the trailer and its attached room to serve as a quiet office.

A succession of owners and managers has brought many improvements. The most notable has been the enlargement of the recreation building. It was partly funded by an assessment to each tenant. Most of the labor was donated by the local residents. Much thought went into the planning. A complete kitchen facility, free standing fireplace, television, donated paperback library, pool table and donated furniture make it an ideal place for frequent potluck dinners and programs. The "rec" room has been a great addition to the park. Because the construction money was contributed by permanent tenants, it is mainly controlled and managed by the BPA (Butterfield Permanent Association). In our area about 40 trailers are arranged in a square and we have occupied the same space for 30 years. In the center of the square, in addition to the clubhouse is a swimming pool and spa which we use extensively. As the park expanded more spaces for travel trailers were developed and 2 more pools were added. Our rent started at $25 per month in 1967 and has increased to $250 in 1996. In addition, we pay for electricity and gas, but both are nominal.

Mason Valley provides a variety of vegetation. At certain seasons the flowering plants are brilliant with color. Indians once lived in the valley and have left groups of morteros in several places. Gene even made a map of their locations. Also, scattered shards of broken pottery signal their burial grounds. Short exploratory walks reach abandoned garnet and tourmaline mines, and signs of historical habitation. Not far away are ancient Indian petroglyphs.

Our trailer has been enjoyed not only by our selves but also by Bob, Bill, Steven, Will, Suzie and their friends. It is stocked with food and is always ready for us and our family to setup housekeeping. It makes a home away from home, providing a quiet, restful retreat from city life.

Oceanographic Tower

In June 1959, Gene had an oceanographic tower constructed off Mission Beach. Although I had little to do with it, I did help with making measurements and collecting data. The location was ideal and we often spent holidays and weekends there to allow others to have time off with their families, for some work continued on a 24 hour schedule. The tower, its installation, boarding and layout have been covered by Gene, but I do want to add a word about how lovely it was out there and the many hours we enjoyed it. Even boarding posed no problem for me, tho one visitor remarked,"I went through the war and was never so scared". He just froze so the crew solved the problem by lifting him in the big basket used to transport heavy equipment. I just jumped on the ladder when the boat was high on the swell. We often sailed our lightning boat out there, too. To help pass the time between data readings one man used to bake bread, but we usually had enough work to keep us more than busy.

International Indian Ocean Expedition

In December 1962 I accompanied Gene to India to work on the I.I.O.E. Prior to our cruise our program was to tour Indian marine science institutions and both of us to give lectures and to explain the objectives of the expedition and its value to India. As already mentioned, our ship was the Anton Bruun, President Truman's Presidential yacht converted for oceanographic work, and for 4 months 28 male scienists and 30 male crew and I cruised the Bay of Bengal and the Andaman Sea. Part way through the cruise our ship put in at Vizag where the USIS arranged a seminar and our preliminary results were reported. Life aboard ship was interesting, and often strenuous. As we left Bombay Gene called a meeting of the 12 young scientists and assigned watches, 6 hours on and 6 hours off around the clock. Gene and I were up for all the stations, meaning we often slept

in 3 hour "pieces". The visiting scientists set their own schedule and everyone was busy. The fun time occurred when the big trawl net was opened over the sorting tables and out spilled a magnificent array of "you name it - its there". Many species were rare. My main job was to record the log of the activities at each station. My presence as the only woman aboard was also an experiment, as Dixie Lee Ray planned to make later cruises if ours worked out well, which it certainly did.

UNESCO

In December, 1963, I went with Gene to Paris where he worked for UNESCO. He had a very nice room and I shared it with him. I had no affiliation with UNESCO, just used part of Gene's room to work for WHOI. Gene's boss, Konstantine Federov, did not object, maybe tolerated it would be more correct. My contract with WHOI was to process the physical oceanography data collected on our IIOE cruise in the Indian Ocean. Specifically, I corrected reversing thermometers and determined the depth of sampling. I rented a hand operated calculator and cranked and cranked to my hearts content.

Early in 1964 Bill joined us in Paris. Languages came easily for him and to learn French he enrolled in the Alliance Française. Right next to him sat an attractive little Spanish girl from Barcelona. It didn't take long for a warm friendship to develop and bloom into love. The story of their marriage has been written in detail. Mercedes had to wait 3 months for her permanent visa, Bill had to come home for the military draft. Gene's work in UNESCO was completed in May and we had to leave them both in Paris just after they were married and return to NEL and our lives at home.

IAPSO

In 1970 when Gene was elected Secretary of IAPSO at the Tokyo meeting, our lives changed. IAPSO was an international organization and the Secretary's job was largely administrative and required a great deal of paper work and travel. I was deeply involved in writing letters and circular mailing. As a result, Gene and I were transferred from the research department to the NEL overhead function. Gene's research days were now over

and he spent his time corresponding with other oceanographers and organizing meetings throughout the world. Initially my job consisted of receiving, cataloging and sometimes semi-translating and editing the many abstracts that came in and helping Gene sort and arrange them into some semblance of subject-wise order for the different sessions.

We also traveled widely. Usually first to overlook the venue of an upcoming meeting to check its suitability, facilities and arrangements, and later to oversee the meeting, pass out travel grants and help Gene solve glitches which frequently occurred.

Travel grants were a fact of life for participants from developing countries and their distribution fell to me. IAPSO, per se, was not a funding organization and we had to raise the grant money ourselves. Fortunately, The National Science Foundation (NSF), Office of Naval Research (ONR), National Oceanographic and Atmospheric Administration (NOAA) and UNESCO were usually responsive to our pleas. The grant itself was available to grantees upon their arrival. I set up a bank account and passed out checks in local currency or usually in dollars. The cashing of my checks usually went smoothly and quickly because recipients arrived nearly penniless. The only question raised was in Honolulu when the Russian passport used for identification spelled the name differently than I had on the check. The bank called me and I verified the person, whereupon he told his colleagues that the check was cashed, "upon the authority of Katherine". I guess Russian women have no such authority.

After 17 years Gene was pleased that the IAPSO Secretaryship was taken over by Bob Stevenson and his wife Jeanie, and the office passed into the computer age.

Navy Electronics Laboratory

In 1971 I finally surmounted the bureaucratic obstacles and became a physical oceanographer at NEL, working in Gene's oceanography division. Although my actual qualifications were for a GS-15, Dr. Wilson asked me to accept a GS-7 rating in order to avoid any hard feelings in the division because of my relationship to Gene. It

took a while for my secret clearance to come through but just in time for a classified meeting in Panama City. At first I worked on the Anton Bruun cruise positions and data but gradually included Baja California thermistor chain data as well as other data collected in the Pacific and the Sea of Japan, thermal fronts, internal waves and even pollution. Several joint papers resulted from this work. During the late 60's and early 70's the laboratory's emphasis changed from research to hardware development and pure research declined.

After Gene's election as Secretary of IAPSO in 1970, our duties and work involved with IAPSO gradually replaced his declining research activities. We moved our office several times, ending up in the barracks area on top of Point Loma. In 1973 Gene retired but hung on in the emeritis program till it just became easier to do our IAPSO work at home. We converted Bob's bedroom into an office and operated successfully therefrom for the many years he held the position.

Vietnam

In 1971, Gene and I were ordered by the Navy Department to go to Vietnam, to evaluate the oceanographic laboratory in Nhatrang, and recommend equipment and facilities needed to revitalize the once famous laboratory. The war was winding down and it looked like we were winning.

We were both issued navy orders, duplicate identification badges and wished "good luck and God speed". From Saigon to Nhatrang we flew in a small army plane with seats mounted against the sides of the plane, and watched the flashes of gun fire erupt below. Our quarters were the summer presidential palace which still showed touches of the glory that had been. Situated nearby was the fuel depot and one night the enemy tried to shell it - such a racket, but fortunately they missed. The army post at Nhatrang appointed a very nice officer to take care of us. He invited us to dinner and escorted us home after dark in a jeep, complete with a rifle in his lap. We were later told not to go out after dark because of snipers. Back in Saigon our hotel was situated next to the presidential palace only this was the time of the Tet holiday. The previous year the commies took advantage of the relaxed holiday atmosphere and mounted an attack.

This year the army was prepared and we watched all day as many many soldiers were brought in to the grounds.

During the night a great commotion woke us up. I braced a chair against the doorknob, but removed it when a voice demanded, "Police - open up". In came two steely-eyed men with raised rifles who looked us over, looked around the room and unceremoniously departed. Sleep did not come easily. (See Gene's previous section).

China

While at the IAPSO meeting in Hamburg in 1983, the Chinese delegate, Ye Longfei, offered to arrange a lecture trip to China for us. This would be a new experience and we readily accepted the invitation. Both of us prepared lectures with slides and after bureaucratic hassles finally left for Asia on 1 June 1984. We first stopped in Japan to see if the people in Kushiro would be interested in the Kuroshio current, then flew on to Beijing. Great was our relief to be met on 10 June 1984 at the airport by a young man holding a big sign "Dr. E. LaFond.". He helped us through the formalities, took us in a chauffeur driven car to the hotel, helped Gene register both himself and his "accompanying person" and told us to enjoy the dining room - all expenses were on the house. This was a state to which we would like to become accustomed, but were too tired to enjoy more than soup. Our room was nice, even had a full bathroom, and we enjoyed the ever present large thermos of hot water and canister of green tea.

The following day Gene gave 2 lectures to a group, I think, mostly politicians. That evening we were guests at a fancy dinner party. Because it is bad manners to have an empty glass, a waiter stood behind the chair and continually filled our tiny glasses with "white mule", a strong, colorless liquor. One sip was my limit and as the party broke up I caught the eye of a portly gentleman across the table and offered my glass. He beamed and passed over his half consumed beer. I now have at least one confirmed friend in China.

During our short stay in Beijing our guide took us to the Great Wall, a drive out of town, a museum of beauti-

ful art - all for sale - and what we call a pharmacy, for by now my cold, caught in Japan, was in "full bloom". A woman clerk/diagnostician recommended a mixture of herbs - to be brewed as tea. It really worked and I felt better as we booked the night train for Qindao.

Our compartment had 4 berths, 2 upper and 2 lower. Gene managed the upper one over me and another woman occupied the other lower bunk. We were the only foreigners in the dining car and aroused some curiosity. Food was no problem but we were not always sure what we were eating.

In Qindao we were met by Dr. Hanli Mao, the director of the institute. During the cultural revolution he was demoted from being the director of a famous oceanographic/fisheries institution to being a janitor - and for a number of years he cleanrd toilets - and broke his health. When we knew him, tho elderly, he seemed to be in good health and when he and his wife visited our home some years later we all enjoyed each other.

From Qindao we flew to Shanghai. The departure was delayed several hours by bad weather. Also the airport was experiencing a very busy day - they had had 5 flights come in. In Shanghai we stayed at the famous Pearl Hotel - a relic of past days of glory, but still enjoyable. Here we expereienced a big city in all its crowded glory. Bicycles were everywhere, traffic signals were few and far between and no one paid any attention to them anyway, people just darted between cars and bikes. We were told that about 40 people per month don't make it to the other side. Highlight of this stop was the circus, by far the finest we have ever seen and it outshone anything we in the U.S. have ever produced.

Then on to Amoy (Xiamen). By now my previous cold was back and I was really sick. Our guide from Mao's office was concerned and we finally let him call a doctor. She came promptly, put a thermometer in my armpit and gave me a shot - a novel experience. A tap to the general area, a continuous tapping near the needle, a very slow injection and I hardly felt it. Would all our shots be so expertly done. The next morning she brought a male with her and by then I was much better. With a list of prescriptions (in Chinese) and a handful of pills we were off to Guangshou.

The hotel in Guangshou was the most elegant we have ever stayed in. The main floor/foyer was an art museum itself. One whole wall protrayed a bridge with many, many people crossing and every possible economic class was portrayed. As guests of the State we - and many other people - had our own dining room. The food was good and plentiful but the management thought all guests were eskimos and the room temperature was very, very cold. Contrasting with the warm outside, we soon learned to "bundle up". The hotel grounds were extensive and beautiful - a true oriental park.

The doctor in Xiamen (Amoy) gave us, in Chinese of course, a long list of drugs to procure at the hotel clinic in Guangzhou. This complete medical clinic was just off the main foyer and was managed by a pleasant, tho no nonsense, woman doctor who gave me a shot, took my list and gave me a handful of her own pills. By now the shot had taken effect and I felt much better, so not knowing what the pills were, I just ignored them.

The university people were most gracious and after the usual lectures we had lunch in a faculty porch, just off the students dining room. Food service was primative - rice was served from a large tub-like container, etc. After tours around the city and shopping we were soon on the train to Hong Kong. Some of the passengers were carrying presents to relatives or friends, especially ancient chicken eggs. We were told that the eggs are now dipped in a solution which ages them quickly. We tasted them at a banquet and they are really not bad but looked unappetizing to us.

Arrival in Hong Kong meant leaving China, and entrance formalities were more complicated. It seems many Chinese cannot just "enter Hong Kong", for it is still, until 1997, a British colony. We went to a hotel on the mainland, Kwonloon, toured the mall of stores nearby and surrounding streets and throughly enjoyed ourselves, except for one incident. It was raining and we ducked in under an awning - two boys did also. Soon one said "oh look" and pointed across the street. At the same time he rattled a newspaper. My pocketbook was on my left arm, close to him, and unzipped, so when he rattled the newspaper I looked down and left and did not look across the street. He

rattled for quite a time and, finally moved off with his friend. It was then that I noticed my ticket folder, containing our passports and travel documents and travelers checks was upended and just ready for a quick snatch. I was really shaken. And I learned my lesson and now keep my pocketbook zipped and unavailable. In Hong Kong a heavy rainstorm passed over and the city battened down for a typhoon. The TV gave istructions to keep windows shut, etc., and frequent weather updates. But it soon passed, and we were on our way home and our fabulous trip to China is now just a happy memory.

Scientific papers and awards

My scientific career started at Scripps with a joint paper with Eric Moberg, "The boron/chloride ratio in sea water", which I presented at the AAAS meetings in Berkeley in 1936. Later that year Gene matriculated and I worked at the university there, thus interrupting my scientific career.

The following years were devoted to raising our two boys. But even tho I was at home I helped Gene with his papers. And when the boys were almost grown I again had the opportunity to become involved with scientific work.

Military Oceanography Award, 1969

On the IIOE I got my hands wet again. Then afterwards in Paris I worked on the data. Finally, when employed at NEL I analyzed oceanographic data, wrote reports and presented the results at scientific meetings. Most papers were authored jointly with Gene, but a few were my own or I was listed as senior author. One I wrote in German and it was published in a German periodical. In all, 38 scientific papers bear my name as author. The titles of most are listed in Gene's section of this book.

Awards. Because of our numerous publications, Gene and I were awarded the 1969 Military Oceanography Award by the Oceanographer of the Navy, at the Navy Assembly in Monterey in 1970. The plack reads "For outstanding contributions to the scientific investigation of near shore oceanographic processes".

NEL Environment Award, 1972

At the NEL laboratory in 1972 we were given the NEL Environment Award by the Director, Captain Charles Bishop, for having the most attractive office, environmentally speaking.

San Diego State University Distinguished Alumnus Award

Probably my most prestigeous award was the "Distinguished Alumnus Award" presented to Eugene Cecil LaFond and Katherine Gehring LaFond, by the San Diego State University, Alumni and Associates, College of Sciences, on May 20, 1981. This was a formal affair. Professor Dudley Robinson (left in photo) our former chemistry professor, and his wife Irene, were at the presentation.

Ancestors

The Table of Contents lists the names of LaFonds, Imes, Gehrings and Greenfields. However, I am anxious to complete this write-up of my life and so have not included a section on our ancestors. We plan to include them in a Second Edition.

Conclusions

Much could be included to embellish this account of my life - especially the Indian years and experiences. A goodly amount of material has already been collected and written but at this writing, and in my mid-eighties, the task of assembling it into a book is now greater than I want to take on.

As I look back over the years, three factors in my life stand out in great relief - the joy of my wonderful marriage of more than 60 years, the joy of our two sons, and the joy of my work. I hope this small account will attest to a very rewarding life both for myself and my beloved Gene.