

CHAPTER 2

WALTER KENRICK FISHER, DIRECTOR

In the winter of 1918, Stanford University President Ray Lyman Wilbur appointed Walter Kenrick Fisher as the first director and first full-time resident faculty of Hopkins Marine Station.¹ Walter K. Fisher's interest in biology was inspired by his father, Albert Kenrick Fisher - a noted vertebrate zoologist and ornithologist who served as one of the founders of the U.S. Bureau of Biological Survey. Working as an assistant with the Bureau of Biological Survey, WK Fisher, himself, gained the skills of a trained field naturalist. For his college education, Walter K. Fisher entered Stanford University in 1897, completing a bachelor's degree (B. A.) in 1901; a Master's degree (M. A.) in 1903 [thesis title: "*The anatomy of Lottia gigantea Gray*"] and a doctorate degree (Ph. D.) in 1906 [thesis title "*The starfishes of the Hawaiian Island*"]. He joined the Stanford faculty in 1902 as assistant instructor in zoology, becoming a full instructor in 1907, an assistant professor in 1909, and professor of biology in 1925.

As suggested by the titles of his M. A. and Ph. D. theses, Fisher's chosen field of expertise was invertebrate zoology, a subject that required a broad knowledge of the anatomy, taxonomy, and natural history of marine invertebrates. Within this field, his specialty was the biology of the echinoderms, a phylum that includes both sea urchins and starfish.² Part 1 of Fisher's major work "*Asteroidea of the North Pacific and Adjacent Waters*", a monograph of the U. S. National Museum with 400 pages and more than 100 plates was published in 1911. Part 2 of this monograph appeared in 1928, and part 3 in 1930. Besides these major works, were authored numerous smaller publications –beautifully illustrated by WK Fisher himself.³

During the first decade of Hopkins Marine Station, WK Fisher served as the only full time resident faculty positioned at the seaside laboratory. As such Fisher's responsibility extended far beyond teaching and research, and included a handful of duties once described by Professor Lawrence Blinks: "*It was he who first came down here as resident director in 1918, and he was for nearly ten years the only resident faculty member, working the year round almost single-handed, not only as director, but secretary, custodian, and everything but janitor, in the building.*"⁴

[Blinks, Lawrence (1953). Letter of Correspondence to Dr. J. E. Wallace Sterling, November 4, 1953). Stanford University Archives]⁴

A letter of correspondence from famous geneticist Thomas Hunt Morgan to WK Fisher, suggests that Fisher, at times, was put in the position of coordinator for visiting researchers, which included being responsible for making the necessary arrangement for their housing, meals, transportation and research supplies.

February 10, 1920

Columbia University in the City of New York

Department of Zoology

W. K. Fisher

Hopkins Marine Station,

Pacific Grove, Calif.

Dr. Fisher,

I was at the point of writing you when your letter came with its good news that you will be able to accommodate us during the coming summer. Concerning living quarters, we would be most grateful to you if you could find out for us or put us in the way of finding out what possibilities are available in Pacific Grove during the summer months.

Concerning myself and family (6 of us in all) we shall need a house with at least four bedrooms, a dining room and kitchen. It would be better to have one or two rooms in addition to this but it is not essential. We need not be immediately at the laboratory but somewhere not too far off. And, of course, if possible, we should like to have enough room around the house for the children to play in. As for rent, we should be prepared to pay anywhere from \$150 to \$300 a month. We hope to buy a Ford automobile as soon as we arrive, and as none of us are experienced we think a new machine would be worth our while. There may be some trouble I believe in obtaining machines unless ordered ahead and I am thinking of placing an order here now for a machine to be delivered on our

arrival four months hence. It would be desirable, therefore, to have some sort of general garage or rent a separate place for it. Any advice you could give me in this direction would be appreciated. If possible, we want to do our cooking at home on account of our children, but in order that Mrs. Morgan shall be free from other things, we hope to be able to obtain a cook, although we realize how difficult this is anywhere, more especially in California at the present time. Should you here of anyone available, I hope you will let us know. Possibly we could do better by going to some boarding house in the vicinity if such are to be found, or possibly have someone come in for part of the day and cook one or two of the meals. Local conditions, of course, will have to decide these questions. Concerning the Bridges family, consisting of himself, wife, three children and an aunt, the enclosed letters from Mrs. Bridges will explain their situation to you. They want a smaller, less expensive house, as you will see by her letter.

The two women assistants who go along will probably not have much trouble in getting room and board in the village. Any information concerning such possibilities you could furnish will be useful to them. Sturtevant will look out for himself. I was glad to hear from your letter that we will be able to obtain bananas. The only other requirement will be milk bottles, and I propose to purchase these and send them to you at the laboratory. Can you give me the name of any Company in San Francisco or elsewhere that would supply milk bottles, wholesale rates? I suppose it would be cheaper to buy them in California than to have them sent from here. I should be greatly obliged to you for any information on the above points.

*Sincerely,
TH Morgan*

[Morgan, TH (1920). Letter of correspondence to Walter K. Fisher, February 10, 1920. Stanford University Archives]⁵

In addition to his serving as the Director of Hopkins Marine Station, WK Fisher served as the Curator of the Department of Invertebrate Zoology for the California Academy of Science, a position he held beginning in 1917 until his death in 1953.⁶

President Ray Lyman Wilbur's selection of Walter K. Fisher as Director of Hopkins Marine Station ensured that a portion of the teaching and research taken up at the seaside laboratory was to be directed toward the taxonomy and systematics of marine invertebrates. Beyond the extended emphasis on the classification of invertebrates, a great expansion and widening of the Marine Station's program was achieved under Fisher's administration. During the time WK Fisher served as director of the seaside laboratory, a balance was implemented between the various disciplines of biology: botany, embryology, microbiology, physiology and zoology.⁷

**ADDITIONAL RESIDENT FACULTY FOR
HOPKINS MARINE STATION**

In 1925, a second Stanford faculty member, Professor Harold Heath, was granted permission to serve as a full time resident at Hopkins Marine Station. The following year, in 1926, Tage Skogsberg was recruited to Stanford for a third faculty position allocated to Hopkins Marine Station. Skogsberg's appointment to the seaside laboratory was followed by the recruitment of Cornelius Bernardus van Niel, in 1929. Next, Lawrence Blinks, in 1933, was recruited to the faculty at Stanford; a decade later Blinks was appointed to director at Hopkins Marine Station. Blinks recruitment was followed by Rolf Bolin's appointment to the position of full instructor in 1935, assistant professor in 1937, associate professor in 1940, and full professor in 1949.

HAROLD HEATH

Born in Vevay, Indiana, in 1868, Harold Heath graduated from Wesleyan University of Ohio in 1893, during which time he served as instructor of Biology from 1890-1893. He next spent two years (1894-1896) as Professor of Biology at the College of the Pacific, Stockton California and as an instructor of invertebrate zoology at Stanford University. For graduate school, Heath attended the University of Pennsylvania (1896-1898) with Professor E. G. Conklin serving as his primary advisor.⁸ Harold Heath participated as a student at the original Hopkins Seaside Laboratory in 1894, and instructor in the summer courses from 1895-1899, serving as Instructor in Charge during the summer of 1909. He came to the faculty of Stanford University, first serving as Assistant Professor (1898-1901), then Associate Professor (1901-09), and Full Professor (1909-1933), upon which time he became Professor Emeritus.⁹

In 1925, having obtained the reluctant consent of Ray Lyman Wilbur, Harold Heath became the next full time resident faculty positioned at Hopkins Marine Station. Over the course of the next nine years, Professor Heath instructed courses in embryology, invertebrate and vertebrate zoology, while supervising undergraduate and graduate research in embryology, morphology, and zoology.

For the Annual Report of the President of Stanford University For The Forty Second Academic Year ending August 31, 1933, WK Fisher provided the following: *Professor Heath retires at the close of the present academic year, thus terminating a teaching career of which nearly forty years have been spent in the service of Stanford University. Throughout that period he has achieved a position of distinction in Zoology and has held the merited affection and esteem of his students and his colleagues. We note his retirement with no merely formal expression of regret.*¹⁰

KARL JONAS TAGE SKOGSBERG

In 1920, Tage Skogsberg was awarded his doctorate, from the University of Uppsala, Sweden with the completion of a Ph. D. dissertation titled: *Studies on Marine Ostracods I. Cypridinids, Halocyprids and Polycopid*. That same year, Skogsberg traveled to Hopkins Marine Station, for the purpose of investigating the marine Ostracods of Monterey Bay. Remaining in California, Skogsberg worked for a short time as a scientific assistant for the California Fish and Game Commission (1922), then a research assistant at the University of California, (1923-1925). In 1925, Tage Skogsberg returned to Stanford as an associate professor in zoology, instructing the marine zoology course offered during the summer quarter (1925-26). The following year, Skogsberg was recruited to join the two resident faculty of Hopkins Marine Station, Walter K Fisher and Harold Heath. The following letter from David Starr Jordan to WK Fisher suggests that part of Skogsberg's new role would be to serve as curator of fishes.

*David Starr Jordan
Stanford University
California*

*Mr. Walter K. Fisher
Hopkins Station,
Pacific Grove, Calif.*

My dear Dr. Fisher:

I had a very good interview with Dr. Skogsberg, I think that he is just about the man as we want as assistant professor and curator of fishes. While he does not know much about fishes, he knows what in the long run most important-the best methods of taxonomy.

I have written to Snyder to this effect, and sent a copy of a letter to Wilbur. I have thought that a letter to me from you, stating effectively your view of the young man would be a good thing for me to send to Snyder and Wilbur.

*Very truly yours,
David Starr Jordan*

Jordan, David Starr. (No Date). Letter from DS Jordan to WK Fisher. Stanford University Archives - Hopkins Marine Station ¹¹

Working in both the field of oceanography and invertebrate zoology, Tage Skogsberg research was directed at understanding the ecological aspects of the open waters, and the comparative morphology and taxonomy of marine invertebrates.¹² Soon after his recruitment to Hopkins Marine Station, Tage Skogsberg was placed in the position of supervising students whose research projects were of an ecological bent.

CORNELIUS BERNARDUS VAN NIEL
HERZSTEIN PROFESSOR OF BIOLOGICAL SCIENCES

Cornelius Bernardus van Niel joined the Stanford faculty at the Hopkins Marine Station in Pacific Grove in 1929, and it was here he remained throughout his career. From this small seaside community, Cornelius B. van Niel introduced the study of microbiology to America while investigating the biochemistry of photosynthesis. In 1946, CB van Niel was appointed Herzstein Professor of Biology. The Herzstein Professorship in Biology is the oldest of the endowed chairs at Stanford. It was established in 1928 by an endowment from Dr. Morris Herzstein, a San Francisco physician. The holder is expected to promote and conduct original biological and physiological research. In 1964, C. B. van Niel would be the first biologist to be awarded the Presidential Medal of Science.

The summer course in microbiology taught by van Niel became legendary among the circles of academic science. Martin Dworkin of the Department of Microbiology at the University of Minnesota, in an interview conducted by Professor Clarke A. Chambers, describes C.B. van Niel summer course through his first hand experience.

MD [Martin Dworkin]: I then did a post-doc at Berkeley with one of the great Canadian microbiologists, Roger Stanier. I took a course at the end of my post-doctorate career with a microbiologist by the name of "Case" van Neil [sic Niel] that changed my life. It was a course that was unlike any course I had ever had before. What he did was he showed me what teaching in the best sense could really be. One of the things that was characteristic about van Neil's [sic Niel] course was that he took an historical approach to his teaching. So much of teaching, certainly now ... to a lesser extent then, was bottom line teaching in science. Here are the facts. Here is the way it is. Move on to the next thing. If you don't get these facts, you're not ready to move on to the next thing; so, one is presented with a lot of facts and a lot of information that doesn't really get under your skin in the way it does when it's unfolded for you. His course was a summer course. He would give eight-hour lectures, literally. He took a break for lunch. He would start lecturing in the morning, and lecture to lunch, have lunch-this was in Pacific Grove; we'd go out, and sit on the rocks, and watch the ocean, have a sandwich, and come in-and then

lecture again from one until five o'clock on essentially the same subject. He would unfold the subject for us. Where did it start? Where did it go wrong? How did the ideas come by? Who was talking to whom? Where did it come from? You ended up with a sense of that material that was very, very different than if somebody is just giving it to you. I loved that.

CAC [Clarke A. Chambers]: You took this as a model in your own teaching?

MD [Martin Dworkin]: Yes, but it was a model that I was never able to use because we're trapped into a way of doing it. You come into a class and you've got forty-five minutes. The bell rings. The bell rings to come. The bell rings to go. You've got to give them the information so that they can take the next course in the sequence; and if you don't, they're in trouble and you're in trouble. The only time that I've been able to do this was over the past five years. I've been course director for a course at Wood's Hole, the Marine Biological Lab. I formulated the course in a similar way to this van Neil [sic Niel] course. Van Niel's philosophy shaped the Microbial Diversity Course at the Marine Biological Laboratory in Woods Hole, founded in 1970 by Holger Jannasch and Ralph Wolfe. This course takes place each year for at first 12, now 6 intense weeks which inspire students and teachers alike. This unique and freewheeling exposure to the microbial world has influenced a number of career paths over the years, and it is not uncommon that former students return as teachers at a later time.¹³

ROLF LING BOLIN

In 1928, Rolf Ling Bolin entered Stanford University as a graduate student with a keen interest in biology. Under the direction of Professor Tage Skogsberg, Bolin began his research on the embryology of fish. In 1929, he completed a Masters (M. A.) thesis titled *The Gross Embryology of Orthonopias Triacis and Engraulis Mordax: A Comparative Study of Demersal and Pelagic Fish Eggs*. That same year, Bolin began his Ph. D. research focusing on the taxonomy, spawning habits, early embryology and ecology of the Cottoids of California.¹⁴ Financial support was limited, as this was the period of the Great Depression, so Bolin supported his years as a Ph. D. student working as an assistant for the Hydrographic Survey of Monterey Bay and helping to instruct the marine zoology course. In 1934, Bolin completed his Ph. D. studies with a dissertation titled *Studies on the California Cottidae: An Analysis of the Principles of Systematic Ichthyology*. Upon receiving his doctorate, Bolin came to the faculty of Stanford University, first serving as acting instructor in marine biology and oceanography. Bolin was next appointed to full instructor in 1935, assistant professor in 1937, associate professor in 1940, and full professor in 1949.¹⁵ For a time Bolin served as assistant and associate director of Hopkins Marine Station, and served as chief scientist for the Te Vega program.

At Hopkins Marine Station, Bolin instructed courses in ichthyology and the ecology of marine animals, while at the main campus at Palo Alto he taught comparative anatomy. According to Stanley Weitzman: *He was a man of maturity and fairness who also had a great sense of humor...Bolin's interests encompassed ecology, systematics, and morphology. He was particularly interested in deep-sea fishes and open-ocean ecology. Monterey Bay was ideally suited for such studies, with deep water located close to shore. A wide variety of habitats were thus available for study in a relatively small area. Bolin was a yachtsman at heart and loved to travel on the open ocean. He obtained oceanographic grants from various agencies, which allowed him to do just that. Much of this work was done on Stanford's research vessel, the Te Vega.*¹⁶

Quoting from David G. Smith (2007) article about ichthyologists Stanley and Marilyn Weitzman.: *"Stan points out an interesting facet of Bolin's work that has been largely overlooked. In his thinking about the use of data in studying relationships among*

fishes, Bolin foreshadowed the cladistic revolution that lay in the future. He published a paper on marine cottids (Bolin, 1944), in which he used generic categories different from those traditionally accepted. In response to criticism, he published another paper (Bolin, 1947) explaining his reasoning. Here, he emphasized the value of specialized characters over primitive characters in assessing relationships. He did not pursue these ideas further, and no one at the time seemed to grasp their significance. It demonstrates, however, that new scientific theories seldom appear fully formed out of nothing. Although Willi Hennig is rightly given credit as the "father" of phylogenetic systematics, some of these ideas were already circulating and only needed someone to put them all together."

LAWRENCE BLINKS

Lawrence Blinks finished two years of undergraduate study at Stanford (1919 - 1921) followed by two years at Harvard (1921-1923) majoring in biology.¹⁷ His education extended into graduate school at Harvard with an emphasis on general physiology. Blinks returned to the Hopkins Marine Station to teach a course during the summer quarter of 1931, only to be recruited to a faculty position at Stanford in 1933. Lawrence Blinks continued to teach and carry out research at the Hopkins Marine Station during his first years on the Palo Alto campus.¹⁸ In 1943, Dr. Ray Lyman Wilbur, Chancellor of Stanford University, announced that Dr. Lawrence R. Blinks, Professor of Biology, would succeed Walter K. Fisher, as Director of Hopkins Marine Station.¹⁹

ADVANCED INSTRUCTION IN BIOLOGY

From the start the idea was for the teaching and research efforts associated with Hopkins Marine Station to be brought into close contact with the biological work at Stanford University.²⁰ With the relocation of the seaside laboratory to China Point, the decision was made to use the marine station to provide both regular and advanced instruction in biology to students during the spring and summer quarters of the academic school year. In an effort to facilitate a strong connection with the teaching and research efforts associated with the University, students were encouraged to include a quarter of undergraduate work at the Hopkins Marine Station.²¹

The first summer quarter at the new location (1918) offered in General Zoology (Starks), Marine Botany (McMurphy), General Physiology (Martin, Weymouth), Invertebrate Embryology (Heath), Marine Zoology and Ecology (Fisher), Economic Zoology (Heath), and special research work in Botany, Physiology and Zoology.²²

While the first summer quarter at the new location was offered in 1918, the first spring quarter was not held until eight years later. With the addition of spring quarter in 1925, the range and diversity of instruction expanded with the following courses offered: Marine Zoology (Fisher), Marine Invertebrates (Fisher), Comparative Embryology (Heath), Comparative Anatomy of the Vertebrates (Engle), and Zoology Research (Fisher, Heath). The summer quarter to follow, packed full of courses of instruction,

provides a glimpse as to the bustle of intellectual activity taking place at the marine station.

The summer quarter of 1925 offered course of Marine Zoology (Skogsberg), Elementary Physiology of Marine Organisms (Martin, Weymouth, Olmsted), Field Botany (Abrams), Marine Invertebrates (Fisher), The Invertebrates (Fisher), Comparative Embryology (Heath), Germ Layers and Organ Systems of the Metazoa (Kingsley), Comparative Anatomy of the Vertebrates (Wells), Advanced Physiology of Marine Organisms (Martin, Weymouth), Heredity and Environment: their Interaction in Producing the Characteristics of Organisms (HH Jennings), Advanced Botany (Abrams), Zoology Research (Fisher, Heath).²³

A DIVERSE GROUP OF VISITORS

From the earliest beginnings, Hopkins Marine Station attracted a most diverse group of Stanford faculty and visiting scientists who contributed, not only to the courses of instruction, but toward the use of the facility for a variety of research purposes. As WK Fisher had mentioned in his letter to Vernon Kellogg, after relocating to China Point, the Hopkins Marine Station began to serve as a central location along the California coasts for researchers to meet, share ideas and collaborate on research efforts. Those scientists who came to utilize the facility for their research interests were often mentioned in departmental reports prepared by Walter K. Fisher. The following bit from WK Fisher's departmental report for 1920 indicates how quickly the facility came to be utilized by visiting scientist.

" From January 7 to March 10, [1920] Dr. Frank R. Lillie, Professor of Zoology, University of Chicago, and Director of the Marine Biological Laboratory, Woods Hole, worked on problems of fertilization using the two species of common sea urchins. Dr. Lillie was assisted by Mr. J. Nelson Gowanlock, University of Manitoba, and assistant in Zoology, University of Chicago. During the spring quarter of 1920, Dr. H. H. Newman, Professor of Zoology, University of Chicago, worked on hybridization and artificial parthenogenesis, using sea stars and sea urchins (1920). During the latter part of the spring quarter and the summer quarter, Dr. T. H. Morgan, Professor of Zoology,

Columbia University, Dr. A. H. Sturtevant, Dr. Calvin B. Bridges, Miss E. M. Wallace, and Miss P. C. Reed, of the Carnegie Institution, investigated problems in genetics as illustrated by the fruit fly, Drosophila. Dr. Otto Louis Mohr, Professor of Anatomy, University of Kristiania, Norway, also worked on genetics, using Drosophila. Dr. Lund, of the University of Minnesota, spent a few days during the latter part of August working on the physiology of hydroids, and at the same time. Dr. Frank A. Potts, University of Cambridge, England, visited the station to see the commensal annelid worms of the region. Dr. Gertrude Van Wagenen started work on a monograph of the actinians and corals of Monterey Bay."²⁴

From the above paragraph, one finds the name Mr. J. Nelson Gowanlock, University of Manitoba, and assistant in Zoology, University of Chicago. During his time in Chicago, James Nelson Gowanlock numbered among his friends, AE Galigher and Edward F. Ricketts, the three of whom lived together in an apartment the men referred to as "The Boar's Nest."²⁵ Shortly after J. Nelson Gowanlock and Frank R. Lillie had spent the winter as visiting scientists at the Hopkins Marine Station, AE Galigher set off on a sometimes dirt "Lincoln Highway" with wife and mother bound for the Pacific Grove California.²⁶ Shortly after his arrival to the Monterey peninsula, Galigher established a biological supply company he named the Pacific Biological Laboratories. The following year, AE Galigher welcomed his former college roommate, Edward F. Ricketts as a junior partner to the business.

Reviewing of the Hopkins Marine Station guestbook, one finds the signatures of others visitors, among them several notable scientists, who visited Hopkins Marine Station in 1920, including JMD Olmsted, Toronto Canada [UC Berkeley, Physiology], Julius W. Eggleston, Riverside, California, John B. Henderson, Washington DC (United States National Museum-Smithsonian) [Molluscs], Gerrit Smith Miller Jr., Washington DC (United States National Museum-Smithsonian) [American zoologist and botanist], John Sterling Kingsley, Urbana, Ill. [American Professor of Biology and Zoology], Seitaso Goto, [Imperial University, Tokyo, Japan], Dr. [EJ] & Mrs. Lund, University of Minnesota, Minneapolis Minn., Herbert Spencer Jennings, Baltimore, Maryland Professor of Zoology, [John Hopkins University], Vernon Kellogg, Washington, D.C.,

[John D. Rockefeller Foundation], Charlotte Kellogg, Washington, D.C., Jean Kellogg, Washington D.C., Mr. and Mrs. Timothy Hopkins, Menlo Park, CA, William A. Hilton, Pomona College, Clairmont, CA, Harry H. Laughlin, Cold Springs Harbor, NY [Director of the Eugenics Record Office (ERO) was founded at Cold Spring Harbor, New York,], Tage Skoksberg, Uppsala, Sweden, Edgar D. Peixotto, San Francisco, W. J. V. Osterhout [Professor of Botany, Harvard University], and Myra M. Sampson, [Professor of Zoology, Smith College, Northampton, Mass.]

Among the extended list of scientific investigators who visited the lab during the time WK Fisher served as director, were a number invertebrate specialist who, through their natural history work with the marine fauna, made significant contributions to the taxonomy and systematics of Pacific coast marine invertebrates. Included in the initial wave of visiting invertebrate specialist who used the Hopkins Marine Station for their research was Dr. Myrtle E. Johnson, who, in 1921, spent several weeks identifying the common invertebrates of the Monterey Bay.²⁷ Dr. Johnson's visit involved her efforts toward organizing the publication of her book, in collaboration with Harry James Snook, titled the *Seashore Animals of the Pacific Coast* (1927).²⁸ This book, often referred to amongst invertebrate biologist as "Johnson and Snook" was credited as the first substantial publication that identified and described, be it organized phylogenic manner, (i.e. one chapter on sea stars, one chapter on molluscs), the invertebrate shore life of the Pacific coast.

A little over one decade later, following the publication of the *Seashore Animals of the Pacific Coast* (1927) appeared a book titled *Between Pacific Tides: An Account of the Habits and Habitats of Some Five Hundred of the Common, Conspicuous Seashore Invertebrates of the Pacific Coast Between Sitka, Alaska, and Northern Mexico* by Edward F. Ricketts and Jack Calvin (1939).²⁹ In contrast to the Johnson and Snook's work, the book by Ricketts and Calvin associated the marine invertebrates with their habitat, rather than in terms of their phylogeny. This method of presenting the marine invertebrates based on the environment within which they inhabit was in response to a new discipline in natural science termed *ecology*.