

THEODORE HENRY HITTELL'S

CALIFORNIA ACADEMY
OF SCIENCES
1853-1906

Alan E. Leviton and Michele L. Aldrich

California Academy of Sciences

Theodore Henry Hittell's

**THE CALIFORNIA ACADEMY
OF SCIENCES**

A NARRATIVE HISTORY: 1853-1906

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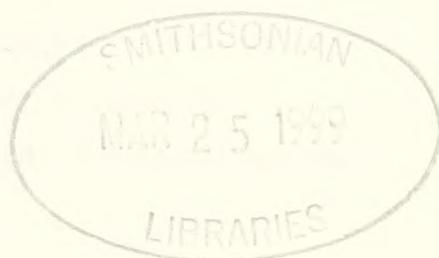
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THE CALIFORNIA ACADEMY OF SCIENCES

A NARRATIVE HISTORY, 1853-1906





THEODORE HENRY HITTELL

1830-1917

(Photograph taken about 1885)

Courtesy, Geoffrey F. Dunn, Santa Cruz, California

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PREFACE

This is indeed a long-delayed publication. Theodore Henry Hittell wrote a historical sketch and chronology of the first fifty years of the California Academy of Sciences, 1853 until 1906, which was in press and destroyed at the time of the San Francisco earthquake and fire in 1906. Fortunately, Hittell's manuscript survived, but in the urgency of rebuilding the museum in Golden Gate Park it was misplaced and "lost" for many years. It was at last rediscovered when records were moved to the new Cowell Hall in 1969.

The manuscript was transcribed and typed and proved to be a most valuable history of the foundation and first half century of the oldest scientific society in the western United States.

Dr. Alan E. Leviton, Curator of Herpetology of the Academy and Executive Director of the Pacific Division of the American Association for the Advancement of Science, is an authority on the pioneer scientists who explored the natural history of California and the West during the last half of the nineteenth and early twentieth centuries. Frequently they were associated with the California Academy of Sciences. Most fortunately, Dr. Leviton undertook the editing of the Hittell manuscript in collaboration with his colleague Dr. Michele L. Aldrich, an historian of science and former archivist of the American Association for the Advancement of Science.

The comprehensive index which they compiled has more than 50 pages of closely-spaced double-column entries, which attests to the scope of the Academy's early activities. As Leviton once observed, "I think this will become a basic reference. And now, historians of science and institutions will no longer have an excuse for ignoring us or the active community of pioneer scientists that initiated and sustained the scientific enterprise along the Pacific Coast during the second half of the 19th century."

Theodore Henry Hittell became a member of the Academy on September 5, 1887, a life member in 1903, and a member of the Board of Trustees in 1909, serving until January, 1915. He died February 23, 1917, at the age of 86.

Hittell was an attorney who came to California in 1855. He was a writer, historian, journalist, and accomplished artist. He was a linguist, and became expert in Spanish and Mexican land grants. He authored a four-volume history of California. He was attorney and advisor for James Lick, and later a trustee of the Lick estate. He was, in part, responsible for Lick's generous bequests to the California Academy of Sciences and the California Historical Society.

A memorial tribute to Hittell and acknowledgment of his accomplishments was

published in the *Proceedings of the California Academy of Sciences* on June 17, 1918. It is reprinted as an appendix (Appendix H) to this publication.

In addition to Drs. Leviton and Aldrich's valiant labors as editors, Mr. Roy Eisenhardt, Executive Director Emeritus of the Academy, encouraged its final preparation and publication, as did Mr. Paul L. Davies, Jr., former Chairman of the Board of Trustees, who also provided financial and moral support.

Mr. Frank Hittell, a surviving lineal descendent of Theodore Hittell, and his wife Jeanne have long been members and supporters of the Academy. They provided the portrait of Theodore Hittell (frontispiece).

Geraldine Kendrick Morris Lindsay (1916-1983) was the founder and first president of the Academy's Docent Council. She was an Academy trustee and benefactor of the institution. Gifts for the publication of this Academy chronology were made in her memory.

George Edmund Lindsay
Executive Director Emeritus
California Academy of Sciences

October 3, 1995

FOREWORD

Several attempts at abbreviated histories of the early days of the California Academy of Sciences have been attempted. Perhaps most significant among these was Theodore Henry Hittell's essay in this volume (Appendix A) that was prepared for presentation at the Semi-Centennial Meeting of the Academy held on May 18, 1903. It was intended also for publication as the introductory chapter to a chronology of the Academy from its founding to 1906 that he had assembled between September 1903 and early 1906 and which was in the hands of the printer when the earthquake struck the city on April 18, 1906. Although most of the manuscript and a few pages of galley were recovered from the print shop and the Academy, where all but the first 80-or-so pages of the manuscript were at the time, the project was set aside as the Academy had to deal the more serious matters upon which its very existence depended.

In 1893, Charles Frederick Holder, in celebration of the opening of the Academy's new museum on Market Street in 1891, published an article in *The Californian* titled simply "The California Academy of Sciences." Although it gave a brief account of the earliest days in the life of the Academy, it dealt largely with the "current" Academy, the new building, its displays, its research facilities, and the principles then guiding the institution, its trustees, and its staff.

In 1903, Theodore Hittell began work on the Academy's chronology. He had available all the pre-earthquake documents, minute books, published records of meetings, and the extensive records of the corresponding secretary. However, the chronology, largely a verbatim extract of the minute books and published proceedings of Academy meetings, also included occasional additional insights by Hittell himself based on his own knowledge of people and events. Most notable among these were his all too brief observations on James Lick, whom he knew intimately as one of his attorneys and confidants, and his previously unpublished description of the events immediately following the devastating earthquake and fire that ravaged San Francisco 18-19 April 1906.

In 1918, Charles B. Turrill read a paper before a meeting of the Academy in which he also talked about its early days. Turrill had become a member of the Academy on June 20, 1870 and had known many of the early Academy members. Thus, like Hittell, he contributed first-hand experience to his commentary, part of which, his description of the visit of Louis Agassiz in September of 1872, is quoted in Appendix D.

Lastly, in November 1942, the late Robert Cunningham Miller, a former Director of the Academy, read a brief essay at the meeting of the California Historical Society

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Chapter XVIII — Year 1875.

The annual meeting was held January 7. The president and officers presented their reports showing the condition and progress of the Academy during the past year. The annual election resulted in the choice of Professor George Davidson as president; Henry Edwards, first vice-president; Henry C. Hyde, second vice-president; Dr. A. B. Stout, corresponding secretary; Charles G. Hale, recording secretary; Elisha Brooks, treasurer; Charles Dyer, Librarian. W. G. W. Hartford, director of the Museum; David B. Bolton, R. G. C. Kearns, George H. Gray, Ralph C. Harrison, Thomas P. Madden, William Ashburner, and John D. Miller, Trustees. An nomination of the Council Professor George Davidson was elected an honorary life member. In the Board of Trustees, it appeared that there were not sufficient funds on hand to pay the tax bill of \$2,584.81, assessed against the property of the Academy, and Gen. Bolton, as president of the Board, was authorized to make an arrangement with the Bank of California to pay the taxes on the Market Street property. A bill of Henry B. Newhall for \$215.85, being \$150 rent of the Academy building for the month of December, 1874, and \$65.85 for repairs of building, was ordered paid. Gen. Bolton then presented to the Board his annual report, which, it appears, was never read to the Academy. He commenced by saying that it was his duty to report the condition of the temporary affairs of the Academy at the close of the year just past, but it was, neither pleasant nor satisfactory to him to do so. The treasurer's report showed that the indebtedness of the institution was over \$4,000, and this was the more unsatisfactory for the reason that the most rigid economy had been practiced, so much so that complaints had been made of the Trustees for declining to ~~allow~~ ^{allow} expenses which there was no money to ~~pay~~. But it had been the unanimous determination of the Board to ~~make~~ ^{incur} ~~no~~ ^{no} ~~debt~~ ^{or allow the creation of} ~~or allow the liability~~ against the Academy, which could not be met from what could be reasonably expected to be the revenue of the Society, ~~or~~ ^{or} to rush into debt, without certainty of the source from which the necessary funds would be forthcoming, would ~~not~~ ^{not} be to jeopardize all the valuable property of the Academy; and that the Board would never consent to do; under the circumstances any accusation against the Trustees of too much economy ~~was~~ ^{was} not only ~~unfounded~~ ^{unfounded} but unjust.

He regretted he must go on to say, that the very moderate and reasonable hopes of the Trustees, at the close of the last year, of the receipt of certain funds, being the proceeds of personal property, at the Lick home, which had been specifically donated to the Academy by the late James Lick, had not been fulfilled, although the property had been sold and those claiming to be the Trustees of the Lick estate had received the money. Such unreasonable conditions had been imposed upon the Academy, without compliance with which they would not pay over the money, that the Academy had been precluded from the receipt of the same. Although the managers of the estate had found or assumed authority, to sell the property, and receive the proceeds, they would ~~not~~ ^{not} consent to pay us our portion, notwithstanding the authority to sell and to pay over the proceeds were inseparable under the terms of Mr. Lick's deed. And he would further say that the parties managing the Trust under Mr. Lick's deed did not seem to be disposed to acknowledge the relationship of the Academy of Sciences

on “The California Academy of Sciences and the Early History of Science in the West.” His remarks were then published in the December, 1942 issue of the *California Historical Society Quarterly*. Although a readable essay, it suffers from not having been based on a critical review of source materials. Rather Miller accepted much of the oral tradition that had evolved over nearly a century of Academy history plus what he had gleaned from the typescript copy of Hittell’s original manuscript. Unfortunately, both oral tradition and the Hittell manuscript suffer to some extent from the same malady, the lack of verification of the earliest days of the Academy and of the people involved. For instance, Miller, like Hittell, stated that Andrew Randall was a gunner aboard the *Plymouth*, Commodore John Sloat’s flagship, when the latter entered Monterey Bay in 1846, and that he jumped ship and remained in California to become the first president of the California Academy of Natural Sciences. However, it was not gunner Andrew Randell (corrected spelling), but David Dale Owen’s field assistant in the Federal geological survey of the Wisconsin-Minnesota territories, Andrew Randall, who came overland to California in 1849 with Col. James Collier’s party, who became the Academy’s first president.

Many publications, books and shorter essays treat the 19th century history of natural history in the United States, and in some of these there is brief mention of the Academy. However, all too often, authors were unaware of any connection whatsoever, or if aware, dismissed the connection with only passing notations. Lester Stephens’ delightful biography of Joseph LeConte^{F.1} offers one such example. Stephens mentions LeConte’s participation in the Academy only once, though his association with the Academy spanned more than two decades, in the context of LeConte’s concern that the Academy did not publish his paper on the Carson Prison footprints (*q.v.*) in a timely way. LeConte was an active contributing member of the Academy for many years and as Stephens observed, was a key player in the controversial interpretation of the Carson Prison fossil footprints, which attracted the attention of other distinguished paleontologists of the time, E. D. Cope and O. C. Marsh among them. In all fairness to Stephens and others who have written biographies and histories of 19th century western American science, until now, with publication of this chronology, there was scarcely anything, save for the unindexed minutes of Academy meetings unevenly spread across nearly 50 years of *Proceedings* publications, to which historians could turn that would tease the imagination or even suggest opportunity for more in-depth investigation. So little survived the earthquake and fire of 1906!

To the best of our knowledge, save for obituaries and memorials, Joseph Ewan’s 1953 essay on “San Francisco as a Mecca for 19th century naturalists” and Michael Smith’s 1987 “Pacific Visions: California Scientists and the Environment, 1850-1915,” few biographical sketches or essays on early^{F.2} naturalists of the West have

^{F.1} Stephens, Lester D. 1982. *Joseph Le Conte: Gentle Prophet of Evolution*. Louisiana State University Press, Baton Rouge, LA.

^{F.2} We specifically exclude, for instance, such references as Roland Alden and John Iffit’s 1943 essay on “Early Naturalists in the Far West”, the explorations of John Frémont, the geology of John Tyson, or the many other references which deal largely with pre-1850 natural history explorations and study because they predate the founding of the Academy and are not relevant to its history.

been written or are currently in manuscript that do any better than Stephens in taking into account the associations of early naturalists and scientists with the Academy. But, for those who peruse the following pages, quickly it will become apparent that the Academy served as a focal point for scientific communication along the Pacific Coast during the second half of the 19th century prior to the ascent of the area's universities, and that it attracted the attention and following of many distinguished scientists of the period. And, lest it be forgotten, the Academy, almost from its founding, took to heart the advice proffered by Spencer Fullerton Baird to publish and distribute its publications widely. It did, and its publications did not pass unnoticed, either in the United States or abroad. For instance, we find on a cursory examination of Eduard Suess' monumental synthesis of global geology, *Das Antlitz der Erde*, published between 1885 and 1909, Academy publications by members George H. Ashley, James Blake, William Phipps Blake, Amos Bowman, George Davidson, W. Harper Pease, and James Perrin Smith, among others, are cited. Thus, we believe that this narrative should serve as a useful reference, providing as it does names, dates, and subject matter, a springboard, so to speak, to the exploration of materials that survive in archives, in papers preserved in departmental correspondence, and in published sources, both at the Academy and elsewhere. While such studies can not fail to enhance the Academy's 19th century reputation as a mecca for the scientific community in the West, more importantly, they will serve to enlarge our understanding of how scientific organizations, geographically isolated from institutions founded in older, well-established centers of population, developed during the 19th century, what roles they played in fostering both local and regional scientific inquiry and communication, and how they responded to community needs, at local and state levels, for scientific expertise and education.

ACKNOWLEDGMENTS

The project of preparing the Hittell chronology for publication was begun more than a decade ago. The editors started with a faded yellow typescript (which has since been transcribed into a clean white original and yellow carbon) copy of the original manuscript but quickly realized that they had to go back to source material to verify much of what had been written. This was difficult to do in part because many of the records Hittell had available to him had been destroyed in 1906. Fortunately, the *Minute Books* of Academy meetings and most of the *Minute Books* of both Academy Council and Trustee meetings survived. Also, correspondence among Academy members and scientists along the Eastern seaboard survive in archives of Eastern museums and universities. It was to these that the editors turned their attention, especially with respect to the earliest Academy members, John Boardman Trask, William Orville Ayres, Albert Kellogg, Henry Gibbons, and others.

Thus, the editors are indebted to many persons who helped them locate relevant documents and photographs: Clark Elliott, Harvard University Archives; Judith Schiff and Ferenc A. Gyprhyey, Yale University Archives and Historical Librarian, Yale University Medical School respectively; Benjamin Watson, Donohue Rare

Books Room, Gleeson Library, University of San Francisco; Stanley Clewett, Dawn Benson and Margot Benson, Shasta College Museum and Research Center (Redding, California); the staff of the Academy of Natural Sciences of Philadelphia Archives;Carolyn Rittinger, editor of the *Kitchener-Waterloo Record* and Scott Muir Stroh III, curator of the Anacortes Museum, and Ms Eunice W. Darvill, also of the Anacortes Museum, Anacortes, Washington, for permission to publish the image of Amos Bowman; Mrs. Ann-Lisa Måneskjöld-Lower, who not only provided additional information about Gustavus Eisen, but also generously donated original portraits of Dr. Eisen and Lucius Harwood Foote in her possession to the Academy Archives; Patricia Akri, director of the San Francisco History Center, San Francisco Public Library, and Roberto Landazuri for assistance in locating a portrait of George Hewston; Peter Hanff and the staff of the Bancroft Library, University of California, Berkeley for their help in locating many portraits in their archives; and most importantly, William A. Deiss (retired), Pamela M. Henson, Alan L. Bain, Susan Glenn, Bruce Kirby, and William E. Cox of the Smithsonian Institution Archives (hereafter cited as SIArchives). The latter not only helped us in our survey of the Smithsonian's rich manuscript resources but further assisted us in locating many good period portraits of several key players in Academy history.

During the first few years of this project, the Library of Congress was a gold mine for the research and the editors enjoyed the full cooperation of the library's staff, including access to the library stacks, which enabled them to pore through hundreds of volumes, especially unindexed government documents. Unfortunately, in its infinite wisdom, the Library of Congress effectively shut its doors to much historical research when it decided to deny access to its book stacks to serious scholars. Thus, what could be accomplished in a matter of hours now takes weeks and months to do, which makes further use of the library's resources next to impossible, especially for those who are not local residents. But, during the early days of the project, the editors did receive the full cooperation of the library's staff and for this they are indeed grateful. They especially want to acknowledge the generous support they received from the Library's chief of the Newspaper Division, Mr. Frank Carroll, who assisted in their search of early San Francisco newspapers, notably *The Pacific*, and more recently, John Rossman of the Library's Book Service Section, Collections Management Division, who was able to retrieve from the stacks volumes we had been told could not be found.

The staff of the Academy's Library, past and present, have been outstandingly supportive of our efforts. Thomas Moritz, Librarian, Larry Currie, Lesley Segedy, and most notably Adam Schiff, Associate Librarian, and Karren Elsbernd, Special Collections Librarian, have been of immeasurable help and have responded to our numerous requests with helpful enthusiasm. The same must be said of many of our Academy colleagues, especially Drs. Peter U. Rodda (Department of Geology), Paul H. Arnaud and Vincent Lee (Department of Entomology), and Frank Almeda and Thomas Daniel (Department of Botany). Dr. Robert Drewes (Department of Herpetology) read the entire manuscript and caught errors we had missed; so did Dr. Patrick

Kociolek (Director of Research). Academy photographers Susan Middleton and Dong Lin helped with several of the illustrations. Penultimately, we acknowledge with grateful thanks the support of the Academy's administration, notably Dr. George Edmund Lindsay, Emeritus Executive Director, Roy Eisenhardt, Emeritus Executive Director, and Dr. Evelyn Handler, Executive Director of the California Academy of Sciences, for their ongoing encouragement. And, once again we want to acknowledge the financial support for publication of this volume provided by Dr. George E. Lindsay in memory of his wife, Geraldine Morris Lindsay, and former Academy trustee, Paul Davies. Their support made the Hittell project a reality.

A final note. In editing and then augmenting the Hittell manuscript, we found it necessary to review all the extant documents we could find that related to Hittell's earlier effort. We discovered many inconsistencies, some trivial, some not so. Dates, names, and on occasion specific events had to be corrected or supplemented with editorial notes. Although we did the best we could given both time and available resources, we are certain that some errors slipped through our grasp. Not all the inconsistencies are the fault of Hittell or of the editors, however. In the manuscript *Minute Books* of the Academy, individual's names are sometimes spelt differently, often dependent on who was the recording secretary at the time. Thus, we find reference to Hocholzer and Hochholzer, and Condie and Comrie, Townsend and Townsden, and time simply did not permit us to explore and correct all the variant spellings we uncovered. Thus, we beg the reader's indulgence to bear with us and accept our apologies for any inconvenience this may cause.

This is intended to be a reference work, not an analytic history, and for this reason we have provided an extensive index. As for the style of presentation, to the extent we deemed desirable, we retained Hittell's style, including capitalization and grammatical construction, even applying it to the new material we added intratext (but not the footnotes except as they include direct quotes [N.B., footnotes are numbered by chapter and sequence within a chapter, e.g. 12.1, meaning chapter 12, footnote 1]). Thus, we have not brought everything up to today's standards of expression or grammar. For instance, the reader will find the words "especial" for "special" and "therefor" for "therefore" used widely throughout the text. We have, however, to the best of our ability, corrected errors in spelling, of names of people, of biological names (but we did not make changes to account for cases of nomenclatural synonymy), and of geographical localities when we could verify that the errors were unintentional. When Hittell consistently used a variant spelling, such as Baulines Bay for what is now known as Bolinas Bay, we retained Hittell's use but annotated the Index to this effect. Also, in many instances, in the Index we cite people's full names, if known, even though Hittell or the Academy's handwritten *Minute Books* may have used initials only. Lastly, we have made no attempt to provide biographical sketches of the key figures in the story. Biographical sketches are to be found elsewhere. Instead, we do provide in the Bibliography a list of suitable references for further exploration on the part of the reader.

It is important to note that among the missing records of the Academy are the

Minute Books of the Board of Trustees meetings for the period 1880 to 1906. This was a critical period in the Academy's history, coming as it did at the time of the construction of a new museum building and the expansion of Academy activities, both made possible by the settlement of the James Lick estate and the receipt of several large cash donations dedicated to the institution's research and library programs. The *Minute Books* in question were available to Hittell in 1903, and he dutifully extracted much useful material, which he used in his narration. Thus, Hittell's manuscript, which survived the earthquake and fire and is preserved in the Academy's Archives, and this publication, which is based on that manuscript, are the only surviving sources of information on actions taken by the Academy trustees during that period. A complete list of the *Minute Books* covering Academy, Trustee, and Council meetings that survived the earthquake and fire is given in Appendix J of this volume.

Alan E. Leviton and Michele L. Aldrich

San Francisco, California

February 11, 1997

Proceedings
of the
California Academy of Natural Sciences

The following gentlemen friendly to the organization of an association for the development of the Natural Sciences met by agreement at the Office of L. W. Sloat, in the City of San Francisco on the 4th day of April 1853.

Dr. Andrew Randall +
" Henry Gibbons
" Albert Kellogg
" S. J. Nevins
Prof. J. B. Trask
Dr. Charles Purvis
-- Lewis W. Sloat,

After a free conversation and the interchanging of views and sentiments bearing upon the object contemplated.

Dr. Andrew Randall was called to the chair and L. W. Sloat was appointed Secretary.

On motion of Mr. Sloat it was after discussion and remark unanimously Resolved that it is expedient and desirable that an association be organized for the promotion of Natural Science and that the name and style of such organization be "The California Academy of Natural Sciences".

On motion of Mr. Nevins Resolved that a committee of three be appointed by the Chair whose duty it shall be to draft a constitution for effecting the object contemplated by the foregoing resolution and to report the same with suggestions and remarks at a future meeting. The Chairman

A NARRATIVE HISTORY OF THE CALIFORNIA ACADEMY OF SCIENCES

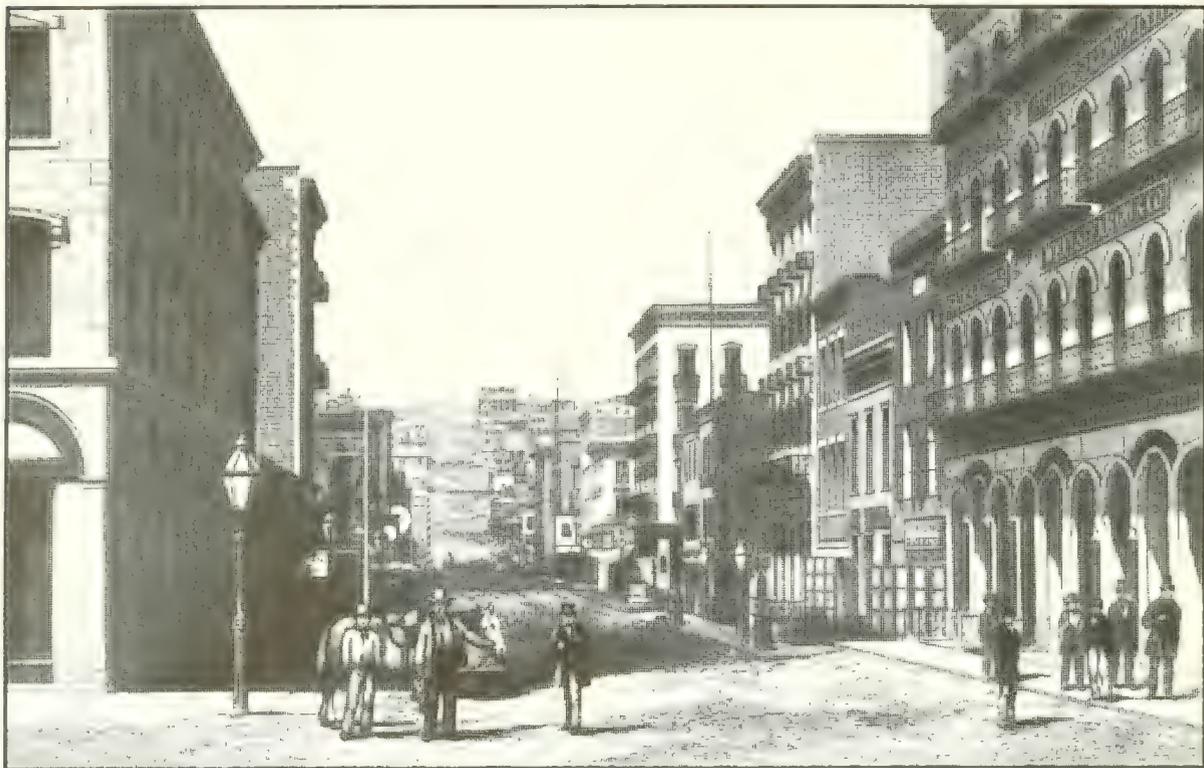
1853-1906

Chapter I: Year 1853

On the evening of APRIL 4, 1853 seven San Francisco gentlemen who described themselves as friendly to the “organization of an association for the development of the natural sciences,” met by agreement in the office of Lewis W. Sloat at what was then known as No. 129 on the west side of Montgomery Street between Sacramento and Commercial. These gentlemen were Dr. Andrew Randall, Dr. Henry Gibbons, Dr. Albert Kellogg, Col. Thomas J. Nevins, Dr. John B. Trask, Dr. Charles Farris and Mr. Lewis W. Sloat. Randall, Gibbons, Kellogg, Trask, and Farris were doctors of medicine;^{1,1} Nevins was agent of the American Sunday School Union and also attorney-at-law; and Sloat, a nephew of Commodore John D. Sloat, who had come out to this country with his uncle in the sloop-of-war Savannah, and was present with him at the raising of the American flag at Monterey in 1846,^{1,2} was a real-estate broker, notary public, and commissioner of deeds.

^{1,1} Neither Randall nor Trask had M.D. degrees. Trask was granted a licentiate in medicine from Yale, but not an M.D. (see Leviton & Aldrich, 1982). Randall did not hold a degree nor did he practice medicine. He had been an assistant to David Dale Owen on the Federal survey of the Minnesota and Wisconsin territories before trekking to California in 1849 as a member of the Col. James Collier party (for an interesting account of the Collier party see Foreman, 1937).

^{1,2} Lewis W. Sloat may have been aboard the Savannah in 1846, but his name is not among the ship’s complement. According to Charles Turrill (see Appendix D), he served as “his father’s secretary.” A Lewis M. Sloat is listed among the members of John Woodhouse Audubon’s “California Company,” a group from New York heading for California’s gold fields. Trask was also among the members of Audubon’s company.



San Francisco, 1854: Looking north along Montgomery Street from the corner of California and Montgomery Streets, one block south of Sacramento Street. Lewis Sloat's office at 129 Montgomery Street was on the west side of Montgomery Street, probably in the third building on the left, immediately following the second tall brick structure (From Soulé, 1855)

After what was called “a free conversation and the interchange of views and sentiments bearing upon the object contemplated” Dr. Randall was called to the chair and Mr. Sloat appointed secretary. It was then formally resolved to be expedient and necessary to organize an association for the promotion of natural science and that the name and style of such organization should be “The California Academy of Natural Sciences.” It was next resolved that a committee of three should be appointed by the chair to draft a constitution and report the same with suggestions and remarks at a future meeting. The chair appointed as such a committee Col. Thomas J. Nevins, Dr. Henry Gibbons and Mr. Lewis W. Sloat.

At the next meeting held at the same place on APRIL 11, 1853 – at which another physician, Dr. T. L. Andrews, and another attorney-at-law and journalist, Mr. Edwin R. Campbell, appeared – the draft of a constitution was presented, and also a written report. In this report the committee said that “in the examination of the subject submitted to them, they had become deeply impressed with the importance of the measure proposed in its bearing upon the interests of Natural Science not only on this coast but in all the civilized world.”

“Natural History” – continued the report – “in its various departments, as illustrating the principles of Science, has within the last half century attracted the attention of the scientific world; and our own countrymen have shared largely in the general enthusiasm, which is from year to year becoming more general and absorbing.

Scientific associations have been organized in many of the older States, whose investigations and labors have brought to light many of the previously hidden mysteries of nature and have contributed immensely to the progress of the age in the practical application of the natural laws to the purposes of agriculture, commerce and the useful arts.

“These developments have contributed in no small degree to the elevation of our country in the scale of national importance until she has become the envy and terror of despots everywhere. They have opened to us avenues of wealth and national aggrandizement and placed in our hands the means and facilities for diffusing the principles and blessings of our free institutions to the ends of the earth.”

After this refreshing burst of patriotic sentiment, the report briefly referred to what had been done in the interest of science in the other States and concluded as follows: “We have on this coast a virgin soil with new characteristics and attributes, which have not been subjected to a critical scientific examination. Sufficient, however, meets the eye of the naturalist to assure him that this is a field of richer promise in the department of Natural History in all its variety than has previously been discovered.

“It is due to science, it is due to California, to her sister States, and to the scientific world that early measures be adopted for a thorough systematic survey of every portion of the State and the collection of a cabinet of her rare and rich productions.”

The meeting then took up, read and discussed the constitution, section by section, and, after correction, recommitted it for engrossment. At the same meeting a committee was appointed to draft a set of by-laws; another to draw up an address or circular for publication “detailing the objects of the association and specifying the subjects of collection and investigation, and soliciting the cooperation of all interested in the objects of the association;” and another to publish the report of the committee on organization.

The original constitution, thus presented on April 11, 1853, was not finally adopted until May 16; but in the meanwhile several other meetings were held. At one of them held APRIL 18, by-laws were presented, discussed and recommitted for correction and engrossment; a committee was appointed to “make and present a list of such scientific books as are necessary for the immediate use of the Academy,” and at the same meeting a number of gentlemen were proposed as corresponding members, including John Donald of San Mateo, California, James C. Swan and Captain C. J. W. Russell of Shoalwater Bay, Washington Territory, Mr. Johnson, Waioli, Island of Kauai, Sandwich Islands [Hawaiian Islands], and Dr. Henry P. Sartwell, of Penn Yan, New York. At a meeting on APRIL 25, a start was given to the cabinet by the donation by Capt. Nakum Haynes of a quantity of marine shells and coral from the South Pacific Islands and a *cassis* from the West Indies. Samuel A. Hastings also presented an otter-skin, bows, arrows and quiver, small baskets, a bone drinking-cup, a mountain squirrel skin and a gray-fox skin, obtained by him from the Rogue River Indians.

The next important meeting, and the one at which the California Academy of

Sciences may be said to have been founded by the adoption of the constitution, took place on Monday, MAY 16, 1853, at the office of Col. T. J. Nevins at what was then No. 174- $\frac{1}{2}$ and is now No. 622 Clay Street, between Montgomery and Kearney, which had by that time become and for a number of years continued to be its meeting-place. As a preliminary at this meeting a list of names was presented; and it was agreed that the gentlemen so named should be considered, and might become, resident members by signing the constitution and paying the membership fee, without further requirement. These names, omitting titles, were Andrew Randall, Henry Gibbons, Wm. P. Gibbons, L. W. Sloat, T. J. Nevins, E. R. Campbell, T. L. Andrews, A. B. Stout, Charles Farris, Leander Ransom, James Nooney, John B. Trask, Joshua P. Haven, David Chambers, Ebenezer Knight, A. Kellogg, S. H. Willey, S. Blakeslee, O. M. Wozencraft, James D. Whelpley, S. D. Simonds, B. Brierly, Wm. Speer, Samuel F. Elliott, H. H. Toland, L. Lanszweert and J. H. Foster.

The constitution, adopted at this meeting of May 16, 1853, was expressly drawn up under and in conformity with "the Eighth Chapter of the Act of the Legislature the State of California entitled 'An Act Concerning Corporations,'" passed April 22, 1850. In it the association was called "The California Academy of Natural Sciences" and its object was declared to be "the investigation and development of Natural Science, the collection of a cabinet of specimens and a library to embrace the standard and current works on Natural History and Natural Science, together with such choice miscellaneous literature as may be contributed by the friends and patrons of the institution." It provided that "Scientific gentlemen may be received as Resident Members, Honorary Members, or Corresponding Members," by a two-thirds vote at any stated meeting; but requiring previous proposition by a member. Donors were to be called contributing members. An initiation fee was required of \$10, and monthly dues of \$2. Life members were to pay \$500. The first annual meeting was to be held on the first Monday of January, 1854, and annual [business] meetings thereafter on the first Monday of every year, which meeting might be "adjourned from time to time, but not beyond the second Monday of January, for closing up unfinished business." There were to be weekly [scientific] meetings. The officers were to consist of a president, a first vice-president, a second vice-president, treasurer, corresponding secretary, recording secretary, librarian, and three or more curators. The president and two vice-presidents were to constitute the Board of Trustees. The duties of these different officers were prescribed. The curators, who were to appoint their own chairman and secretary and keep a record of their proceedings, were to have charge of the cabinet and catalogue the specimens, and give the names of the donors. Standing committees of three or more were to be elected to take charge of the respective departments of Library, Finance, Publication, and Proceedings; but each member of any such committee could only be elected at a separate balloting. An interesting provision was that at least one scientific lecture was to be given annually on each of the several departments of Natural Science, which was to be written out in full by the lecturer on paper of uniform size to be furnished by the recording



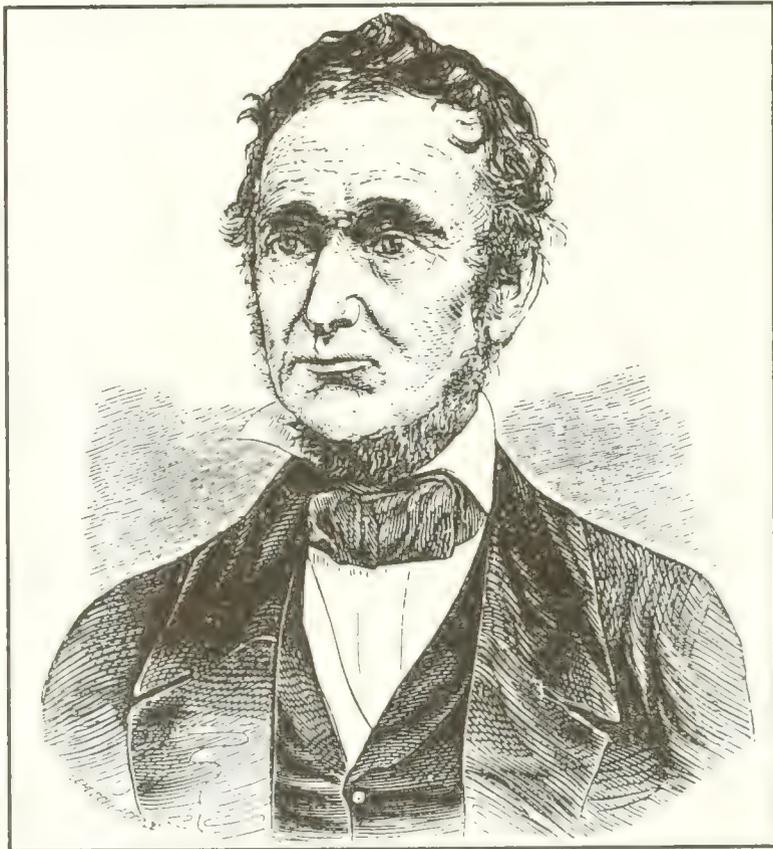
Andrew Randall
California Academy of Sciences Special Collections



Albert Kellogg
California Academy of Sciences Special Collections



John Boardman Trask
California Academy of Sciences Special Collections

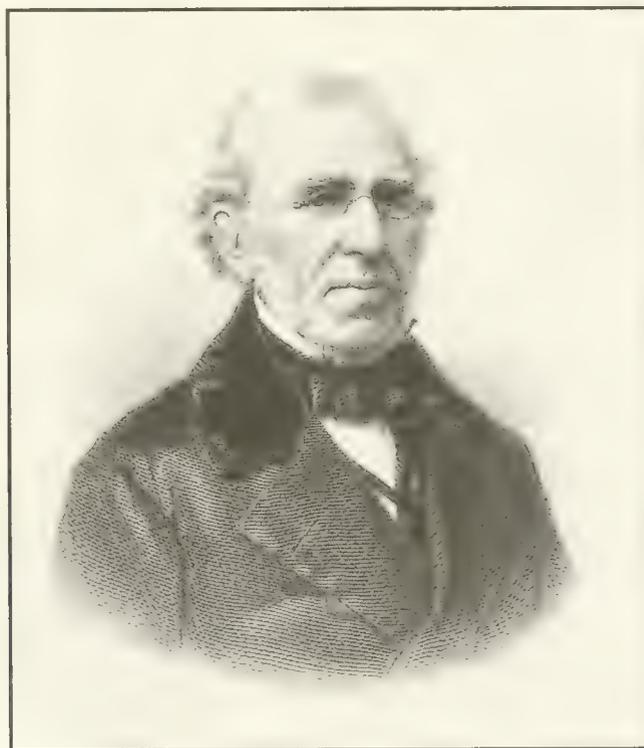


Thomas J. Nevins
California Academy of Sciences Special Collections

secretary at the expense of the association, to the end that they should be bound in volumes and placed in the Library.

At the same meeting, or in the course of the following week, twelve of the gentlemen, who had been named as members, signed the constitution; and at the succeeding meeting of MAY 23, an election of officers was held which resulted in the choice of Dr. Andrew Randall as president; Dr. Henry Gibbons, first vice-president; Col. Thomas J. Nevins, second vice-president; Dr. Arthur B. Stout, treasurer; Dr. William P. Gibbons, corresponding secretary, Lewis W. Sloat, recording secretary; Thomas J. Nevins, librarian, and Dr. Albert Kellogg, Edwin R. Campbell and Dr. Henry Gibbons, curators. A start was made in the election of standing committees, of which the chairmen became Leander Ransom for the library; Thomas J. Nevins for publications; Joshua P. Haven for finance, and Thomas J. Nevins for proceedings. By-laws were also adopted at the same meeting, providing that stated meetings should be held weekly on Monday evenings; that proceedings should be conducted in accordance with the usual parliamentary practice, and formulating an order of business. Dr. Kellogg made remarks upon a "plant common in the country, supposed to belong to the genus *Echinocystis*"; and Dr. Randall presented specimens of granite from China, granite from Monterey, bitumen from Santa Barbara, cinnabar from near the Mission Dolores, and carbonate of lime from the Sanchez Rancho in what is now San Mateo, but was then San Francisco County.

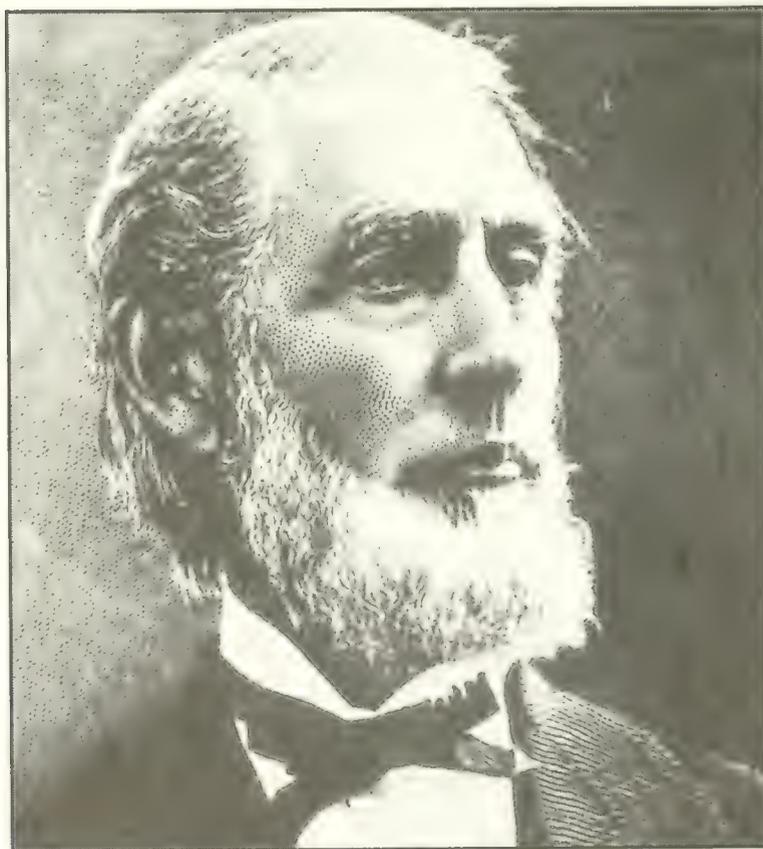
At the third meeting thereafter, held JUNE 13, the first election for new members took place, when Alfred Higbee was chosen a resident, Isaac Lea an honorary member, and (?) Clements, (?) Johnson, E. W. Gavitt, Henry P. Sartwell, John B. Gebhard, and Washington Townsend, corresponding members. At the same meeting



Isaac Lea of Philadelphia, the Academy's first honorary member.
Smithsonian Institution Archives (95-20502)



William P. Gibbons
Bancroft Library, University of California, Berkeley



Henry Gibbons
California Academy of Sciences Special Collections

Dr. Wm. P. Gibbons exhibited specimens of the viviparous perch of California and gave notice that he would present a paper on the subject. On JUNE 20, J. B. Townsend and Robert Nelson were elected resident members, Joseph Delafield, Charles Pickering, and Robert Bridges, honorary members, and B. W. Budd of New York and J. W. Redfield, corresponding members. The publication committee reported that it had a thousand copies of a circular printed at a cost of \$50, for which it presented the bill. This circular, consisting of a single sheet in small type, of four duodecimo pages, was intended to call public attention to the Academy and its objects, and to give general instructions of how to prepare specimens for scientific examination and forward them (see Appendix I). At the same time it was ordered that the recording secretary should procure the incorporation of the Academy, and that the constitution, by-laws and proceedings should be published.

On JUNE 27, Thomas J. Nevins, William Speer and Albert Kellogg, who had been appointed a committee on a seal for the association, were clothed with full power to design and procure the engraving of such seal; and at the same time the recording secretary, through Col. Nevins, reported that he had procured the execution, acknowledgment and recording of the necessary certificate, whereby the association was legally incorporated. This certificate, which recited the adoption and signing of the constitution on May 16 and the election of the trustees on May 23, was signed in proper form by Dr. Randall as president and judge of election in presence of Lewis W. Sloat. It was acknowledged by Sloat before E. V. Joice, Notary Public, and on the same JUNE 27, 1853, filed for record in the San Francisco County Court.

Thus was launched at a very noteworthy period in the history of our City and State, under interesting and in some respects amusing circumstances, what we are in all seriousness disposed to think one of the most important and valuable institutions in California. It was indeed, as has been said, at a very remarkable period in the history of our City and State. The early flush times of California were not yet entirely over and San Francisco was still in a "boom" of excitement and speculation. The City then had about fifty thousand inhabitants and a large floating population passing through it to the mines and returning thence with long buckskin bags full of chunky nuggets and glittering dust. Bricklayers, stonemasons, ship-carpenters and caulkers were getting \$10 a day, four or five times the ordinary wages of the Eastern States; house-carpenters, blacksmiths, watchmakers and jewellers, \$8 a day; printers from \$10 to \$15 a day. There were twelve daily newspaper and eight tri-weeklies or weeklies. There were five American theaters, besides a French, a Spanish, a German, and a Chinese one; numerous musical, concert and dance halls; two race-courses, and uncountable gambling establishments. The commonest shops rented at from \$200 to \$400 and stores of any pretension at from \$500 to \$1,000 per month. Female servants received from \$50 to \$75 a month; firewood cost \$15 a cord; coal \$50 a ton; fresh butter \$1 a pound; fresh eggs \$1.25 per dozen; turkeys \$6 each, and chickens \$2.50 to \$3 a piece. Every man, who could do anything and was not too lazy or too vicious to work, found plenty to do; and money was abundant, with a million or more of new gold coming in every week from the Sierra foot-hills.

It certainly speaks well for the underlying, fundamental character of the San Francisco population, in those days and in the midst of such surroundings, that there were so many men amongst them who not only took an interest in science but who were also willing to make so many sacrifices, as they did in its behalf. It was only their faith that they were doing good work and their abiding belief that they were pursuing the right path that enabled the founders of the Academy to persist in their labors through years of difficulty and disappointment. Notwithstanding the flush times and the abundance of money in 1853, there was substantially none for the Academy. Then, as now, scientific men were not money-makers; and the general public took no interest in and paid no attention to their beneficent work. It was therefore only with very inadequate means that the association was kept alive, and enough money collected to preserve the organization and prevent it from being turned homeless into the street. But it was born to live, and it manfully struggled on. The first moneys paid in were initiation fees, which up to June 23, 1853, amounted to only \$50, just sufficient to pay for the printing of the circular. By August 1, about \$50 more had been paid in; and then the ominous words, "No money received at this meeting," or "No cash received," or at last the shorter, though quite as expressive, phrase "No cash," which had already been used several times, began to make their appearance in the minutes with alarming frequency.

There is reason to believe that the early minutes were not kept, or at least not written up, with proper care; and doubtless there was more money paid in or handed to the treasurer and disbursed by him than appear upon the record; but at all events it was barely sufficient to keep the Academy alive. Its room on Clay Street was small and inadequate; the lights used were tallow candles and few of them, and the furniture of the cheapest description. And yet there the old founders continued to meet regularly every Monday evening, week after week, and month after month, and year after year. Scientific papers were read and scientific discussions carried on. With all the disadvantages and all the drawbacks the sacred fire was kept aglow, and the work went bravely on.

On JUNE 27, Dr. William P. Gibbons made further remarks on the viviparous perch in California and exhibited a fish with 21 young contained in a sac corresponding to the uterus of a mammal. On JULY 4 – for even the national holiday did not damp the ardor of the scientists – a meeting was held and a resolution adopted urgently requiring the members to pay up their monthly dues. On JULY 11, Richard F. Ryan and Harrison Eastman became members, and Dr. Kellogg read a paper on the plant *Echinocystis*. On JULY 18, Edward Bosqui was elected a resident member, the Rev. J. S. Diehl a corresponding member, David Dale Owen, Charles Whittlesey, and Benjamin Silliman [Jr., {Eds.}], honorary members, and founding member Charles Farris, a corresponding member because he was about to leave the State. Dr. Randall, the president, then read a paper in which he offered a prize of \$50 each for the two best essays on trees and plants suitable for cultivation in California, and particularly with reference to their adaptability to form wind-breaks, stop sand-drifts and guard against encroachments and damages by waves and floods.



Edward Bosqui
 Donohue Rare Book Room, Richard A. Gleeson Library
 University of San Francisco

On AUGUST 1, at the meeting at which George Bartlett was elected a resident member and Lieut. M. F. Maury of Washington City and William Darlington of Westchester, Pennsylvania became honorary members, it was "on motion of Dr. A. Kellogg, *Resolved*, as the sense of this society that we highly approve of the aid of females in every department of natural science, and that we earnestly invite their cooperation." But, it was not for a number of years that the ladies accepted the invitation thus so gallantly held out to them. Edward Bosqui attended this meeting for the first time as a member. At the next meeting, AUGUST 8, Dr. Kellogg touched a little perhaps on what might have belonged to the women's department by reading a paper "On the making of Bread," which it seems was sharply but good-humoredly criticized by Dr. William P. Gibbons. At the next meeting, AUGUST 15, Dr. Henry Gibbons called attention to the phenomena of shooting-stars, which he suggested occurred annually in the early part of August. For the next several meetings, at least until September 5, no minutes appear to have been kept, but the proceedings of the meetings are recorded, as follows: AUGUST 22, at the meeting at which Capt. William McMichael was elected a resident member and geologist Dr. Ira Davis of Norwich University, Vermont a corresponding member, the minutes report on donations to the Academy of a miscellany of natural history specimens. On AUGUST 29, Prof. Joseph Henry of Washington D.C. was proposed for honorary membership. During the meeting, interesting remarks and suggestions were made by members about the comet, which had appeared in the southwestern sky near the horizon for the few weeks past.

On SEPTEMBER 5, the committee on propositions reported favorably on the nominations of Prof. Joseph Henry for honorary member and A. S. Taylor of Monterey, corresponding member, but no further action was taken. Prof. Trask then moved that the corresponding secretary communicate with the President [Benjamin Peirce {Eds.}] or Secretary [Joseph Henry {Eds.}] of the National Scientific Convention¹³ to acquire copies of the proceedings for 1853 and all antecedent years. SEPTEMBER 12 it was "*Resolved*, that the recording secretary (Mr. Sloat) be requested to hand over to the Librarian (Col. Nevins) the minutes of the previous meetings not recorded, together with the record book, that the records might be written up." At the same meeting Dr. Kellogg presented a living owl, "caught near Point Jackson on San Francisco Bay." which was handed over to Dr. William P. Gibbons. For a report on it at the next meeting Dr. Gibbons made his report; "that the owl was lost."

On SEPTEMBER 19, Professor Joseph Henry, of the Smithsonian Institution, was elected an honorary member and A. S. Taylor a corresponding member. Lewis W. Sloat resigned his office of recording secretary and Col. Thomas J. Nevins, who was already second vice-president, trustee, librarian, chairman of the committee on publication and chairman of the committee on proceedings was elected to fill his place. From this date on for a considerable time, and for some time previous, the minutes are in Nevins's handwriting; and he seems to have been the inventor of the curt entry "no cash," which was the usual ending of the record of every meeting. On OCTOBER 3, Hiram G. Bloomer attended his first Academy meeting as a visitor, and at the session of OCTOBER 10, he and Merrick G. Reed became resident members; and E. G. Cannon a corresponding member. As he did at earlier meetings, Dr. Kellogg presented a drawing of another coastal plant and gave notice that he would present additional specimens and drawings at future meetings. OCTOBER 24, George C. Yount¹⁴ was elected a corresponding member. Specimens presented to the Academy included an extensive assortment of plant seeds by Dr. Kellogg. OCTOBER 31, Rev. S. H. Willey, who had been named as eligible at the adoption of the constitution on May 16, sent in a communication declining to perfect his membership.

NOVEMBER 7, Dr. Elijah White, William Davis, William Heffley and Jasper J. Papy became resident members, Prof. E. B. Andrews of Marietta, Ohio, Dr. C. C. Parry of Davenport, Iowa, and William Orland Bourne of New York City, were elected corresponding members, and Alexander Dallas Bache, was elected an honorary member. The treasury was also enriched with \$22 from membership fees. The first effort to form a section of the Academy was made on NOVEMBER 21, when, on motion of Dr. William P. Gibbons, a "Floricultural and Horticultural Department," also called an "Agriculture and Horticulture Committee," was organized by Gibbons, Kellogg, Nevins, Randall and Bloomer, of which Gibbons was elected chairman and Nevins secretary.

Meanwhile many contributions of specimens came in, and much interest was

¹³ The reference here is to the July 1853 annual meeting American Association for the Advancement of Science held in Cleveland, Ohio and the six earlier meetings beginning with the first meeting held in Philadelphia in September 1848.

¹⁴ "Young" in the handwritten Minute Books. George 'Concepción' Yount, came to California in 1831. He settled in the Napa Valley and acquired a land grant, the Cayamus Rancho, where he died in 1865.



Hiram George Bloomer
California Academy of Sciences Special Collections

manifested by the members in scientific discussions in reference to them. At the meeting on NOVEMBER 28, Dr. T. S. Anderson presented the Academy with a collection of plants, woods, and shells from Monterey and Santa Cruz and also from Rio de Janeiro, Valpariso and the Samoan Islands. Dr. Kellogg and Dr. Gibbons both presented specimens of local plants, and Dr. Wm. P. Gibbons spoke about the rocks of Telegraph Hill and the coast of the Bay.

On DECEMBER 5, several essays were presented on the subject of trees, shrubs and grasses suitable for wind-breaks and for stopping shifting sand, in response to Dr. Randall's proposition of July 18 offering rewards therefor; and Ransom, Trask and Nevins were appointed a committee to examine them and recommend the premiums. At the meeting of DECEMBER 12, eight members and two visitors, G. W. de Goodh and John S. Hittell,^{1.5} were in attendance. It was resolved that Dr. H. Gibbons be asked to furnish the Academy with a copy of his meteorological journal and to present the Academy with monthly reports of his future observations, and Col. Ransom be requested to provide the Academy with such scientific information that may come to his notice in connection with the U.S. Land Survey. Cash receipts of \$26 in member dues were reported. As the year 1853 was drawing to a close, DECEMBER 19, A. M. Jackson of San Bernardino was elected a corresponding member. The monthly dues of Col. Nevins were remitted in consideration of the lights and fuel furnished by him for the use of the Academy. At the same meeting an interesting and encouraging letter was received from Professor Joseph Henry of the Smithsonian Institution at Washington requesting correspondence and exchange of specimens and offering his

^{1.5} Theodore Henry Hittell's elder brother who had come to California in 1849, six years before Theodore left Hamilton, Ohio where he had been practicing law after having been admitted to the Ohio bar in 1852. (See Appendix H for a memorial-biographical sketch of Theodore Henry Hittell.)

assistance in procuring for the Academy meteorological and magnetic instruments. Dr. Kellogg presented drawings and specimens of a variety of California plants then in bloom to illustrate the mild character of California climate. On DECEMBER 26, the Rev. A. H. Myers was elected a resident member and Thomas Abbott a corresponding member. Mr. Hittell again attended as a visitor. Dr. Kellogg displayed a new plant with illustrations and Dr. exhibited two specimens of fishes, one of a new subgenus of the family Cyprinidae.

Chapter II: Year 1854

The first annual meeting of the Academy, as provided for in the constitution, was held on JANUARY 2, 1854; but at that meeting the reading of the essays, called out by Dr. Randall, and awarding of the premiums, offered by him, so engrossed the attention and time of the members that the annual election was postponed until January 5. The awards of \$50 each were made for two essays, one of which had for its motto the words "*Fortune Segnatur;*" and that is about all the information the minutes furnish in regard to them, except that there was also an award in favor of a third essay, for which apparently no reward had been offered. Following discussion of the awards, Dr. Kellogg exhibited a drawing of *Rubus ursinus*, the bear blackberry, and Dr. W. P. Gibbons again made some remarks on viviparous fishes first presented by him on 13th June last. The Committee of Investigation for membership reported favorably on the nominations of A. Carpenter for resident member and the Rev. Henry Durant of Oakland as corresponding member, and both were duly elected.

At the adjourned meeting on JANUARY 5, the annual election of officers for 1854 took place and resulted in the choice of Dr. Andrew Randall as president; Dr. Henry Gibbons, first vice-president; Col. Leander Ransom, second vice-president; Thomas J. Nevins, treasurer; William P. Gibbons, corresponding secretary, Hiram A. Bloomer, recording secretary; Col. Thomas J. Nevins, librarian, and Dr. Albert Kellogg, Dr. Arthur B. Stout and Dr. John B. Trask, curators. Dr. William P. Gibbons spoke at some length upon the subject of viviparous fishes. At the next meeting, JANUARY 9, the standing committees were reorganized and the chairmen became: Wm. P. Gibbons for the library, Thomas J. Nevins for publication, Thomas J. Nevins for finance and Hiram G. Bloomer for proceedings. Among the visitors listed was William P. Blake, geologist of the Pacific Railroad Survey. At this meeting Dr. William P. Gibbons again brought forward the subject of the viviparous fishes of California and read a paper on five new species. On motion of James Nooney it was resolved that, as Dr. Gibbons had described five new species and as Professor Agassiz had already given names to three of them, the fourth should be called *Lolconotiss Gibbonsii*.

On JANUARY 16, Chester S. Lyman, nominated for membership by Professor James Nooney, was elected resident member. Professor Henry of the Smithsonian Institution acknowledged by letter his election as an honorary member and stated that he had ordered, on authority of the president, the meteorological and magnetic instruments before referred to, which were to be forwarded without expense to the Academy, but that, upon receiving the necessary advises, a draft would be sent for



Joseph Henry, Secretary of the Smithsonian Institution
Smithsonian Institution Archives (26452)



William Phipps Blake (1877)
Smithsonian Institution Archives Merrill Collection

the amount of the purchase. At the meeting of JANUARY 23, a Mr. Bowman was elected a resident member. Dr. H. H. Behr attended the meeting as a visitor. On account of the uncertainty as to who had been properly made corresponding members, Dr. W. P. Gibbons introduced a resolution "that all names of corresponding members be stricken from the books." On a motion of Dr. Kellogg, the resolution passed. At the next meeting, JANUARY 30, on motion of William P. Gibbons it was resolved "that a committee of three be appointed to prepare a memorial to the Board of Supervisors of San Francisco, the object of which shall be to encourage the cultivation of shade trees within the city limits by offering a premium for every tree, which shall be planted and found to be in flourishing condition within as specified time – the *Ailanthus* to be excluded from the list as being unworthy of cultivation." Gibbons, Randall and Kellogg were appointed such a committee. William P. Blake, geologist with the Pacific Railroad Survey attended the meeting as a visitor. On FEBRUARY 6, Dr. H. H. Behr and William H. Ranlet were elected resident members and Lieut. Trowbridge a corresponding member. On FEBRUARY 13, Professor Louis Agassiz was elected an honorary and Alfred L. Cohen a resident member. At the next meeting, FEBRUARY 20, a seal for the Academy corporation, which had been recommended, sent back and again recommended, was rejected by the votes of Ransom, Trask, William P. Gibbons, Heffley, Papy, White and Behr as against Kellogg and Nevins.

The matter of corresponding members of the Academy came up again on FEBRUARY 27 and an election was held which resulted in the choice of James G. Swan, Captain C. J. W. Russell, Dr. H. P. Sartwell^{2.2}, Mr. Townsend^{2.2}, B. W. Burke, Israel S. Diehl^{2.3}, Dr. Ira Davis^{2.4}, Dr. Brown^{2.5}, C. C. Parry^{2.6}, E. B. Andrews^{2.6} and Alden A. M. Jackson as corresponding members and James Behrens, resident member. At this meeting also the subject of the essays that had engaged the attention of the Academy on January 2 again came up, and an awarded of \$50 was made "to William Thompson, market-gardener near Mission Dolores, for best essay on trees, shrubs, grasses and plants and their adaptation to the sands and soils of our sea-coasts and shores of our bays and rivers." A satisfactory seal for the Academy seems by this time to have been provided, and for engraving it Harrison Eastman was allowed \$12, to be applied in payment of his initiation fee and monthly dues. At the meeting held MARCH 6, Wm. P. Gibbons offered his resignation as corresponding secretary, but the motion was deferred until the next meeting. Under date of MARCH 13 a very unusual entry was made, "owing to inclemency of weather and absence of some members from City, no business transacted."

At the meeting of MARCH 27, C. D. Gibbs was elected a corresponding member. The corresponding secretary then read a letter from Dr. John LeConte, corresponding secretary of the Philadelphia Academy of Sciences, acknowledging "the reception of specimens of the fruit and leaves of the mammoth arborvitae and enclosing a copy

^{2.1} Probably S. V. Bowman who in late 1854 to mid-1855 attended a few Academy meetings and made several donations to the cabinet.

^{2.2} This appears to repeat an action taken on 13 June 1853; Mr. Townsend is probably Washington Townsend (*q.v.*); ^{2.3} Repeat of an action taken on 18 July 1853; ^{2.4} Repeat of an action taken on 22 Aug. 1853; ^{2.5} Probably B. B. Brown of Sacramento whose name was advanced by Dr. Kellogg on 15 Aug. 1853, but evidently was not acted on; ^{2.6} Repeat of an action taken on 7 Nov. 1853.



Louis Agassiz
George Sprague Myers Portrait Collection
Department of Herpetology, California Academy of Sciences



Hans Hermann Behr
California Academy of Sciences Special Collections

of a botanical description of the tree as published in the Gardener's Chronicle, London, December 24, 1853, by Lindley, who names it *Wellingtonia Gigantea*." He also read a letter from Mr. Baird, assistant secretary of the Smithsonian Institution, who referred to the proceedings of the Academy in relation to viviparous fishes. The corresponding secretary (Dr. William P. Gibbons) said he dissented from the views of Mr. Baird in reference to the priority of discovery of this family of fishes. Dr. Kellogg thought that the remarks of Dr. Gibbons were very just and that the Academy should maintain its ground. Months ago, he said, he had proposed the name of *Washingtonia* for the mammoth tree; but, in waiting for further information respecting described species, we had lost it. After further remarks by the president and other members, the Academy unanimously

Resolved, That, in view of the isolated condition of this Academy from other societies, we will regard every publication of new species, which has been or which may be made through the daily papers of this city, as substantial evidence of priority of discovery.

Resolved, That the corresponding secretary be directed to furnish to other scientific bodies a copy of the above resolution, accompanying it with explanations which have led to this conclusion.

In the same connection it was resolved that a committee of three be appointed to prepare for publication an abstract of the transactions of the Academy; and William P. Gibbons, Kellogg and Behr were named as such committee. At the same time it was resolved "that the corresponding secretary have leave to withdraw his resignation" which constitutes the only motion in the minutes that he had offered.

On APRIL 3, the corresponding secretary read a letter from Professor Agassiz disclaiming the discovery of the new genus of viviparous fishes and also requesting exchanges of specimens. The corresponding secretary then made a few remarks upon the identification of a California plant allied to the *Echinocystis* of the Cucurbitaceae family. Col. Nevins stated that he had observed the bitter quality of cucumbers grown in the vicinity and attributed the same to the impregnation of their flowers by the pollen of the *Echinocystis*. A discussion ensued upon the effects of a pollen impregnating different species of plants and vegetables. APRIL 17, visitors included Dr. William O. Ayres and John Hassenger. The corresponding secretary read another letter from Prof. Agassiz, acknowledging his election as an honorary member of the Academy and requesting to be furnished with all the documents concerning the discovery of the viviparous fishes. On APRIL 26 [as recorded in *Minute Books*, but probably the 24th {Eds.}], Dr. William O. Ayres was elected a resident member. Dr. Kellogg donated drawings he had made of plants from Point Reyes, given to him by Dr. Randall. He also spoke about having identified five species of yellow violets growing in California. W. P. Blake, who attended the meeting as a visitor, donated a specimen of silicified wood from the Colorado desert and Dr. H. Gibbons talked about his tour of the quicksilver mines and medicinal springs at Almaden. On MAY 1, Dr. Bigelow was elected a corresponding member and Dr. W. O. Ayres paid his membership initiation fee of \$10 and \$2 monthly dues. On MAY 8, a committee (Nevins and Ransom) was appointed to confer with the editors of the California



William Orville Ayres
California Academy of Sciences Special Collections

monthly magazine called *The Pioneer* on the subject of publishing the transactions of the Academy in that periodical.

Dr. William P. Gibbons on MAY 15 read another paper on viviparous fishes, giving descriptions of four new species, *Hysterochampus traskii*, *Hyperprosopon argenteus*, *Cymatogaster aggregata* and *C. minimus*. Mr. William H. Brooks was also elected a resident member. On MAY 22 Mr. Brooks was again elected a resident member, the minutes of the preceding meeting being unavailable at the time. Dr. Gibbons read still another paper on viviparous fishes, describing three new species. At the same meeting Dr. William O. Ayres exhibited drawings and gave verbal descriptions of five species of fishes, found in our rivers, which he said belonged to the genus *Leuciscus*, called by fishermen salmon-trout. On the same evening the committee, appointed to confer with the *Pioneer* magazine in reference to publishing the proceedings of the Academy, reported that it had not been able to effect any satisfactory arrangement. A communication was received from James G. Swan of Shoalwater Bay, Washington Territory, proposing "a remedy for the ravages of the *Teredo navalis* and other destructive borers, which infest our harbors." In connection with the reading of a paper describing the *Torreya Californica* or California nutmeg, published by Prof. Torrey in the *Journal of Pharmacy*, Dr. Randall said that, though it was stated that the tree had not been observed except on the western slope of the Sierra Nevada, he had found it in a cañada in Marin County, one hundred feet above sea-level, three miles distant from the ocean on one side and the bay on the other, and about twenty miles from San Francisco. The tree there was from fifty to sixty feet in

height and from 12 to 15 inches in diameter. On motion of Dr. Henry Gibbons the committee on publication was requested to ascertain upon what terms a volume of *Proceedings and Transactions* of the Academy, with plates, could be issued; and in the same connection the publication committee was requested to prepare a brief history of the Academy, as found in the early minutes, suitable for publication with the *Proceedings*.

At the next meeting, MAY 29, the committee on publication reported that the letter press of 500 copies of the *Transactions* of the Academy, consisting of 100 pages, royal octavo, 1500 ems to the page, would cost about \$300, and that 500 copies of ten single-page lithographic plates would cost about \$900. The committee was thereupon instructed to open a subscription for a publication fund of \$2,500 to pay the expenses of publication. The attention of the Academy was then devoted to some sulphuret of iron, presented by Mr. Cooper of Georgetown, El Dorado County, with the following statement in reference to it. "I send you a specimen taken from Nevada Tunnel on Cement Hill, 160 feet under ground, where drift and logs are found in abundance. This curious specimen was taken out of a log some two feet in diameter. Any quantity of the same substance is found in this timber. The base of this hill appears once to have been a large river." Dr. Kellogg at the same meeting presented drawings and description of the nest of a giant California bird, which he called "*Pterospoiapsis Sonoraensis*," said to come from near Sonora, Tuolumne County.

On JUNE 5, Professor Asa Gray presented, through H. G. Bloomer, a paper, which he had read before the American Academy of Arts and Sciences, on the age of the giant tree recently felled in California. Dr. William P. Blake, again in attendance as a visitor, presented a *Helix* from Cyprus Hills, Monterey County; also read a paper describing several remarkable specimens of crystalline gold from Coloma, and took occasion to remark that a recent severe earthquake at San Salvador took place at or about the same time (April 10) that a vibration of the earth was observed at San Francisco. Dr. Trask read a paper describing four species of fresh water shells from the Sacramento River. At the next meeting, JUNE 12, the committee on publication presented the form of a subscription list for publishing the *Proceedings*; and it was resolved that the subscription price for the first number should be \$5, and that "all contributors should be entitled to one copy of the first number and that those contributing \$100 or more shall be entitled to five copies." Dr. Henry Gibbons, who at a previous meeting had given his observations upon a trip to the New Almaden quicksilver mines in Santa Clara County, now gave his experiences on a recent trip to the Geysers in Sonoma County. The corresponding secretary read a letter from the Hon. J. McDougall of the U.S. Senate offering assistance in his official capacity in forwarding publications of the Smithsonian Institution. N. W. Chittenden and Robert Simpson were elected resident members, and David H. Storer, M.D., was nominated for honorary member.

On JUNE 19, the corresponding secretary read a letter from Prof. E. B. Andrews of Marietta College, Ohio acknowledging his election as a corresponding member. On JUNE 26, Dr. D. H. Storer was elected an honorary member. Dr. Wm. O. Ayres

exhibited specimens of the Murre, *Uria troile*, the bird that lays the so-called Farallones eggs, great quantities of which were collected every year and sold in the San Francisco market, and also other birds from the Farallone Islands. On JULY 3, Dr. Kellogg presented drawing of a *Silene*, or catch-fly, procured in Marin County by Dr. Andrews, who was to give a specific description of it. Kellogg remarked that the species was one of much beauty and well worthy the attention of florists. Col. Ransom presented a prepared specimen of a new bird, supposed to belong to the cuckoo family, from the plains near San Jose; and Dr. Henry Gibbons read a note from Dr. Birdsall in reference to a horned frog. At this meeting, the recording secretary, H. G. Bloomer, sent in a resignation of his office, which was accepted, and Dr. T. L. Andrews elected to the vacant place. At the meeting held on JULY 10, Dr. Ayres and Dr. Kellogg presented descriptions of new fish and plants; on JULY 17th, Dr. Kellogg presented drawings of three new plants from Mariposa County. Dr. B. [? Howard {Eds.}] B. Coit was also elected a resident member.

The Academy was delighted as well as surprised, on JULY 24, by an announcement, through Dr. Trask, that the proprietors of Clinton, a portion of what is now East Oakland in Alameda County, offered to donate ground for a Botanical Garden. Prof. Nooney and Dr. Andrews were at once appointed a committee to investigate the subject and report. At the next meeting, JULY 31, they reported that Lieut. T. H. Stevens, on behalf of Chipman & Aughinbaugh, the proprietors, proposed to donate to the Academy ten acres of land in the rear of the projected City of Clinton, or, if preferred, a less number of acres within the City limits, for a botanical garden. As this looked like business, the committee was instructed to continue to act and given power to receive similar proposals from any other persons kindly disposed to the objects of the Academy. Attention was then directed to a number of donations from Dr. R. Reid of the Stockton Insane Asylum, consisting of four skulls, one of a grizzly bear killed on the Calaveras River 14 miles from Stockton, one of a gray wolf from the neighborhood of Stockton, one of a beaver from French Camp Slough, and one of a mink from the Stanislaus River; also a male and a female tortoise from the San Joaquin River. A. H. Myers proposed the purchase of ten cases of preserved California birds and mammals, prepared by W. F. Abbott, for \$150. As there were not funds enough on hand to pay for them, Myers contributed \$15, Col. Ransom \$10, Dr. Trask \$10, and Dr. Kellogg \$5. Col. Nevins offered, for the purpose of meeting the emergency, \$50, payable without interest within six months, which was accepted; and the remaining \$60 was ordered paid out of the treasury. At the same meeting Mr. Myers presented apples grown in Alameda on trees transplanted sixteen months previously; and it was the unanimous testimony of all members present that in fineness of flavor they were fully equal to those raised in the Eastern States. It was ordered that Col. Nevins be paid \$20 per month for the rent of his room.

The subject of the botanical garden came up again on AUGUST 7, and Col. Nevins was added to the committee, which on AUGUST 14 was instructed to report at the next meeting the conditions under which the land in Clinton was proposed to be donated. Continuing with the August 7 meeting, George H. Goddard was elected a resident

member and Messes Thomas H. Stevens of Clinton, Dr. R. R. Reid of Stockton, and W. A. Wallace of Los Angeles were elected corresponding members. At the meeting of AUGUST 14, William W. Chipman, one of the proprietors of Clinton, presented what were pronounced splendid specimens of nectarines, raised on trees of about two years' growth in Alameda not far from Clinton. The Academy then turned its attention to the subject of tarantulas, several specimens of which and of their nests were presented by D. S. Gibbes, one of the nests containing young tarantulas. Mr. Gibbes also presented a paper, describing the habits of the tarantula and the manner in which it builds its nest. Dr. Kellogg followed with remarks on the same subject and particularly on the tarantula wasp. C. M. Blake presented specimens of organic remains (bones and teeth) and a bottle of liquid asphaltum from Los Angeles County. Dr. Henry Gibbons made remarks upon the winds in the San Jose Valley, stating their general direction to be from the north and northwest as evidenced by the uniform inclination of exposed trees towards the south and southeast. Ransom, Nooney, Blakeslee and others concurred. Dr. William P. Gibbons urged a revision of the By-Laws, so that specific duties should be required of the curators.

At almost every one of these meetings and many subsequent ones, Dr. Ayres presented specimens and read a paper or made remarks upon California fishes, and Dr. Kellogg the same upon California plants. On AUGUST 21 and 28, the subject of the botanical garden again came up and was talked over. On SEPTEMBER 4, Col. Nevins presented to the Academy a receipt in full for the rent of his office and furniture and pay for storage and stationery furnished from April 18, 1853 to July 31, 1854, being a donation, as he calculated, of at least \$300. Whereupon the thanks of the Academy were tendered him; and on motion \$20 were ordered paid him as rent for the month of September. At the next meeting, SEPTEMBER 11, Mr. Sloat exhibited a proof-sheet of the proceedings of the previous meeting, taken from the columns of *The Pacific*, a weekly newspaper devoted more particularly to religious subjects, as a specimen of the manner in which the transactions of the Academy might be published in a permanent form and at trifling expense. On motion of Dr. William P. Gibbons, the publication committee was instructed to have published 250 copies of the *Proceedings*^{2.7} of the Academy in the form exhibited by Mr. Sloat, and that the subscription price of the same should be fixed at \$3 a year; and, on motion of Dr. Ayres, the recording secretary was directed to publish the proceedings in *The Pacific*

^{2.7} As an outgrowth of the dispute over priority in publication earlier in the year, the Academy undertook to publish its proceedings in a format more acceptable to established scientists and institutions in the eastern United States and Europe. To this time the Academy's proceedings were published in local newspapers, principally the *Daily Alta California* and *The Pacific*. With the issuance of the first pages of the new format in September and receipt of the pages at the Smithsonian Institution in Washington, Spencer F. Baird, who had initially questioned the priority claimed by the Academy in the publication of information on viviparous fishes, wrote the following letter (its receipt is not referenced in the Academy's *Minute Books*) to D. W. P. Gibbons, Academy Corresponding Secretary: [letter dated 10 Oct. 1854]

"Dear Sir: I had much pleasure today in answering your letter enclosing the first sheet of Proceedings of the Academy. In [such] a form there will be no difficulty in [maintaining] any [priority] which may exist at the time of publication, although you will find many [who] will contest the validity of any [announcement] in a mere weekly newspaper.

"Will you permit me to suggest the addition of the date of forwarding and issue of the [sheets] either at the bottom of its first page or some other conspicuous place. It is true that the date of the meetings themselves is given but any interval may elapse between the presentation or reading of a paper and its technical publication. (*continued next page*)

as soon after meetings as practicable. Dr. Henry Gibbons then exhibited a head of bearded wheat, said to grow wild in the mountains. It "measured about seven inches in length, the seeds quite large and nearly half an inch long." Some doubt was expressed whether it belonged to the genus *Triticum* or to a new genus. Dr. Wm. O. Ayres presented a communication about the inappropriate naming of fishes found in the fish markets in San Francisco. The Committee on the Botanical Garden reported progress and was continued.

On SEPTEMBER 18, Selim E. Woodworth presented specimens of ferruginous earth from Molate or Red Rock Island in San Francisco Bay; also a bottle of the earth ground in oil for painting purposes. It was said to resemble what was commonly called Hartford clay and to be used by guilders in San Francisco for the same purposes. At this meeting the subject of a botanical garden, which had been before the Academy since July, received its quietus by an adverso report of the committee upon the matter and the unanimous adoption of the following preamble and resolutions, offered by Mr. Sloat:

Whereas, This Association is without a habitation of its own and the proper means of displaying and preserving its cabinets and library (which are rapidly increasing) for the want thereof, and suitable cases for arranging the same;

And whereas, the society is poor and it is of primary importance that its collections should be arranged and preserved and its proceedings and transactions published;

And whereas, the possession of a botanical garden, however desirable it may be, is at this time comparatively useless to the society and is attended with a large outlay and very considerable current expenses, the funds to meet which are required for the purposes above specified. Therefore be it

Resolved, That the donation of lands at Encinal, made by Messrs. Chipman and Aughinbaugh to this society, be respectfully declined, and the project of a botanical garden be for the present abandoned.

Resolved, That the committee respectfully tender to Messrs. Chipman & Aughinbaugh the declination of their donation by, and the thanks of the society, for the offer of the same.

The attention of the weekly meetings for the remainder of the year 1854 was taken up almost exclusively with the presentation and examination of California fishes and plants, with papers upon them by Drs. Ayres and Kellogg, and the discussions to which they led. Dr. Ayres as an ichthyologist, and Dr. Kellogg as a botanist were absorbed in their respective subjects, and it seemed as if nothing could dampen their

²⁷ (*continued*) "Would it not be well to [issue] the pamphlet [in] [the] form of a monthly issue. [to] [bear] {name;} of month like most Bulletins of learned societies. This would make the parts rather more bulky and [_____] nothing as to date.

"You will find 250 copies hardly enough. As new [members] force you, or you enter into correspondence with new institutions, you will want to supply from the beginning, 500 will be as small a number as you can safely issue, especially if as I trust, the Academy will in time count its centuries of age.

"Professor Henry authorises me to send a full series of Smithsonian Publications. Shall they go by [_____] [express]?"

"I am glad to see Dr. Ayres is active. He is a thorough naturalist and a smart valuable [_____]. . ."

"Very truly yours,"

[signed] Spencer F. Baird

Baird's advice was taken seriously, thus launching the *Proceedings* series of the California Academy of Sciences, now in its 142nd year, save for a break in publication of about 8 years, from 1877 to 1886.

Original of letter not available. This transcription was made from the letterpress copy of S. F. Baird's correspondence in the SI Archives (RU 53, 9:325). Brackets [] enclose words that were either difficult to interpret or could not be deciphered.

enthusiasm or repress their ardor. Both devoted a great deal of their time to observation and study in their special branches of science, so much so that Dr. Ayres' practice as a physician — and he was known and recognized as a very good one — had to some extent at least to suffer, while Dr. Kellogg, who kept a drug-store, was almost too much engrossed with hunting and working over new plants to patiently wait upon customers. Their papers were always drawn with care and were listened to with attention and interest, and especially those of Dr. Ayres, who was a man of remarkable sound judgment, ability and scholarly attainments.

On SEPTEMBER 25, a bill was presented by Whitton, Towne & Co., the printers of *The Pacific* newspaper, for printing the first number of the *Proceedings* of the Academy and ordered paid. On OCTOBER 2, Adelestan Jardin was elected a corresponding member. Dr. Ayres exhibited two new fishes, *Morrhua Californica* and *Grystes lineatus*, and provided detailed descriptions. On OCTOBER 9, Dr. Ayres described a new genus and species, *Clypeocottus robustus*, but then, too late to have it excluded from the published *Proceedings* of the meeting, called attention to Charles Girard's earlier description of the same species, which he said had priority of date.^{2.8} Dr. W. P. Gibbons read a private letter he had received from Mr. Girard asking for additional information on viviparous fishes found on the Pacific Coast. On OCTOBER 16, Dr. C. F. Winslow was elected a resident member and Lieut. Stone (USN) a corresponding member. Whitton, Towne & Co.'s bill for printing the first bulletin [*Proceedings*, eds.] of the Academy was ordered paid. At the same meeting Col. Nevins was ordered paid \$20 for rent of his office for October. On OCTOBER 23, Dr. William Jelly was elected a resident member. Dr. H. Gibbons exhibited samples taken from sinking a shaft in search for coal near Saucelito, and Dr. Kellogg, in behalf of Julius Troeble, Col. W. Warren, and Dr. Trask, presented numerous varieties of California flower seeds. Dr. H. H. Behr presented a specimen of a parasitic shrub, to

^{2.8} The concern over priority of publication caused great concern to Academy members in the early years. But, also of concern was that Eastern scientists did not seem to take their Western counterparts seriously, believing them to be amateurs and upstarts. Although the Gibbons-Agassiz dispute seemed to be settled amicably, this was not always the case, and very early in the game Ayres ran afoul of both Charles Girard and Theodore Gill (*q.v.*). By 1859, Ayres was disturbed by Girard's treatment of his work and in a letter written by John Xántus to Spencer Fullerton Baird, Xántus says of a meeting he had with Ayres in San Francisco, "The other day Dr. Ayres visited me & I lent him the fish Report for perusal. He is extremely irritated at Mr. Girard's proceedings with him. In fact — there is a fish, which was described by Dr. Ayres, & present as a new genus. At the same time Girard noticed a fish in the proceedings, giving him a name, but remarking that the fish is in such condition that it does not admit something like a description. — Now in the Report Girard introduces Dr. Ayres fish, under his [Girard's] specific name of the unknown fish. . . Dr. Ayres already commenced to write a wholesale criticism of the fish Report, and I believe nobody can blame him for." (letter quoted in Ann Zwinger, 1986; see pp. 73-74.)

On April 16, 1859, Baird wrote to Ayres, "My dear doctor, I shall endeavor before the sailing of the next Cala. steamer to get for you the sheets of Girard's work on Fishes. . . You must not consider me responsible for any treading on your toes on the part of Dr. Girard. I have nothing to do with the work." (Letter quoted in Zwinger, 1986, p. 78.)

Like others at the Academy, Ayres felt that even with formal publication in the Academy *Proceedings*, as first recommended by Baird, Eastern scientists still ignored his work, and this pained him. Ayres received the pages of Girard's report in July and in a letter to Baird dated July 19, 1859, Ayres complains, "My Dear Sir, I wish first of all to express my very great indebtedness to you for Girard's Report upon the fishes. It fills the large gap which has so long lain open. . . Of course the first look would be for points in which I am personally concerned. I see that in a number of instances he has dropped me very unceremoniously and very unjustly; whether I shall ever be able to pick myself up again is yet to be seen. . . . I perceive that I have quite a number of genera and species here which he has not touched and which are probably new. I have been waiting for his work, before making attempts at their publication." (Ayres to Baird, SIA, RU 7002 {Spencer F. Baird Collection, 1793-1923}, Box 14, item 110.)

P R O C E E D I N G S
O F T H E
C A L I F O R N I A A C A D E M Y O F N A T U R A L S C I E N C E S.

VOL. 1.

SAN FRANCISCO.

1854.

SEPT. 4th. 1854.

Dr. A. KELLOGG in the chair :

Mr. W. J. Steene, by the Ed. of the *Pacific*, presented a curious specimen of cabbage, grown on the Sacramento bottoms, which, instead of a head formed of leaves in the usual manner, has a globular head formed by an enlargement of the top of the main stock, five inches in diameter, and weighing some two pounds or more, perfectly sound, with a thin rind, and of the consistency of the inner portion of a common cabbage stump. It has the shape and appearance of a round, field turnip, except that it has perfectly formed cabbage leaves on its sides and top, occurring at intervals, as on the ordinary cabbage stock.

Dr. Kellogg exhibited a drawing and specimens of a plant from the sea shore and salt marshes of the Bay of San Francisco, the *Frankenia grandifolia*. This plant is often coated with crystals of salt, which has given it the common name of Salt-weed. It is a low herb very much branched, the limbs opposite, with dense clusters of somewhat wedged-shaped leaves folded back or rolled up; within these, are unbosomed small pink flowers—stamens usually 6, pistils 3.

Dr. Ayres presented descriptions of the following species of fish, believed to be new :

Labrus pulcher, Ayres. This species, one of the finest of our fishes, makes its appearance in

the market about the first of August, and continues in season till nearly the close of February. They are sold by the fishermen under the name of Blackfish, and are also not unfrequently called Sheepshead.—Specimens are often seen weighing six to eight pounds. My description is taken from one sixteen and a half inches in length, weighing two pounds and a half.

Form very similar to that of *Tautoga Americana*. Greatest depth one-fourth the total length. Length of the head, five inches and one-fourth. Forehead protuberant, especially in large individuals, from an accumulation of fat immediately above the eyes.

Lips thick, loose and fleshy.

Teeth on the intermaxillaries and in the lower jaw alike—consisting externally of a single row, stout and conical, of which the two anterior pairs are much larger than the others and project forward: within this external row is a band of blunt, rounded teeth, not arranged in regular rows, scarcely projecting above the membranes. No teeth on the palatine bones or the vomer. Teeth on the pharyngeals evenly flat, tessellated tubercles; on the inferior pharyngeal, a few of the anterior ones are distinct, conical.

Edges of the *operculum* and *preoperculum* destitute of spines or serrations. *Scales* deeply imbedded, not conspicuous, elongated subquadrate, covering the body, the operculum, and the sub-operculum; extending but slightly on the verticle fins.

The rays of all the fins are enveloped in a thickened, partially opaque membrane.

The spinous portion of the dorsal fin is four inches and four-tenths in length; the spines are stout and strong, and one is continued by a fleshy prolongation one to two-fifths of an inch in extent; thus making the height of this portion

Page 1 of the *Proceedings of the California Academy of Natural Sciences*, 1854, vol. 1.

The volume was reissued with "minor" changes in 1873. The changes, some in wording, some in the lithograph plates, are not readily discernable but do exist and must be taken into account if used as a primary source, especially in taxonomic research (see Appendix K for sample comparisons).

(Reproduced from a copy in the Library of Congress)

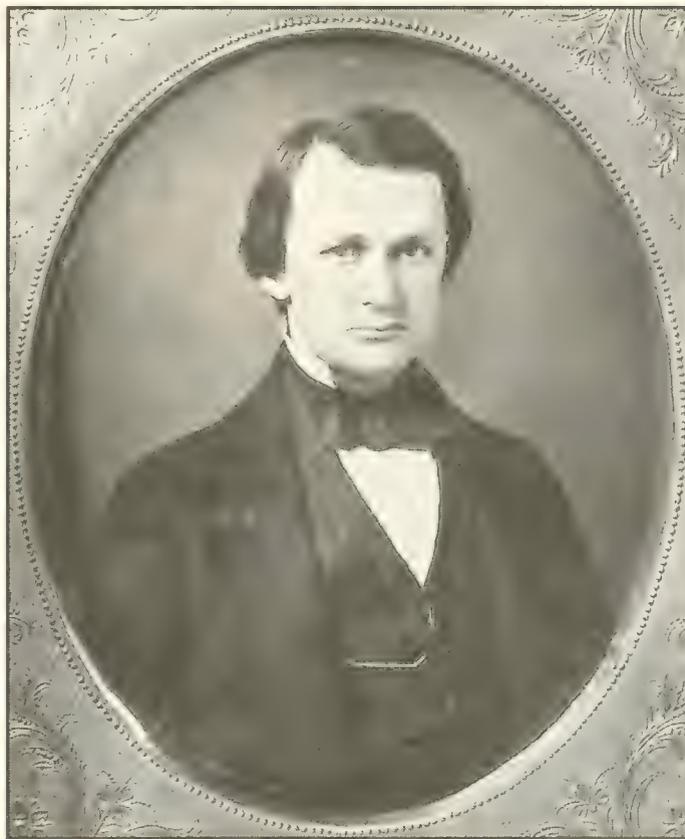
which he gave the provisional name of *Cuscuta Ceanothi*. Subsequently, on DECEMBER 4, he furnished a description of it, written in Latin. It was the old European practice to give all scientific descriptions in the Latin language, so that learned men of any country, as all were familiar with Latin, could read and understand them. But the practice is now to a very great extent abandoned; and, when thus tentatively revived, it met with no encouragement from the Academy, partly because the members generally were not as good Latinists as Dr. Behr and partly because it was felt that plain English was better, or certainly good enough. And it may be added that there is today almost, if not quite, as much necessity for learned men in every part of the world, whatever may be their nationality, to understand English as there was in past ages to understand Latin. NOVEMBER 27, Dr. R. Beverly Cole was elected a resident member and Dr. A. Chase of Downieville, a corresponding member. Dr. Henry Gibbons exhibited peanuts, *Arachis hypogoea*, part of a crop of several hundred pounds, raised in Alameda. DECEMBER 4, P. Edward Connor [in published *Proceedings*, "P. Edwards Conner" in handwritten minutes] was elected a corresponding member. Dr. H. Behr described the parasitic shrub, *Cuscuta Ceanothi*, found in the vicinity of San Francisco, and Dr. Wm. O. Ayres described two new fishes, *Osmerus elongatus* and *Mustelus felis*. DECEMBER 11, Dr. C. W. Brink was elected a resident member. Dr. Kellogg presented specimens of *Polypodium* from Shoalwater Bay, Washington. He said it was used by the Indians in the preparation of their tobacco, calling it "wild liquorice."

Chapter III: Years 1855-1856

1855

The first Monday of JANUARY, 1855, being New Year's Day, the annual meeting was adjourned until Saturday, JANUARY 6, when the annual election for officers took place and resulted in the choice of Dr. Andrew Randall for president; Col. Leander Ransom, first vice-president; Dr. Henry Gibbons, second vice-president; Dr. William P. Gibbons, corresponding secretary; Dr. C. F. Winslow, recording secretary; Col. T. J. Nevins, treasurer; Col. T. J. Nevins, librarian, Dr. W. O. Ayres, curator of zoology, Dr. T. L. Andrews, curator of botany; and Dr. Wm. P. Gibbons, curator of geology and mineralogy. Col. Nevins, as treasurer, reported the receipts for 1854 at \$441.00, and the expenditures as \$461.95, leaving a balance due him of \$20.95. As librarian, he reported that the Academy had sixty-five books, all in good order. The curators reported the cabinet in good condition, and that 1100 specimens had been added to it the previous year. On motion it was ordered that during the year 1855 only \$1 per month should be collected as monthly dues, the additional \$1, required by the constitution being remitted. At the next meeting, JANUARY 8, Dr. Ayres resumed presenting papers on California fishes, and Dr. Kellogg papers on California plants, and they continued bringing forward new matter at most of the meetings in the course of the year. JANUARY 15, Charles Girard was elected an honorary member. Dr. W. P. Gibbons immediately proposed Spencer F. Baird as honorary member and at the next meeting, on JANUARY 22, Prof. Baird was duly elected.

About the same time an article, which was distasteful to most of the members, appeared in a weekly San Francisco newspaper, called "The California Farmer" over the signature of Dr. C. F. Winslow, who had recently been elected recording secretary. At the next meeting, JANUARY 29, Col. Ransom and William Heffley were appointed a committee to wait upon Dr. Winslow and inquire of him whether he was the author. They reported, FEBRUARY 5, that Dr. Winslow admitted that he had written the article as published; whereupon, on motion of Dr. Wm. P. Gibbons, the office of recording secretary was declared vacant; and soon afterwards William Heffley was elected to fill the vacant position. Meanwhile funds had come in so slowly that a committee had been appointed to hasten the collection of monthly dues, and to furnish a list of the members. The committee furnished "a revised list, having erased the names of those who have neither rendered services nor paid anything towards the funds of the Academy, and abated the amount in arrear against certain resident members,"



Spencer Fullerton Baird
Smithsonian Institution Archives (64750)

presumably those who had rendered conspicuous service. The report was accepted and adopted. At the same meeting, a proposition of Dr. Wm. P. Gibbons to deliver a course of lectures on chemistry in aid of the funds of the Academy was approved.

FEBRUARY 12, Dr. John B. Trask read a paper on shells followed, February 19, by a second paper on the same subject. FEBRUARY 19, Col. R. D. Cutts, U.S. Coast Survey, was elected a corresponding member. On account of some abuse of the privileges of the library, the By-laws were amended by adding a provision that no member should remove any book without permission of the librarian or library committee; that a record of all books loaned and the names of the borrowers should be kept, and that no person except a member, should remove any book without special resolution authorizing it. Dr. Trask read a paper on *Alasmodon* and presented the specimens of the shell to the Academy. FEBRUARY 26, Dr. Kellogg exhibited specimens and drawings of a variety of California yellow honeysuckle, *Lonicera Californica*. Dr. Ayres read a paper describing a new genus, *Anarrhichthys*, and species, *A. ocellatus*, of fishes from San Francisco Bay. MARCH 12, Julius Troebel, well-known as an educator and advocate of the Kinder-Garten system, who was then editing the *San Francisco German Journal*, was elected a resident member; and, at his request, it was resolved that he should be furnished with copies of the proceedings of the Academy for publication in his newspaper in the German language. Dr. Thomas Antisell was elected a corresponding member. MARCH 19, Dr. Wm. P. Gibbons presented casts of the jaw and teeth of a mastodon, for which he had received \$25 to

purchase gypsum and procure the casts. The jaw and teeth appear to have been presented by Dr. Trask and were said to have come from Columbia in Tuolumne County. Dr. Gibbons also called attention to a supposed new species of trout, which he called *Salmo iridea*. Dr. Ayres spoke of a monster of the dog family. APRIL 2, S. R. Throckmorton was elected a resident member; and Dr. Behr appears to have been elected curator of botany, though the record is silent as to what had become of his predecessor in that position. Drs. Ayres and Trask spoke of the ravages of teredos or shipworms and thought there had as yet been no adequate way suggested of preventing them. Dr. Trask then read a paper describing a new ammonite from Shasta County, *Ammonites Batesii*. APRIL 9, Quincy A. Brooks of Olympia, Washington Territory, was elected a corresponding member. Dr. H. Gibbons, Dr. Behr, Dr. Trask, and Dr. Kellogg exhibited specimens of interesting plants, minerals, and fossil shells from Tertiary deposits that had come into their possession.

On APRIL 16, Joshua Child of Encinal was elected a corresponding member. It was announced that Palmer, Cook, & Co. had donated to the Academy, for one year from April 1, the free use of Room No. 4 of the Phoenix block, the building at 622 Clay Street in which the Academy held its meetings, for which liberality due thanks were returned. Dr. Ayres presented a description of *Salmo rivularis*, a new species from near Martinez. At the same meeting, a letter was received from William Thompson, market-gardener near the Mission Dolores, in reference to the premiums awarded at the beginning of the year for essays on trees and plants suitable for wind-breaks, and stopping shifting sand. The corresponding secretary was instructed to inform Thompson that \$50 had been awarded to him and was ready to be paid. Thompson's letter appears to have stirred up a lively breeze in Academy affairs; and at the next meeting, APRIL 23, on motion of Dr. Kellogg, it was resolved that Dr. Wm. P. Gibbons, on account of his neglect or refusal to notify Thompson of the award and premium, be requested to resign his office of corresponding secretary. Dr. Kellogg then, in his usual talk on plants, spoke particularly about wild ginger. Dr. Gibbons declined to resign his office; and, for the time, the Academy turned its attention to other matters. G. M. Brunham and Merrick J. Reed were elected resident members, and Dr. Randall paid into the treasury \$70, of which \$50 were probably intended to pay Thompson's premium. APRIL 30, Dr. Behr spoke at some length on the so-called California silkworm, and expressed an opinion that it might, and was likely to, prove valuable. Dr. Wm. P. Gibbons read a paper on a new species of crab, and Dr. C. F. Winslow a paper on the causes of tides, earthquakes, rising of continents, and variations of the magnetic force.

On MAY 7, Dr. Henry Gibbons furnished to the Academy a copy of his meteorological tables from December 1850 to March 1853, together with remarks on winds, clouds, and weather. These meteorological tables, which were made at San Francisco, had been asked for by a resolution dated December 12, 1853; and Dr. Randall had contributed \$10 and Col. Nevins \$5 in advance towards having them made out. Drs. Kellogg and Behr reported on the big tree, *Sequoia gigantea*, which they insisted was improperly called *Wellingtonia* by English authors. They claimed for it their own

name of "*Taxodium giganteum* or Washington Cypress." Dr. Kellogg then produced a stir by offering a resolution that the office of corresponding secretary, filled by Dr. Wm. P. Gibbons, should be declared vacant. It was a reopening of the controversy, which had induced the Academy on APRIL 23 to ask for the corresponding secretary's resignation. After some heated discussion, the resolution was made the special order for the next meeting. Dr. Henry Gibbons moved that the subject should be indefinitely postponed; but his motion was lost. At the next meeting, MAY 14, Dr. Randall in the chair and Dr. Ayres acting as recording secretary *pro tem*, the resolution was called up; Trask, Kellogg, Heffley, and Bloomer voted in favor of it, and Randall, Henry Gibbons, Wm. P. Gibbons and as appeared, Lanszweert against it, while Ayres, Behr, Troebel, Pappy, Ransom, Sloat and Winslow declined to vote. The resolution was accordingly declared lost, and so entered.

The controversy, however, was not yet disposed of, for at the following meeting, MAY 21, a communication from Dr. Lanszweert was read, in which he stated that he did not vote at the meeting of May 14. Upon this, a motion was made to amend the minutes of that meeting; whereupon the following protest was read and filed; "The undersigned hereby protest against the alteration of the minutes of the last meeting in regard to the vote of Dr. Lanszweert; and they assert that Dr. Lanszweert did vote, as recorded, in the negative, and that he declared to each of them that he had come to the meeting and remained in it for the purpose of so voting. H. Gibbons, W. P. Gibbons." This called Dr. Lanszweert to his feet with the assertion that he distinctly said at that meeting "I don't vote," which was heard by Trask, Kellogg and Sloat, and that consequently the protest which had been filed was false. There was again a heated discussion with a final result that the minutes of the meeting of May 14 were amended so as to leave the name of Lanszweert out of the vote on the resolution and declare it carried; and as so amended they were ordered approved. Dr. Kellogg then read a paper on plants and Dr. Ayres one on the California mole, *Scalops californicus*, and one on fishes. At the next meeting MAY 28, James Tallant and Henry C. Macy, were elected resident members. A motion was made to proceed to an election to fill the vacancy in the office of corresponding secretary, when Wm. P. Gibbons presented another protest, which was ordered spread upon the minutes, as follows: "I hereby protest against any action being taken in the matter of election of another corresponding secretary of this Academy; 1st. Because the Academy has no right under the present regulations to elect any officer at other than the first meeting in the month; 2nd. Because the duties of the corresponding secretary, being prescribed by the constitution, the society cannot compel him to perform any duties not particularly specified therein; consequently all action heretofore had in the premises is unconstitutional."

The first ground of this protest was based upon a By-law adopted April 3, 1854, that "the first meeting in each month shall be devoted especially to the business of the Academy and other meetings to scientific purposes; but this rule may be suspended by resolution so that miscellaneous business can be acted on at any meeting." The second ground was based upon the constitution, Art. V, Sec. 4. "The correspond-

ing secretary shall conduct the correspondence of the association; keep a record, in which he shall regularly enter copies of all official letters written by him and also note the receipt of all letters intended for the association, with a reference to his files thereof, and exhibit the same at the next subsequent meeting; and, at the close of his term, deliver to his successor all books, letters, stationery and other property in his hands belonging to the association." The Academy, however, did not seem disposed to consider these questions, but resolved to proceed, and Dr. William O. Ayres was elected corresponding secretary. It was also resolved that the new incumbent should call upon the late corresponding secretary and "that the latter be and is hereby requested to deliver to the said corresponding secretary all books, papers, correspondence and other matters in his hands and belonging to the Academy."³¹

After this experience of internecine feud, comparative quiet reigned, and the Academy devoted almost the whole of its attention during the remainder of the year to inspecting new specimens and listening to and discussing papers presented by Dr. Kellogg on plants and Dr. Ayres on fishes. JUNE 25, M. Auguste Le Folis of Cherbourg, France was elected a corresponding member. Dr. Behr described a new genus and species of plant, *Chloropyron palustre*. On JULY 9, James O'Meara of Calaveras Co., was elected a corresponding member. JULY 30, Dr. John A. Veatch, J. R. Hume and Dr. Henry Bates were elected corresponding members. AUGUST 6, Dr. J. Eckel was elected a resident member, D. E. Hough and Broome Smith, corresponding members, and on the same day a donation was received from Dr. John Torrey, the widely known botanist including "Observations on the *Batis maritima* and a report on the *Darlingtonia Californica*." On AUGUST 20, the old difficulty was called up again by a resolution declaring vacant the office of curator of geology and mineralogy, of which Dr. Wm. P. Gibbons was still incumbent, and the election of Dr. Lanszweert to fill it; and at the same time it was deemed proper to appoint L. W. Sloat a committee of one to call upon Dr. Gibbons, as late corresponding secretary, and "with full power to act, to obtain from him all books, papers, instruments, moulds for casts, and other property in his hands belonging to the Academy." At the same meeting Dr. Veatch and Dr. Lanszweert presented and discussed mineral water from Red Bluff. At this meeting Dr. Ayres read a paper on Echinodermata of the California coast. SEPTEMBER 3, S. W. Parker was elected a resident member and W. P. Blake, a corresponding member. SEPTEMBER 10, Dr. Ayres read a paper on a new species of "cramp fish," *Torpedo Californica*, and illustrated, by dissection, its electric

³¹ On July 16, 1855, Ayres wrote to Spencer Fullerton Baird at the Smithsonian Institution to inform him that he had been elected an Honorary Member on Jan. 22, 1855. As a postscript to the notification, Ayres spoke of the internal bickering in the Academy with respect to the office of Corresponding secretary: "Above I send you a notice officially. An unfortunate difficulty between the former Secretary of the Academy has resulted in their removing him from the office, and their requesting me to take it. He [W. P. Gibbons] refuses to give any report of what he has at any time done, and inasmuch as we cannot learn that more than one or two of those elected as Corresponding & Honorary Members have ever been made aware of it they have wished me to write to all."

On the unrelated matter of his researches, Ayres continued, "I am working along here in the dark as well as I can, with almost nothing in the way of books or means of reference, and what mistakes I make, some of you more advantageously situated must correct. I have the materials; you have the authorities. I am waiting very impatiently for the Reports on the Pacific Rail Road etc. which will contain more full descriptions of the various species from this coast. How can I get them when they are issued? Can you send them to me? . . ." (Ayres to Baird, SIArchives, RU 7002 {Spencer Fullerton Baird Collection, 1793-1923}, Box 14, Item 109.)

organs. SEPTEMBER 24, it was resolved that Col. Nevins be requested to engross the records since January, 1855, at an expense not exceeding \$50. OCTOBER 8, Dr. Ayres exhibited a specimen and provided a description of a new genus and species of shark, *Notorhynchus maculatus*.^{3,2} OCTOBER 22, James Palache of Murphy's, Calaveras County, and James G. Cooper of New York were elected corresponding members. NOVEMBER 5, letters were read from Dr. Isaac Lea, Dr. William Darlington, and Joseph Delafield acknowledging their election as honorary members. William Stimpson of Boston, Norris W. Palmer, Alameda, and Renè Lenormand, Vire, France, were elected corresponding members. NOVEMBER 26, Joshua E. Clayton, from Mariposa, was elected a corresponding member. Next, on motion of Col. Nevins, it was resolved to memorialize Congress in favor of full scientific survey of California and the Territories of Oregon and Washington and to petition "the next Legislature of this State . . . for an appropriation of [_____] thousand dollars per annum for five years to aid this association [the Academy {Eds.}] in procuring a site and erecting a suitable building for its meetings, library and cabinet and defraying the expenses of scientific explorations . . . of this State in the departments of Geology, Mineralogy, Botany, Zoology, etc. etc." DECEMBER 3, Charles Girard of the Smithsonian Institution acknowledged his election as an honorary member. DECEMBER 31, it was resolved that "meteorological instruments, presented by Mr. William Schmoltz" be placed in the hands of Dr. Ayres, and that he be requested to make the observations, for which they were intended.

1856

The year 1856 commenced with a number of changes in the Academy. By that time the early flush times of California were completely over. During the winter months or rainy season of 1855-56, there had been a considerable diminution in the yield of the placer mines; and, partly on that account but more particularly on account of the loose methods and wild and reckless speculation that were prevalent, the great banking houses of Adams & Co., Page, Bacon & Co. and numerous other banking concerns failed and in their crash carried down with them many business establishments and involved the whole community in losses. There was no longer any confidence, and a sort of general bankruptcy stared everybody in the face. The Academy, though it had never been well supported, felt the general depression very sensibly. Even the little dribblets, that had been flowing into its treasury, became more and more attenuated; and very few new members joined, while unavoidable expenses

^{3,2} Ayres' publication on *Notorhynchus maculatus* was rejected by Theodore Gill who in a later paper usurped the name as his own and redescribed both genus and species (see Gill, 1862, *Proc. Acad. Nat. Sci. Phila.*, p. 495 and 1864, pp. 147-151 [especially pp. 149-150]). The clash over this and other groups studied by Ayres and separately by Gill, and Gill's ruthless criticism of Ayres, finally caused Ayres to give up research in ichthyology in 1864. Ayres left San Francisco in 1871 and returned East, first to Chicago, where he suffered serious financial reversals, and then in 1878 to New Haven, Connecticut, where he re-established his medical practice and taught at Yale's medical school. In failing health, he retired to Brooklyn, New York, in early 1887 and died shortly thereafter, on April 30, at the age of 70.

were still running on and had to be met. The collections for the previous year, 1855, had been \$647 but the expenditures were \$672.00, leaving a deficit of \$25.70.

After the difficulty that had occurred in reference to the office of corresponding secretary and the action of the Academy upon it, Dr. Henry Gibbons and Dr. Wm. P. Gibbons, who had always been among the most able, active and efficient members, substantially withdrew and in effect dropped out; and it was not until after the lapse of a number of years that they again joined and took an active part in the institution they had done so much in organizing and maintaining and in the objects of which they at heart took so much interest. Besides the loss of these gentlemen, Dr. Andrew Randall, the president, who had devoted much time and energy to the institution, seems to have found that his large business affairs, which had become more or less complicated in the general financial disasters and depression, declined to serve any longer as an officer; nor does he appear to have taken any further active part in the proceedings. At the annual meeting of JANUARY 7, 1856, at which the officers for that year were chosen, the election resulted in the choice of Col. Leander Ransom for president; Dr. Albert Kellogg, first vice-president; Dr. J. N. Eckel, second vice-president; Edward Bosqui, treasurer; Dr. Wm. O. Ayres, corresponding secretary; Merrick G. Reed, recording secretary; Col. T. J. Nevins, librarian; Dr. J. B. Trask, curator of geology and mineralogy; H. G. Bloomer, curator of botany; L. W. Sloat, curator of conchology, and Dr. L. Lanszweert, curator of zoology.

One of the first things done at this annual meeting, besides the reading of the report of Col. Nevins as treasurer, was an amendment of the constitution reducing the regular monthly dues from \$2 to \$1, and the fee for life membership from \$500 to \$100. It left the initiation fee \$10 as before, but specially declared that no one, though elected, was to be regarded as a member until he had complied with the prescribed conditions. Col. Nevins presented an alphabetical index of the specimens of the Academy mentioned in the records from the commencement of its proceedings, and, as it appeared that he had engrossed the records of 1855 as he had been directed to do, he was ordered paid \$50. Dr. Trask then read a paper on "Earthquakes in California from 1812 to 1850." At the next meeting, JANUARY 14, a committee, consisting of Nevins, Ayres and Bloomer, which had been appointed to solicit an annual appropriation from the California Legislature for the purchase of a site and erecting and maintaining a building for the Academy, made a report, which could not have been very encouraging. The Legislature was entirely too busy with political and other schemes to pay any attention to science and particularly to an institution which could not control the votes even of its own members. The day had not yet come when every Academy of Science will be regarded as of vast importance in every well-regulated State.

There seems to have been still some disagreement in reference to what property of the Academy remained in the possession of Dr. Wm. P. Gibbons, the former corresponding secretary, and it was resolved that the Smithsonian Institution should be communicated with in regard to the instruments ordered from and transmitted by it. Dr. Trask presented a paper on "Earthquakes in California from 1850 to 1855." JANUARY 21, Dr. Ayres, the corresponding secretary, reported that he had received

from Dr. Gibbons, “one cistern-barometer, one rain-gauge, two thermometers, two hygrometers, and one magnetic instrument for determining variations.” JANUARY 28, Dr. C. H. Raymond presented specimens of paper made from wood-shavings. FEBRUARY 4. Trask, Lanszweert and Bosqui were appointed a committee “to put the rooms of the Academy in order.” The effect of reducing the fee of life-membership from \$500, which no one from the beginning had been willing to pay, to \$100 was seen on FEBRUARY 11, when Joseph C. Palmer was elected the first life member, followed on FEBRUARY 18 by his partner in business, Charles W. Cook, and on the same day P. M. Randall and S. Pinkham were elected resident members and Capt. Kentrel a corresponding member. FEBRUARY 25, Dr. Randall, who was present at the Academy for the last time, and Dr. Veatch presented specimens. On MARCH 3, Missouri State geologist B. F. Shumard was elected a corresponding member, and on MARCH 10, A. H. Jones and C. D. Shuepel were elected resident members and J. M. Alden a corresponding member. At the same meeting, on motion of Edward Bosqui, the treasurer, it was resolved that notice should be sent to all members in arrears, and that all money received from monthly dues should be used only for the completion of the rooms of the Academy and paying outstanding indebtedness. Frank Baker contributed carpeting, for which he received thanks. MARCH 17, Prof. J. D. Dana donated a copy of his “Science and the Bible,” purporting to be a review of Prof. Lewis’ “Six Days of Creation.” At the same meeting Col. Nevins presented an account of a thunder storm observed at Alameda and Dr. Trask a paper on fossil shells. MARCH 24, Joshua D. Haven besides many specimens, donated a large mahogany bookcase. APRIL 14, Thomas Rowlandson³³ and Frederick Marriott were elected resident members. Dr. Henry Wheatland of Salem, Massachusetts, was elected a corresponding member. APRIL 21, Dr. Kellogg spoke about a horse-tail plant of the *Ephidae* family. APRIL 28, Augustus Le Plongeon was elected a resident member. A paper on California Crustacea, received from William Stimpson, zoologist to the U.S. Exploring Expedition, was read; and Mr. Cochrane was authorized to collect specimens for the Academy on his travels in Honduras and elsewhere. MAY 12, Sir William J. Hooker, Director of the Royal Gardens at Kew, was elected an honorary member.

On May 14, occurred the shooting of James King of Wm., editor of the *San Francisco Evening Bulletin* newspaper, by James P. Casey, which gave rise to the famous Vigilance Committee of 1856, one of the most extensive and significant social movements in the history of California. San Francisco was at that time in the hands of very corrupt politicians and contained a large number of characters of the lowest grade, countenanced and protected by them. King had undertaken in his newspaper to expose the corruption and had had occasion to speak of Casey, then a supervisor, and mention the fact that he had been a convict in the New York penitentiary at Sing Sing. On account of this exposure, Casey shot King in open day on the public street,

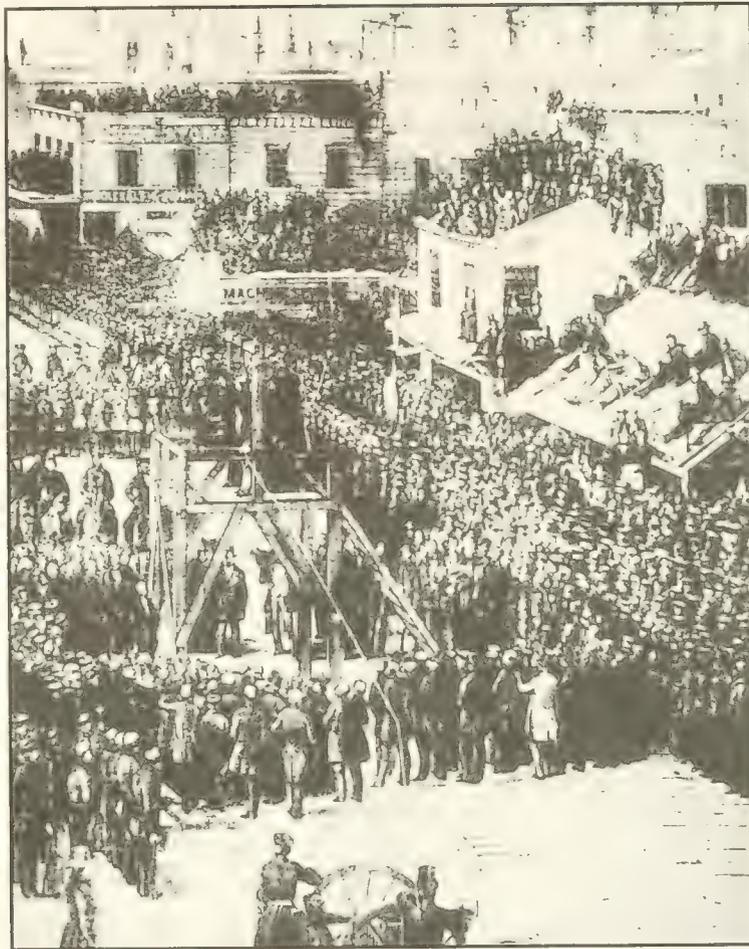
³³ In the published *Proceedings* (1855, vol. 1, pt. 2D, p. 95), the name is misspelt “Rollandson.” In the *Minute Books* and in the hand-written roster of members, compiled some years later, it is spelt “Rollinson.” Thomas Rowlandson arrived in San Francisco from England in 1855 and entered into the life of the city, listing himself variously as a mining, agricultural, and civil engineer (see Aldrich, Bolt, Leviton & Rodda, 1986, *Bull. Seismological Soc. America* 76(1):71-75).

and then hurried to the police office whose chief was his personal friend and where he was sure of protection and sympathy. Shooting, stabbings, deadly assaults of all kinds, robberies, burglaries, larcenies and crimes of all descriptions, and among them ballot-box stuffing and other frauds upon the elective franchise were common; and the community had already been worked up to a degree of excitement, which now burst into flames. The better classes of the citizens met, organized for necessary mutual protection, and commenced the great work of cleansing the City of its scoundrels or at least making them hunt their holes. They established head-quarters, which they fortified, and formed an army of some five thousand men, which, with cannon, marched to the county jail and took out of it Casey and another assassin named Charles Cora, who had a few months previously shot down and killed William H. Richardson, the U. S. Marshal of the California district. Both of these men they carefully tried and after due deliberation convicted; and on May 22, the day of King's funeral, who had died a few days before, openly and in the face of the world hanged them from the windows of their headquarters, popularly known as "Fort Gunnybags."

During those days of public excitement – for the Vigilance Committee did not stop with the execution of Casey and Cora, but, with the approbation of the better class of citizens throughout the State,^{3,4} continued their work for several months and for the time and for a number of years afterwards effectually cleansed the City – The Academy, though it formally met, did little business. On JUNE 2, Mrs. Nevins, as if to remind the members that the sun still shone and the skies still smiled, sent in a vase of beautiful flowers from Alameda. On JUNE 16, J. Mora Moss was elected a resident member. Dr. Trask presented a collection of 126 species (? specimens) of *Achatinella* from the Hawaiian Islands to the cabinet. In the course of a few weeks more, July 24, while the Vigilance Committee were in the very midst of their Herculean labors, a man named Joseph Hetherington, with the same murderous and unbridled passion that had cost Casey and Cora their lives, and apparently oblivious or careless of their fate, openly shot down Dr. Andrew Randall on account of a debt^{3,5} which the latter owed him. The result, as might have been expected by any one that had the remotest knowledge of the spirit and earnestness of the Vigilance Committee, was that Hetherington was at once seized, tried and condemned; and shortly afterwards, in company with another assassin, named Philander Brace, executed, on gallows erected in the public street, in the presence of the entire population of San Francisco. In the meanwhile, JULY 27, the members of the Academy were called upon to turn out in a body and take their place in the long funeral procession of their first president.

^{3,4} Hittell somewhat overstates the support of the Vigilance Committee. Some, such as the Governor, newly installed J. Neeley Johnson, and San Francisco banker, William Tecumseh Sherman, were concerned about the breakdown of constituted authority. Sherman, who earlier in the spring of 1856 had accepted an appointment as Major-General in the California State Militia, agreed to quell the vigilantes by calling out the militia on condition that the Army supply the needed arms. As events turned out, army commander General John E. Wool refused to provide the weapons, and Sherman, lacking support, resigned his militia commission leaving the Vigilance Committee in control of the city for several months. Although there is an extensive literature covering this period of social upheaval, John F. Marszalek's *Sherman: A Soldier's Passion for Order* (1993, The Free Press, Macmillan, Co., New York, pages 105-109) offers a less euphoric assessment of this moment in history than that given by Hittell.

^{3,5} \$67,175.59 (see Butler, C. P., unpublished ms in CAS Archives, vol. 1, p. 160).



Execution of Joseph Hetherington and Philander Brace, San Francisco, July 29, 1856
 California Academy of Sciences Special Collections
 (unknown contemporary source)

The result of the Vigilance Committee work was a complete change in the government of San Francisco, effected by what was know as the "People's Party," which grew out of it. Most of the very bad characters, besides those who were hanged, had been exiled or found it safest to leave. Honest men were put in office; and for the next ten years there was not a more peaceable, orderly or better governed city in the United States or, for that matter, in the world than San Francisco. But the changes thus brought about engrossed the attention of everybody; and the business of the Academy, and particularly its financial interests, had to be more or less overlooked or neglected. A portion of its members, nevertheless, continued to meet, and the life of the institution was preserved.

Returning to member meetings, meetings were held on JULY 7, on JULY 21, at which letters from Professor Joseph Henry Lieut. M. F. Maury, and the Royal Society of London were read, and on JULY 28, when Charles L. Bonaparte (called Prince) and Baron Adolphe J. L. Quetelet were elected honorary members. Also, on their first reading, the members unanimously approved two amendments to the Academy By-Laws:

From and after this date, no matters for exhibition presented by any resident member, shall be entered on the minutes of the Association.

The publication of any paper in the departments of Zoology and Botany, must be accompanied by the specimens described or drawings of the same, in a fit condition for preservation, which shall become the property of the Association.

It was at this meeting that Dr. Trask presented a memorial for Dr. Randall.^{3,6}

On AUGUST 11, on account of pressing want of funds, a resolution was adopted calling upon Edward Bosqui, the treasurer, for a report upon the state of the finances. At the next meeting, AUGUST 18, Mr. Bosqui made his report; but at the same time, apparently regarding the resolution as a reflection upon his activity in collecting funds, he tendered his resignation of his office. This resignation, however, the Academy, being in no sense disposed to accept, was expressly rejected; but, for the purpose of helping Mr. Bosqui in his arduous task, Mr. Heffley was appointed to assist in the collection of dues. About the same time, Dr. John A. Veatch, who became a very active contributor of scientific papers, became a resident member. AUGUST 25, A. F. Beardslee was elected a corresponding member. Among donations to the cabinet were two snakes, *Eutainia dorsalis* and *Pituophis catenifer*, by Dr. Lanzweert, and several fish. SEPTEMBER 8, Julius K. Rose and Theodore F. Moss were elected resident members; and, SEPTEMBER 29, F. L. A. Pioche and Jules B. Bayergue also. Dr. Joseph Birnstill was elected a corresponding member. On the last named day, the two amendments to the By-laws first read on July 28 were presented by Dr. Trask for their second reading, one to the effect that matters for exhibition presented by a resident member should not be entered in the minutes, and the other, that every paper intended for publication in the departments of zoology or botany must be accompanied by the specimens described in a condition to insure their preservation or drawings of them; and that all such specimens and drawings should become the property of the Academy. Both amendments elicited much discussion and being put to vote, were lost – Kellogg, Trask and Heffley voting in favor of them, and Eckel, Lanzweert, Ayres, Bloomer, and Moss, against them.

OCTOBER 20, Dr. Ayres presented a description of a new species of mackerel, *Scomber Diego*, from the Santa Barbara Channel. NOVEMBER 17, several donations to the cabinet are recorded. DECEMBER 16, Dr. J. B. Haggin was elected a resident member. Captain J. D. Brown donated specimens of corals and sponges from the Gulf of California, Mr. Bridges, specimens of *Sequoia* and *Pinus*, and Dr. Veatch, rock specimens from the vicinity of Clear Lake.

^{3,6} Although supposedly read to the members at the meeting held on July 28, there is no mention of it in the minutes of that meeting. As pointed out by Leviton & Aldrich (1982:62), the original of the memorial had been presented to the Randall family and was kept among the family records until it was presented to Mr. C. P. Butler of the Academy's Department of Geology by a decendent relative of Andrew Randall. For more details about this and about Andrew Randall in general, reference should be made to an unpublished manuscript in the Archives of the Academy written in the late 1970s by Clay Preston Butler (see Bibliography, this volume).

Chapter IV: Years 1857-1862

1857

The records of the Academy for the next few years are very imperfect.⁴¹ There are, however, some items preserved, showing the general progress. The annual meeting for 1857 was held on JANUARY 5; but the attendance was so slim that the annual election was put over until the next meeting. Dr. J. B. Stillman of the steamer *John L. Stephens* presented a number of specimens which he had collected on one of his trips to Panama. On JANUARY 12, in accordance with postponement, the election for officers of 1857 took place and resulted in the choice of Col. Leander Ransom for president; Theodore F. Moss, first vice-president; Dr. J. N. Eckel, second vice-president; Merrick G. Reed, recording secretary; Dr. Wm. O. Ayres, corresponding secretary; Edward Bosqui, treasurer; Wm. Heffley, librarian; Dr. L. Lanszweert, curator of zoology, and Dr. J. B. Trask, curator of geology and mineralogy. Col. Thomas J. Nevins, apparently on account of his services, was made a life member; and Thomas G. Cary⁴² was elected a resident member. Dr. Trask read a paper on "Earthquakes in California in 1856," and Dr. Kellogg a paper on new plants. An extensive collection of California plants, woods of native forest trees, mosses from New Mexico and the Gila country, shells and minerals, was purchased from the estate of Dr. Andrew Randall. (On JANUARY 25, Thomas G. Cary seems to have been elected a resident member a second time [*Proceedings*, vol. 1, pt. 2, p. 105]. {Eds.})

On FEBRUARY 23, Joseph Britton, James Hepburn and A. A. Branda were elected resident members and George Fraunfeld of Vienna [Austria], a corresponding member. Wm. P. Blake read a paper on "Telluret of Silver in California." MARCH 23, on motion of Dr. Ayres, Captain C. J. W. Russell was declared by *viva voce* vote a resident member. On MARCH 30, Professor Asa Gray and Dr. John Torrey were elected honorary members. At this same meeting Dr. Trask presented, among other things, a quantity of ripe fruit of the coffee tree from the Hawaiian Islands; and the curators were requested to distribute it throughout the state with a view to inducing

⁴¹ Not only are the records imperfect, but none of the minutes of the meetings held following January 5, 1857 to January 20, 1862 are recorded in the minute books. Nor do any of the minutes, save for the papers read at the meetings, which were then published as scientific contributions, appear in the Academy's *Proceedings* (ser. 1, vol. 2, 1858-1862). Mention of some of the interesting events that took place at the meetings, such as J. D. Whitney's effort to get the State of California to build a state museum to be administered by the Academy (see Appendix E), are to be found only in the personal correspondence of Academy members, such as J. D. Whitney and William H. Brewer, whose personal papers and those of their correspondents, e.g., Spencer Fullerton Baird, are to be found in archives outside of California.

⁴² Thomas G. Cary, brother of Mrs. Louis (Elizabeth Cabot Cary) Agassiz.

its cultivation in California. Dr. Trask read a paper on the direction and velocity of the earthquake of January 9, 1857. He also read a paper on new microscopic organisms from the Santa Barbara Channel, and a paper on zoophytes from the Bay of San Francisco and adjacent localities. Captain Russell deposited a water-bottle and beads, with a mortar, which had been used, and were supposed to have been made, by the Indian woman Maria, the so-called female Robinson Crusoe, on the Island of San Nicolas during her solitary residence there of eighteen years. He also deposited a volume of records in Spanish of the Mission of San Diego, dating back to 1770. A paper by Mr. Garrett on shells of the Hawaiian Islands, was read; and the recording secretary was requested to convey to Joseph C. Palmer the thanks of the Academy for a donation of the room rent for the ensuing year. OCTOBER 5, Dr. Kellogg read a paper on *Cupressus fragrans*. On NOVEMBER 30, Col. Nevins made a proposition to write up the records, which was laid over for a week; and at the next meeting, DECEMBER 7, the whole subject matter was indefinitely postponed. At the same meeting, Dr. John A. Veatch read a paper on "A Visit to the Mud Springs in the Colorado Desert in July 1857."

1858

It was in this year that the Fraser River gold excitement was at its height, and a large part of the population of San Francisco rushed off to the new mines. The effect of this exodus – added to the business depression of previous years and the drain produced by the filibuster attempts of William Walker to establish himself and extend the area of slave-territory in Nicaragua, from which the city had not yet recovered – was for the time disastrous. Real-estate went down to a very low figure; business in general languished more than ever, and merchandise, except for hard-tack, pork, and beans and other gold-rush supplies, became to a great extent a drug in the market. But, notwithstanding these discouragements, the California scientists, who apparently had little in the way of wealth to lose, kept on at their work. The annual meeting for 1858 was held on JANUARY 4, when the officers for the previous year with Col. Leander Ransom as president at their head, were reelected, the only change being that of Dr. Trask as recording secretary in place of Merrick G. Reed. Dr. Veatch was also made curator of conchology. At the next meeting, JANUARY 11, the constitution of the Academy, on account of some doubt about its provisions, appears to have been amended, so as to entitle life members "to participate by vote or otherwise in all meetings of the Society"; (Art. II, Sec. 7); and so as to provide that "if any member shall be delinquent in dues for a term of more than twelve months, his name shall be erased from the list of members, his membership ceasing from that date. But if the person thus affected shall show evidence to the Academy that he has been absent from the city not less than six months of this time, the rule shall not be enforced. All articles or sections of articles conflicting with the above amendments are hereby repealed" (Art. II, Sec. 8). At the next meeting, JANUARY 18, it was resolved to dispense with

the election of standing committees for the current year. FEBRUARY 22, Col. Ransom read a paper on "Growth over the Butt of a Blazed Tree," showing such growth for five years and indicating a "ring" for each year. JULY 25, Dr. Kellogg read a paper on a blue-star tulip, which he called *Cyclobothra coerulea*. AUGUST 2, he presented specimens and descriptions of two of plants, *Calochortus lilacinus*, the blue-beard butterfly tulip, and *Campanula filiflora*, the tubular bellwort, the latter first presented by him in July, 1855. OCTOBER 25, Dr. Kellogg exhibited drawings of *Brodioea terrestria*.

1859

The proceedings of the year 1859 were very much like those of 1858.⁴³ The Fraser River adventurers had come back disappointed. They had found no gold worth the hunting or that would even pay the expenses of the search. Their return though they were impoverished, somewhat brightened business prospects; but, in the meanwhile national politics were drifting towards the great conflict between the North and the South on the subject of slavery, and, except among the very few devotees, little or no attention was given to science. For a long time no new members joined the Academy. But still it continued its sessions and its work went on. At the annual meeting of 1859, held JANUARY 10, the old officers, with Col. Ransom at the head as president, were re-elected. On JANUARY 17, Dr. Veatch read a paper "On the Occurrence of Boracic Acid in the Sea-water of the Pacific." For a number of subsequent meetings Dr. Kellogg seems to have occupied the chief attention with paper on plants: — JANUARY 24, on *Abies bridgei*; APRIL 25, on *Fritillaria viridae*; JUNE 13, on *Collinsia solitaria*; JULY 18, on what he called the *Veatchia* genus and *Veatchia crystallina*, a new genus,

⁴³ John Xántus, the Hungarian naturalist who visited San Francisco in 1859, in a letter to Spencer Fullerton Baird at the Smithsonian Institution, said of the Academy, "The California Academy of Nat. Sciences is in a deplorable condition, they have only 11 (say eleven) members, and each of them has to pay about \$300 a year to defray the expenses of the society. Their once beautiful collection is entirely eaten up by the miriads of mice & rats, they even destroyed the labels of all the Rocks & fossils." (Letter to S.F. Baird, Feb. 17, 1859; in Zwinger, p. 59). Xántus, according to Ann Zwinger (*Xántus: The letters of John Xántus to Spencer Fullerton Baird from San Francisco . . . 1859-1861*. 1986. Dawson's Book Shop, Los Angeles, CA. 422 pp.) had a "craving for respect and public approbation [that] led him to fabrication and plagiarism. He wrote for fame, not for truth . . ." (Zwinger, p. 32). He also led Baird astray by withholding important details of specimens he sent. For instance, in his letter to Baird (lit. cit. supra), Xántus said, "Mr. Hubbard will forward this steamer two boxes from me, the one contains birds & mammals . . . The box contains also two small boxes with eggs of the *Passerella cinerea*, & *Chrysomitris Yarellii*, which I obtained also from Dr. Ayres, and never saw them in Ft. Tejon, they were procured near town on the Mission Dolores [San Francisco] last summer." Baird, on receipt of the package, had difficulty dealing with the eggs and wrote directly to Ayres on April 16, "I have not been able to identify the eggs you sent through Mr. Xántus. . ." Ayres responded (May 18, 1859), "You inquire about those eggs sent by Mr De Vesey [John Xántus]. I can tell you nothing about them, only that I have no idea whatever that either name [e.g., *P. cinerea*] or [*C. yarellii*] is correct. The nests & eggs without the bird were presented to the Academy nearly five years ago, having been found somewhere near the city, & remained for a long time without any labels excepting a note of their locality. . . For entre nous, & speaking with all possible respect, there is no one of our members who to the best of my knowledge & belief could tell the egg of a sparrow from that of any other bird which might happen to be of small size . . ." (see Zwinger, p. 67.)

In a letter written to Baird a few days earlier (Feb. 11), and in a more generous mood, Xántus says, "Mr. Hubbard [Samuel Hubbard, agent for the Pacific Mail Steam Ship Co.] introduced me to the Mercantile library association, and I got acquainted through him with almost every scientific gentleman of the town. Dr. Trask [John Boardman Trask] is particularly kind to me, and so is Dr. Ayres [William Orville Ayres], who both told me, to consider their houses as my own . . ." (see Zwinger, p. 55).

Bloomeria, and species *B. aurea*, and *Lilium washingtonianum* from the Sierra Nevada; AUGUST 29, on *Ledum californicum*; and SEPTEMBER 19, on two new species of *Pentstemon* [= *Penstemon*]. On SEPTEMBER 26, Dr. Veatch read a paper on new genera and species of plants, which he had found on Cerros Island near the west coast of Lower California, particular descriptions of many of which were presented by Dr. Kellogg. The subject of new plants, brought up from Cerros Island by Dr. Veatch, was continued by Dr. Kellogg on OCTOBER 2 and again on OCTOBER 10, when drawings of the *Rhus veatchiana*, or elephant sumac, and some other Cerros Island plants were presented. At the October 10 meeting, Prof. E. Balfour^{4.4} and Dr. Robert K. Greville, were elected honorary members. On OCTOBER 17, Dr. Ayres^{4.5} read a paper describing eleven new California fishes; after which, on OCTOBER 24, Dr. Kellogg resumed the subject of new plants, brought by Dr. Veatch from Cerros Island and continued the same subject on NOVEMBER 14 and NOVEMBER 21 with drawings of the plants described. On NOVEMBER 30, Dr. Kellogg read a paper on a new species of oak found near Clear Lake, California by Andrew A. Veatch^{4.6} and called Abram's oak; and on DECEMBER 5, he seems to have finished up for the time on the collections brought by Dr. Veatch from Clear Lake and from Cerros Island. At the same meeting Dr. Trask presented a paper on "Earthquakes in California During 1858" and another on "Earthquakes in California During 1859."

1860^{4.7}

The records for 1860 are even more meager than those of the preceding several years. The annual meeting took place on JANUARY 2, and all the officers of 1859, with Col. Ransom at their head, were re-elected. On MARCH 5, Dr. Kellogg described a new genus of plants, which he called *Liliorhiza*, and gave a drawing of *Liliorhiza lanceolata*. MAY 7, he described a new species of *Trillium* and presented a drawing

^{4.4} Prof. E. Balfour, otherwise unidentified in the *Minute Books*, may have been Edward Green Balfour (1813-1889). Balfour, born at Montrose, Forfarshire, England, went to India in 1834 and entered the medical department of the Indian Army, becoming surgeon-general from 1871 until his retirement in 1876. In 1850, Balfour offered to establish a Government Central Museum in Madras and was appointed its superintendent, until he stepped down in 1859. While head of the museum, he published several catalogs, including a classified list of Mollusca, and reports on the work of the museum. (See *Dictionary of National Biography*, vol. 22 [supplement], pp. 113-114.

^{4.5} See footnote 2.8 (p. 35).

^{4.6} Mr. Andrew A. Veatch, son of Dr. John A. Veatch.

^{4.7} Although nowhere recorded in extant Academy records, the establishment of the California Geological Survey on 21 April 1860 was to have a profound effect on the Academy because it brought to San Francisco a cadre of eastern scientists, notably Josiah Dwight Whitney, director of the Survey, William Henry Brewer, William M. Gabb, and others who gravitated to the Academy thus giving it a new lease on life and a broadened perspective on the natural sciences. For a perceptive discussion of this, see Smith (1994, *Pacific Visions*), especially the section dealing with the California Academy of Sciences. As important as the Geological Survey was in this regard, in fact it was only one of several events that attracted this new breed of scientist to the San Francisco area and to the Academy in the 1860s. Unrelated to the Survey was the arrival of William Healey Dall, Robert Edwards Carter Stearns, James Graham Cooper (although he was employed by Whitney for part of the time), George Davidson, and with the founding of the University of California in 1867, John and Joseph LeConte. For an interesting analysis of the impact that these new arrivals had on the Academy, see Table 1 (Appendix G) in which the attendance at Academy meetings, based on data recorded in the *Minute Books*, is shown by year and month from 1853 to 1876.

of it. JUNE 4, he described and gave a drawing of *Sisyrinchium flavidum*. On JULY 2, Dr. Ayres read a paper on a number of new fishes, including the new genus and species *Halias marginatus*, and presented outline drawings of them. He continued the same subject on AUGUST 6, describing *Trichodon lineatus* and *Osmerus thaleichthys*. SEPTEMBER 3, Dr. Kellogg presented descriptions and drawings of *Hemizonia luzulaefolia* var. *fragarioides*, *Hemizonia balsamifera*, *Lonicera conjugialis* and *Abronia crux-maltae*. OCTOBER 1, Dr. Ayres again took up the subject of fishes, reading papers and presenting drawings of two new species, *Atherinopsis affinis* and *A. tenuis*; and on NOVEMBER 5 and DECEMBER 3, describing *Johnius nobilis* and *Poronotus simillimus* and two new genera, *Seriphus* and *Camarina*.

1861^{4.8}

The annual meeting of 1861 was held on JANUARY 7, and the same officers who had held for several years, were re-elected. JANUARY 21, W. Newcomb, M. D., of Oakland was elected a corresponding member. Dr. Kellogg read a paper on what he called *Polypodium carnosum*, and Dr. Trask a paper on "Earthquakes in California in 1860." FEBRUARY 4, Dr. W. Newcomb read papers on shells, one on *Helix Bridgesii* from San Pablo, and another on *Helix Traskii*, and three others; and on MARCH 18 another paper on other shells in which he described *Helix Carpenteri* and *Helix Ayresiana*. He seemed to wish to revive the old practice of giving Latin descriptions, but at the same time yielded so far to scientific English as to give them in English as well as in Latin. Dr. Kellogg read papers on plants FEBRUARY 18 and 25, APRIL 1 and 15, MAY 5, JUNE 2, JULY 21, SEPTEMBER 2, OCTOBER 6 and 20, NOVEMBER 3 and 17, and DECEMBER 15. The plants described were accompanied in every case with outline drawings made by himself; and they included species of *Ribes*, *Galium*, *Mentzelia*, *Sisyrinchium*, *Chlorogalum*, *Allium*, *Collinsia*, *Lewisia*, *Astragalus*, *Hosackia*, *Ceanothus*, *Echinosperrum*, *Lathyrus*, *Lonicera*, and *Wahlenbergia*. On JULY 7, Dr. J. G. Cooper read a paper on new California animals, among which were what were known as Whitney's owl, *Athene whitneyi*, Lucy's warbler, *Helminthophaga luciae*, Agassiz' land tortoise, *Xerobates agassizii*, and some others. AUGUST 5, R. Pumpelly read a lengthy paper, a "Mineralogical Sketch of the Silver Mines of Arizona." On AUGUST 19, Col. Ransom read a paper on the "Declinations

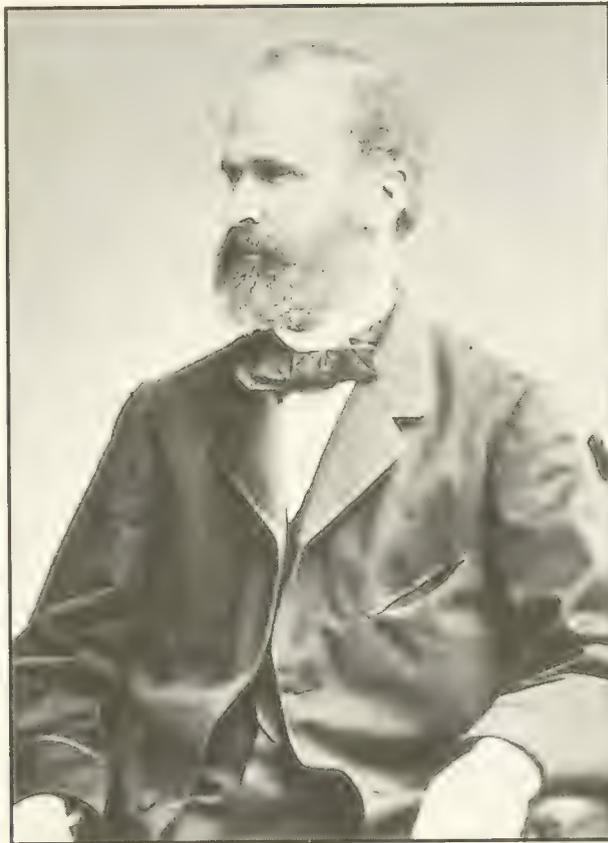
⁴⁸ As noted earlier, there are large gaps in the handwritten records of Academy meetings contained in the *Minute Books* that were saved from the earthquake and fire. There are no written records for all of 1861 and the only records that were preserved of the meetings are those published in the *Academy Proceedings*. However, these are also incomplete and Hittell had nothing at hand to indicate what, if anything, had gone on, or indeed, if meetings were even held. They were, and from the Academy's standpoint, one of particular interest was held on Sunday, June 23, 1861 at which, according to a "Dear Friends" letter written by William Henry Brewer that day, "and must go soon to a meeting at the Academy of Natural Sciences which meets tonight — Prof. W. [J. D. Whitney, {Eds.}] has a grand scheme for building a great building for the State collections here. We are ventilating the matter here now." Whitney and Brewer seemed to think the matter sufficiently important that they delayed their departure for the field, "I had expected to leave San Francisco on Tues morning but Tuesday I had to meet some men to talk over matters relating to our cabinet building — so we delayed until Wednesday." (Brewer to Dear Friends, (California Letters 1860-1861), Yale Univ. Archives: Family Correspondence, Group 100; Ser. 1; Box 8, Folder 2111, Letter 21, June 23, 1861.) See Appendix E for a transcription of Whitney's proposal to the Governor and State Legislature for construction of a new State Museum building to be administered by the California Academy of Natural Sciences.

of the Magnetic Needle in California.” He said that the needle varied about 12°40' East at the southern line of the State, while at the northern boundary it varied about 18°, and that the lines of equal variation in a general east and west direction were very much curved. He said further that there appeared to be in this State an annual increase of variation of about four minutes. He added that “the occasional earthquakes, with which we are visited in this State notwithstanding they do no material injury, other than to frighten the timid, are believed to have more or less effect on the magnetic forces and to cause sudden changes in some localities.” Professor Wm. P. Blake, on OCTOBER 6, presented a paper on “Crystals of Silver in Furnaces,” and on DECEMBER 1, Dr. Ayres a paper, with drawings, on a Lower California fish called *Cynoscion parvipinnis*.

1862^{4.9}

The year 1862 commenced with better auspices for the Academy. It is true that the great Civil War had broken out and that, though the scene of military contention did not extend to California, the attention and sympathy of all the people were more or less enlisted and engrossed in the gigantic contest. But at the same time, the State had at last taken a very great step in the direction of science by the passage on April 21, 1860, of an act for a geological survey of California, and in December of that year Professor Josiah D. Whitney, who had been appointed State Geologist and was placed at the head of the survey, established his headquarters at San Francisco. Both he and his able assistant [William Brewer], naturally drifted into the Academy; became active members and workers; put a sort of new life into the institution, and gave it an impetus which materially assisted in enabling it to continue its struggle for existence and in the end to triumph over all obstacles. The records still continue to be imperfect; a number of persons became members and were recognized as such, without any notice on record of their election, and various errors occur which are difficult, and in some cases impossible, of correction. But from this time on the record is fuller than for the previous five years. At the annual meeting of 1862, held on JANUARY 6, Professor J. D. Whitney and his assistants, Professor William H. Brewer and William M. Gabb, appeared as resident members of the Academy. At the annual election, which took place on that day, the officers chosen for the year were Col. Leander Ransom, president; Dr. J. N. Eckel, first vice-president; Rev. S. B. Bell, second vice-president; Professor Wm. H. Brewer, recording secretary; Dr. Wm. O. Ayres, corresponding secretary; Wm. Heffley, treasurer, and Professor J. D. Whitney, librarian. A very complete corps of curators were elected in the persons of Wm. M. Gabb for paleontology; J. B. Trask, conchology; J. G. Cooper, zoology; H. H. Behr, entomology; H. G. Hanks, mineralogy, and H. G. Bloomer, botany.

^{4.9} The records are not quite as imperfect as they had been during the late 1850s and first two years of the 60s. The minutes of the Academy's meetings are again recorded in the *Minute Books* beginning with the meeting held on January 20, J. D. Whitney serving as “Sec’y Pro. Tem.” William Brewer served as recording secretary when not in the field and H. G. Hanks and J. B. Trask as interim secretaries in his absence.



Josiah Dwight Whitney
Smithsonian Institution Archives (78-106)



William Henry Brewer (1861)
Bancroft Library, University of California, Berkeley



William More Gabb

(From Nat'l Acad. Sci., *Biogr. Mem.*, 1909, vol. 16; frontispiece)

Courtesy Peter U. Rodda, Department of Geology,
California Academy of Sciences

By this time, though the record does not give the date, the regular meetings of the Academy had been changed from every Monday evening to the first and third Monday evenings of each month. On JANUARY 20, Dr. Ayres, in whose hands the meteorological instruments of the association had been placed, made a report upon the remarkably heavy rainfall of that winter – usually known as the “Winter of the Flood” – up to date. He said there had been 18 days in December, with a fall of 7.030 inches, and 15 days to date in January with 15.040 inches, or in all over 25 inches. He remarked that the geological indications of the country were all in favor of the supposition that in former times rains had been much heavier than since the American occupation. Numerous traditions of Indians and accounts of old settlers united in making it appear that such had been the case. He also made remarks upon the medical bearing of greater or less rainfall and next spoke of the fluctuations of the barometer upon this coast, saying that he considered it of little value here for prognosticating the weather. Dr. Ayres then presented resolutions of respect for the memory of Col. Thomas J. Nevins, a life member and one of the original founders of the Academy, who had recently died. He spoke of his “many estimable and amiable qualities” and said that the Academy had lost in him “one of its most valued members, one always true to its interests, always prudent in judgment, always a sincere and ardent friend of science.”

The rains still continued; and, on FEBRUARY 3, there was another discussion on

the extraordinary weather. In addition to the rain, snow had fallen on three different occasions, covering the Oakland hills; and at Napa it had been five or six inches deep – a very rare occurrence. The thermometer at the corner of Clay and Stockton streets in San Francisco had, on January 28, fallen to 18- $\frac{1}{2}$ ° Fahrenheit, and ice had formed seven-eighths of an inch thick. Dr. Ayres stated the rainfall of January at 19.155 inches, and that of the preceding night at .721 of an inch. At this meeting J. W. Lyon and Gorham Blake were elected as resident members and Dr. George Horn of Philadelphia was proposed as corresponding member. On FEBRUARY 17, Dr. George Horn of Philadelphia was elected a corresponding member. The extraordinary floods in the interior of the State were made the subject of discussion; and Dr. Ayres said that they had carried down into the Bay of San Francisco many freshwater fishes, which were caught by fishermen where only salt-water fishes had been commonly found. He also said that many serpents had been brought down, and that rattlesnakes, which must have come from the interior plains, had been caught in fishermen's nets in the Bay. At the same time he spoke of rattlesnakes in Oakland and remarked that since the land there had been fenced, the snakes, on account of thus keeping out the hogs that destroyed them before, had greatly increased – “a curious effect of civilization.” Professor Wm. H. Brewer called attention to the fact that the Philadelphia Academy of Natural Sciences in the publication of their *Proceedings* always antedated them, sometimes several weeks and sometimes over a month or six weeks earlier than they could have been published. He said it was a matter of considerable importance as to the question of establishing priority in the description of a new species. Professor Whitney made some comments about the notes published by John Xántus on Lower California that first appeared in Hungarian and then were translated into German and published in *Petermanns Mittheilungen*.^{4 10} He questions many of the facts like the 215 gold and 150 silver mines that are spoken of as well as the large quicksilver mine, which from its description must be the New Almaden mine in California. He concluded that much of what Xántus says about mining interests of the peninsula may be quite mythical.

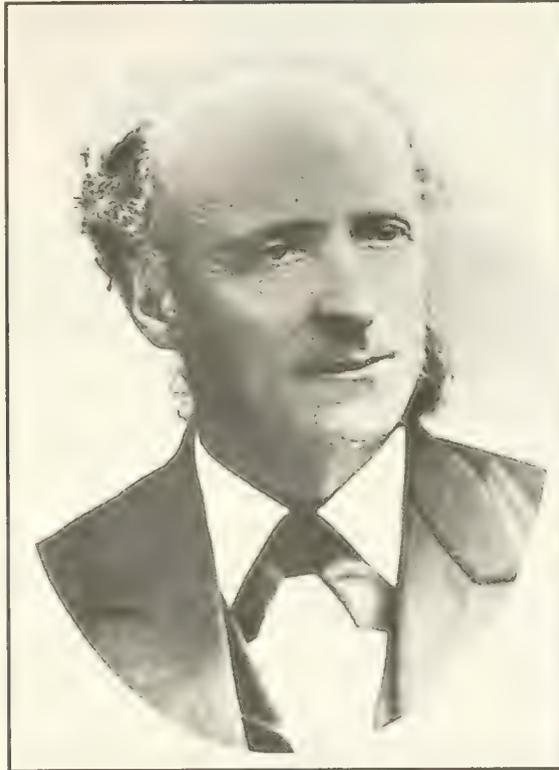
On MARCH 3, Rev. E. B. Wadsworth and Thomas Vickery, and on MARCH 17, Dr. George Hewston were elected resident members. Dr. Trask presented a meteorite found at Honcut [Honecut in manuscript minutes {Eds.}] Creek in Butte (then Plumas) County in 1861. Professor Brewer presented a slab from a meteorite found in Putnam County, Georgia, in 1839. It showed the “Wiedmannstadtian figures” very finely. Professor Whitney made remarks upon a Japanese collection of mineral and

^{4 10} Whitney's comments, recorded by Brewer in the *Academy Minute Books*, volume for April 4, 1853 to Aug. 20, 1866, pp. 225-226, are as follows: “Prof. Whitney, called attention to John Xanthus' [sic] notes on Lower California, published first in Hungarian, then translated into German and published in ‘Petermanns Mittheilungen. This is considered high authority and goes into all lands, but many of the facts are very questionable. 215 gold mines and 150 silver mines are spoken of, also a very large quicksilver mine, which from its description must mean the New Almaden mine in this state. It is not possible that any such mine exists in the locality he mentions. Prof W. considers that all he says in regard to the mining interests of the peninsula may be quite mythical.” Brewer then records, “Several members united in saying that Mr. X. told many large stories here about Lower Cal. that have never been confirmed, and considered that his statements must be taken with much allowance for exaggeration. And although the article in question will probably long be quoted as authority on the matters of which it treats, yet it is evident to the society that much is mythical.”

other specimens belonging to J. H. von Reed that had been put up for sale. They were beautifully put up, he said; but he found among them a pipe that was evidently Dutch and several minerals that looked very much like California specimens. He pronounced the collection on the whole interesting; but the labels were in Japanese and there was no one known in the City who could read them. Dr. Ayres spoke at some length about a strange turtle in the collection, called the sacred turtle of Japan. There was a growth of *Conferva*, which led to a discussion. Professor Henry N. Bolander said he had seen a similar growth on a snapping turtle. Dr. Behr said the growth was usually attended with disease. APRIL 7, as previously on March 3, Wm. M. Gabb read papers on strange animals found in San Francisco Bay, among them *Octopus punctatus*. Professor Bolander reported that the Academy received a large and valuable collection of plants from M. René Le Normand, a corresponding member of the Academy. APRIL 21, Dr. Kellogg read a paper and presented specimens and drawings of a new species of what he called *Trixis*, brought by Dr. Veatch from Cerros Island three years previously. Dr. Ayres exhibited specimens of eleven species of rock-fish from the vicinity of San Francisco. He thought the rock-fish of more economic value to California than any other kind of fish except salmon. He pointed out the distinctions between the genera *Sebastes* and *Sebastodes*, made by Dr. Theodore Gill of the Smithsonian Institution, and thought they were not sufficiently characteristic but rather dependent upon the smooth head and long lower jaw of the former compared with the rough head and short lower jaw of the latter. Five species



Henry N. Bolander
California Academy of Sciences Special Collections



George Hewston, ca. 1875
 San Francisco History Center,
 San Francisco Public Library

of *Sebastes* and six of *Sebastodes* were exhibited – a larger number than was found in any other locality. Dr. Behr read a paper, with Latin descriptions, and drawings of rare California butterflies.

Professor Bolander, on MAY 5, read a paper on the grasses in the Academy's herbarium and, among them, the so-called buffalo-grass and grama-grass. MAY 19, Dr. Kellogg proposed Mr. Francis Hobler as a corresponding member. He then described a new species of plant, *Lilium parvum*, from the Sierra Nevada. Dr. Behr read a paper on a new genus belonging to the family of Bysophaga. JUNE 2, Mr. F. Hobler was elected a corresponding member. Professor Whitney presented the bones of a chicken from China, which were said to have been blackened by some substance the bird had eaten. He mentioned the fact that some chickens in Ceylon and the East Indies had bones so colored. Dr. David Wooster deposited for safe keeping a singular vase in the form of a coiled serpent. It had been taken from the walls of Jalapa and placed in the museum of the City of Mexico, from which it had been removed by Dr. Wooster at the time of the Mexican war in 1846. Mr. Rowlandson presented rock samples taken from excavations of the Spring Valley Water Works and Dr. Cooper made some remarks on some birds in the State collection. JUNE 16, Dr. Cooper presented fishes and reptiles from the Rocky Mountains; Ferdinand Gruber, birds from the Farallone Islands; and John S. Hittell a lizard from Hunter's Point. JULY 7, Leo Eloesser was elected a resident member and F. Gruber sent specimens of birds and a letter in reference to them, from the Farallone Islands. Professor Bolander read a paper on various plants and particularly the California wild oats. Mr. Rowlandson

introduced a motion "That the Academy extend to Dr. Trask on his departure their thanks for the interest he has always manifested in their object together with their thanks for the great amount of labor done by him in behalf of the Academy, as well as their wishes for his success and welfare [*sic*] in his new field of labor." The motion was unanimously carried. JULY 21, Ahira Holmes and E. F. Lorquin^{4 11} were elected resident members. Mrs. J. M. Nevins, widow of Col. Thomas J. Nevins, presented plants she collected in Oregon. AUGUST 4, a communication from Lady Dorothy Neville of England was read, asking for cocoons of the *Saturnia ceanothi* or California silkworm and seeds of the plants on which it fed. Dr. Ayres presented specimens of "pure alumina" argillaceous earth, sometimes mistaken for "meerschäum," from the Farallone Islands, and made remarks upon the novelty of its occurrence on those granite peaks.

By this time several of the collections, and particularly that of plants, had grown so large that great need was felt of proper cases in which to keep them. On JULY 21 a committee had been appointed to procure a plan and estimate of expense for cases to contain the herbarium and Dr. Cooper was to do the same for insects; and on AUGUST 18 it was resolved that the first money received, that could be spared, should be appropriated for the purpose of doing something in that direction. Also, because of the growth of the collections, Mr. Hanks, on behalf of the curators, asked permission to have numbers for specimens printed at Academy expense. His request was approved. On SEPTEMBER 15 twelve cases, costing only \$18, however, were procured for holding insects; and label numbers for all kinds of specimens were printed. A communication was received from the Museum of Hamburg, soliciting exchange of specimens, particularly zoological. NOVEMBER 3 Professor W. P. Blake read a paper on the Mariposa "big-trees" and, among other things, said that they were "well known and much admired by the Indians, who call them Wa-wo-nah – meaning Great Tree." Dr. Cooper read a paper on California mollusks; Dr. Ayres a paper on *Sebastes*; and Dr. Kellogg, as he had also before on AUGUST 18 and OCTOBER 6 and afterwards on DECEMBER 15, a paper on California plants. On NOVEMBER 17 the subject of a course of lectures for the benefit of the Academy and methods in inducing new members to join it were discussed; but, so far as appears, there was nothing of importance in those directions accomplished. Dr. Trask and Professor Whitney were appointed a committee to endeavor to procure for the Academy all or at least a part of the "Great Arizona Meteorite"; but they reported, DECEMBER 15, that they were

^{4 11} Ernest F. Lorquin, son of Pierre Joseph Michel Lorquin. The latter came to California in 1849 and, according to E. O. Essig, was the first great entomological collector in the State. He spent several years collecting throughout Asia in the late 1850s and early 60s, and returned to France in 1865. According to E. O. Essig (1931, p. 695), "While in the state [California] . . . [Pierre Lorquin] allied himself with other scientists and particularly with those of the California Academy of Sciences, where he met H. H. Behr in 1852 . . ." Although Pierre Lorquin may indeed have met Behr in 1852, it could not have been through the Academy inasmuch as it was still a year in the future. Curiously, although an active naturalist and collector, and supposedly a close friend of Academy member Behr, whose own membership dates from February, 1854, Pierre Lorquin does not seem to have had any direct association with the Academy. His name does not appear in any of the Academy's records, either as a member or as having attended any of its meetings or presented any papers. Nor does his name appear in the early records among those who donated specimens to the Cabinet, although it appears that he did arrange for specimens to come to the Academy via intermediaries, such as Dr. Behr. Pierre Lorquin sent his collections to Boisduval in Paris, who returned cotypes of the new species he described, which were then given to the Academy. All were lost in the San Francisco earthquake and fire of 1906. (See E. O. Essig, *A History of Entomology*, 1931, p. 695-697.)

not able to obtain any part of it. At this last meeting of the year Professor Whitney presented a paper on the subject of “Which is the highest mountain in the United States, and which in North America?” – questions of very great interest, which could not then be answered.

Chapter V: Years 1863-1864

1863

At the annual meeting of 1863, held JANUARY 5, the committee on the Arizona meteorite reported that they had obtained permission to take casts and were furnished some small pieces for analysis. The meteorite itself had been deposited for the time in Odd Fellows' Hall; but it may be added that it was afterwards transferred to Pioneer Hall, where it now is. For the first time in a number of years the records contain statements of the condition of the collections. Wm. M. Gabb, curator of palaeontology, reported 1,007 specimens in his department, exclusive of numerous duplicates, and he said that all were in as good condition as the accommodations of the Academy would admit. H. G. Bloomer, curator of botany, reported 2,150 specimens acquired in 1862, of which 20 new species had been described – the entire collection consisting of 6,150 specimens in fair condition. Dr. Behr, curator of entomology, reported that the insects were in good order, but that no important additions had been made. Dr. Cooper, curator of zoology, reported a few valuable additions of animals, but said that great difficulty had been experienced on account of inadequate accommodations and that many of those in alcohol were in bad condition. In the absence of Dr. Trask, curator of conchology, Dr. Cooper stated that much had been done in the arrangement of the collection. In the absence of H. G. Hanks, curator of mineralogy, Professor Whitney stated that great improvements had been made in the arrangement and labeling of specimens, but that the collection was poor in species. As librarian, Professor Whitney reported that valuable accessions had been made in 1862, especially in journals; but that on account of want of proper cases and of proper care on the part of members and visitors, losses of books and journals could not be entirely prevented.

The annual election for 1863 resulted in the choice of the same officers as those of the previous year, Col. Ransom being continued as president, with the exceptions that Dr. Trask was made second vice-president instead of S. B. Bell; Dr. Kellogg curator of botany instead of H. G. Bloomer, and Gideon E. Moore curator of mineralogy instead of H. G. Hanks. Dr. Cooper exhibited a specimen of coral, *Porites*, drawn up by a fishing line at the Farallone Islands, and said that such coral had been found in Monterey Bay but not before so far north as the Farallones. On JANUARY 19, William Ashburner and Dr. W. W. Hays were elected resident members. Two hundred copies of the second volume of the *Proceedings* of the Academy, stitched



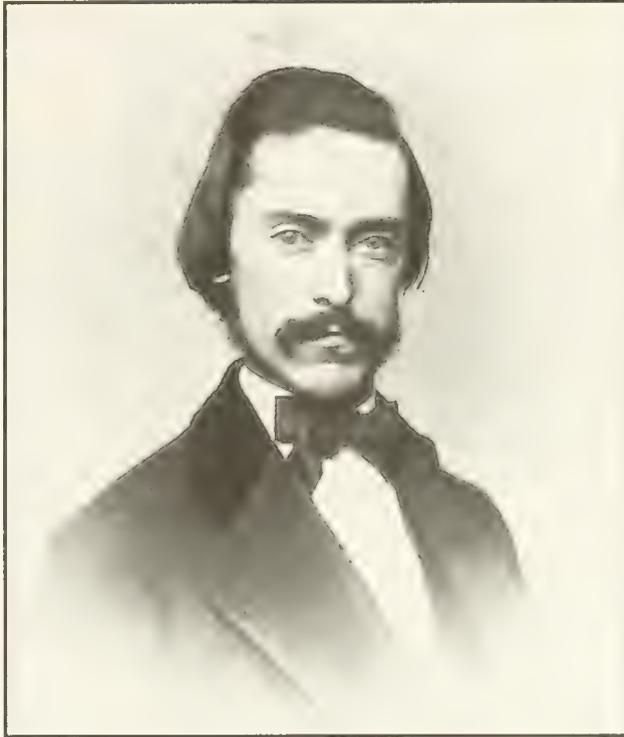
William Ashburner
Bancroft Library, University of California, Berkeley



James Graham Cooper
California Academy of Sciences Special Collections

and bound in paper covers, were brought in; and it was ordered that 100 of them should be sold at \$1 per copy to help pay the expenses and 50 copies sent to the Smithsonian Institution for distribution. Professor Whitney read a paper on the inaccuracy and unreliability of the Eighth Census of the United States in regard to the mineral and metallic productions of the country. He pointed out many plain errors and said that the list might be greatly extended. Professor Whitney then exhibited a peculiarly rich specimen of auriferous quartz from the Fellow Lead on the Middle Yuba in Sierra County and said that, according to disinterested and reliable authority, \$250,000 had been extracted from an excavation there, only 10 feet long and 4 feet wide, by crushing the rock in hand-mortars. Robert L. Harris made remarks on the comparative friction of car-wheels on a iron track, when rolling and when sliding, as shown by experiments made on the street railway on Washington Street. The heaviest grade there was 528 feet to the mile or one foot in 10. On a wet day, if the wheels were stopped rolling, they would slide on the track and the car become unmanageable, while, if the wheels were allowed to revolve somewhat, the car was easily governable. This, he said, was not the popular opinion, and the authorities generally stated that the sliding friction was the greatest; but experiments had shown that the friction was greatest when the sliding was combined with the rolling motion.

FEBRUARY 16, R. L. Harris exhibited a piece of "Oregon-pine" pile, destroyed by teredos at Rincon Point, which led to considerable discussion. It seemed to be the general opinion that there was no certain way of preventing the ravages of the teredo except by sheathing the pipe in metal; but it was said that piles on the north side of the city suffered much less than those on the south side. Attention was called to the unreliability of reports by Mr. Xántus about mines in Lower California. MARCH 2, Dr. Ayres remarked that a late paper by Dr. Theodore Gill of the Smithsonian Institution on the sharks of the Pacific showed his usual want of fixed opinion in regard to the genus *Notorhynchus* (Ayres), — a name which he had restored after some years. Professor Whitney called up the subject of J. H. von Reed's collection of Japanese specimens and said he had found one specimen of coal to be of English origin. Professor Gabb said that the fossils very closely resembled the Tertiary fossils of our Northwest, and Dr. Ayres remarked on a similarity between some of the fishes and species found in California. MARCH 16, Dr. Trask presented a specimen of tree-cotton from Mazatlan, Mexico. He said it grew in a pod resembling a banana on a shrub from 4 to 15 feet high, which formed a high chaparral. Nothing was known of its commercial value. Dr. Behr said it resembled certain plants in South America and the East Indies, which produced a cottony fiber but were not considered useful. Dr. Trask spoke of a species of *Conferva*, which appeared to be sensitive like species of *Schrankia*. Dr. Kellogg read a paper on and presented drawings of two new *Collomia*. APRIL 5, Dr. Kellogg described a new genus and species of plant, *Pterostephanus runcinatus*, from Nevada. APRIL 20, Philip Lutley Sclater of London, England was elected a corresponding member. Dr. Cooper read a paper on a new California mollusk of the genus *Gundlachia*, found in the Feather River near Marysville. He considered the discovery of great interest as there was only one other



Theodore Gill
Smithsonian Institution Archives (\$A-602)

species known, which was in Cuba. H. G. Hanks stated that he had collected about two hundred specimens of minerals in Owen's Lake valley, and that H. M. McCormick, a resident of that valley, had presented bones found there in a well thirty feet deep.

On MAY 4, Professor Whitney read a paper on the California State Geological Survey. He spoke of its object as being "an accurate and complete geological survey of the State" and a report containing "a full and scientific description of its rocks, fossils, soils, and minerals, and of its botanical and zoological productions." He said that Professor Brewer, his principal assistant, was in especial charge of the departments of botany and agricultural geology, but so far had been engaged in geological field work. William Ashburner had been employed in the field, particularly in examining gold quartz mines and machinery, up to the spring of 1862. Mr. Gabb was palaeontologist; Dr. Cooper, zoologist; C. F. Hoffman, topographer. A. Rémond, C. Averill and V. Wackenrunder had been employed at intervals. He gave a general account of all that had been done in the two years and a half since the work commenced. He spoke of the collections that had been made and the want of permanent provision for them, but at the same time called attention to an act of the last Legislature, which had appointed the State Geologist, the Superintendent of Public Instruction and the Surveyor-General a committee to report to the next Legislature "upon the feasibility of establishing a State University, embracing an Agricultural College, a School of Mining and a Museum, including the geological collections of the State." He also called attention to the fact that under the law, as it existed, the publications of the Survey were required to be copyrighted and sold for



California State Geological Survey, photograph circa 1862
 Left to right: Chester Averill, William More Gabb, William Ashburner,
 Josiah Dwight Whitney, Charles F. Hoffman, Clarence King, William Henry Brewer
 Smithsonian Institution Archives Merrill Collection (16830)

the benefit of the common school fund; so that it had been impossible to communicate to the public from time to time the results which had been obtained.^{5 1}

Professor Whitney, at the same meeting, presented an analysis of the Arizona meteorite, spoken of at previous meetings, made by Professor Brush of Yale College, which showed its composition to be upwards of 81 percent iron and 9 percent of nickel. It appeared that in July, 1853, when John R. Bartlett was in Tucson, Arizona, his attention was called to a mass of meteoric iron, which was being used as an anvil in a blacksmith's shop at that place. He described it in his "Personal Narrative of Exploration" (vol. II, page 297) as about five feet long in its greater length and as weighing about 500 pounds. It had been found, as he understood, about twenty miles distant from Tucson and about eight miles from the road to Tubac at a locality where there were said to be a number of large masses. In June 1862, when General James H. Carleton marched the "California Column" through Arizona, he took possession of the meteorite, supposed to be the one mentioned by Bartlett, and sent it as a present to the City of San Francisco, with the expression of a wish that it should be placed upon the Plaza and remain there for public inspection forever as "a durable memento

^{5.1} What Whitney did not speak about during this presentation was the difficulty he had with the State bureaucracy. In a letter to Spencer Fullerton Baird (Smithsonian Institution), dated Dec. 15, 1862, Whitney states that he has not been able to collect the \$15,000 the State still owes. He also remarked that "State officers would be my best friends if I would be their confidential adviser in their interest in claims and stocks; but as it is, I do not know one of them who cares a rye-straw for the work [of the Survey]." With respect to the funding of a State Museum, Whitney goes on to say, "No action has been taken . . . for the establishment of a state museum or the disposition of the specimens collected . . . this year the governor is a Sacramento man and thinks only of Sacramento." (Whitney to Baird, Dec. 15, 1862. SIArchives, RU 7002 {Spencer F. Baird Correspondence, 1793-1923}, Box 35).

of the march of the Column from California." When it arrived in San Francisco, however, it was deemed inadvisable to expose it on the Plaza, as desired by the donor, on account of its liability to rust in the damp atmosphere and the difficulty of securing it from injury by careless and mischievous handling. This in substance was all that was ascertained about the meteorite at that time. At the same meeting, Dr. James Blake read a paper on "Infusoria from the Moving Sands in the Neighborhood of San Francisco," and Dr. Kellogg presented a paper on two new species of plants, one a *Conyza* and the other a *Collinsia*. Professor Bolander spoke of several plants from Marin County, and particularly of *Hierochloa fragrans* "as a remarkably fragrant plant and as furnishing beautiful grass for lawns."

On MAY 18, Rev. Thomas Starr King was elected a resident member and William S. Sullivant and Leo Lesquereux of Columbus, Ohio, corresponding members. Dr. Trask sent copper ore from the Mammoth Lode in Del Norte County. JUNE 1, Dr. Kellogg presented a paper on a new species of *Hosackia*, and Dr. T. M. Logan a paper on the "Physics, Hygiene and Thermology of the Sacramento River." JUNE 15 Dr. Kellogg presented a paper on a new species of *Mentzelia*. On JULY 6, George Thurber of New York City and Frederic W. Putnam, Cambridge and Salem, Massachusetts, were elected corresponding members. Dr. Kellogg described three new plants, two new species of *Linum* or California flax and a new species of *Silene*. Dr. James Blake read a paper "On the Gradual Elevation of the Land in the Environs of San Francisco." He set forth very clearly the evidences of a very considerable rise and expressed the opinion that this country affords "more striking example of the action of existing causes in modifying the surface of the earth than is to be found in any other portion of the globe." JULY 20, Jules B. Bayerque was elected a life member. Professor Whitney called attention to the presence in the city of another large Arizona meteorite from Tucson. This mass, which was in the form of a rough ring, weighed about 1600 pounds and was being forwarded by Jesus M. Ainsa to the Smithsonian Institution at Washington. It now appeared that this was the meteorite that had been used as an anvil at Tucson and was seen there by Bartlett in 1853. It had been found at an early date by Jesuit missionaries in the Sierra de la Madera and had been removed from there, a distance of about twenty miles, to Tucson in 1735 by Don Juan Bautista Anza, the famous opener of the overland road from Altas in Sonora to Monterey in California in 1774. The meteorite presented to the City of San Francisco by General Carleton in 1862 seems to have been another large specimen found in the same locality.

AUGUST 3, F. M. Spence of Victoria, Vancouver Island, was elected a corresponding member. Auguste Rémond presented a paper describing four new species of fossil "Echinodermata from the Tertiaries of Contra Costa County," and Dr. Kellogg one describing a new species of *Allium*. The library reported receiving more than 50 foreign scientific publications through the good offices of the Smithsonian Institution. AUGUST 17, Dr. Cooper described a number of new and rare California terrestrial mollusks. SEPTEMBER 7, he described the genus *Binneya*, a new genus of California terrestrial mollusk. Andrew Garrett of Honolulu read a paper describing three new

Hawaiian fishes. OCTOBER 19, Dr. Ferdinand Mueller of Melbourne, Australia, was elected an honorary member and Frederick Wideman of Sinaloa, Alex. Drauphing of San Sebastian, and S. W. Morrell of Mazatlan, Mexico, were elected corresponding members. Dr. Cooper exhibited specimens of the "little-chief hare," *Lagomys princeps*, a rare animal found in some places about the limits of perpetual snow in the Sierra Nevada. NOVEMBER 2, W. G. Binney of Burlington, New Jersey and George N. Lawrence and William Cooper of New York were elected corresponding members. Dr. Cooper presented a paper on new genera and species of California fishes, including the genus *Dekaya*, named in memory of New York naturalist Dr. James E. DeKay, and *Ayresia*, for Academy associate William O. Ayres. On NOVEMBER 16, Professor Bolander presented a paper entitled "Enumeration of Shrubs and Tress Growing in the Vicinity of the Mouth of San Francisco Bay," and Dr. Behr one entitled "On Californian Lepidoptera, No. III." Dr. Cooper continued his paper, or series of papers, on California fishes. Dr. Cooper reported that A. S. Taylor of Santa Barbara had complained that his name had been omitted from the list of corresponding members though he had been elected some years earlier. His name was reinstated. DECEMBER 7, Professor Bolander was authorized to obtain subscriptions for cases to contain the botanical collections. DECEMBER 21, Royal Fisk and Robert L. D'Aumaile were elected resident members. Dr. Ayres read a paper from Andrew Garrett, from Honolulu, Sandwich Islands, on new Hawaiian fishes, and Dr. Cooper described new genera and species of California fish.

1864

The annual meeting of 1864 was held on JANUARY 4. The various officers made reports confined mainly to additions to the collections. In reference to finances it appeared that during 1863, \$815.35 had been received, which added to \$141.22, left over from the previous year, made \$956.57. The disbursements had been \$903.75, leaving \$52.82 on hand. At the annual election, the officers of the preceding year were continued in office, except that Dr. Eckel and Dr. Trask changed places, Trask becoming first vice-president and Dr. Eckel second vice-president, and Samuel Hubbard was elected treasurer instead of Wm. Heffley, resigned. A proposition to amend the constitution so as to make all members of the Academy residing in the State resident members and requiring them to share in the expenses of publication, which fell heavily upon the members residing in San Francisco, was discussed, submitted to vote, and rejected. But in place thereof it was, on motion of Dr. Ayres, resolved: "That hereafter the *Proceedings* of the Academy shall be distributed gratuitously only to resident members and to such societies and individuals as the Academy shall direct, and that the price of a subscription to others shall be regulated by the publication committee." On further motion of Dr. Ayres, the thanks of the Academy, the cancellation of any unpaid dues, and exemption from payment of dues for the year 1864 were voted to Dr. Kellogg in recognition of his services in making

the plates for the illustration published in the *Proceedings*, which had so far been furnished by him free of cost.

Dr. Ayres read letters from European naturalists commenting with disapprobation upon the course pursued by Dr. Theodore Gill of the Smithsonian Institution in regard to nomenclature in zoology. He also presented letters of inquiry in reference to the first printed volume of the *Proceedings* of the Academy, which had never been properly completed and the supply of which had been long exhausted. There was some discussion on the subject of a re-publication of the volume; but, as it would cost at least \$500 and the Academy did not have the money, a re-publication was deemed impracticable. The recording secretary called attention to the fact that two constitutional amendments had been adopted at the annual meeting of January 6, 1862, which had been acted on for two years, but had never been recorded either in the written or printed records; one was a reduction of the initiation fee for a resident member from \$10 to \$2 (Art III, sec. 2). The secretary was authorized to record the amendments as adopted. A paper by Professor Asa Gray was presented, entitled "Description of New Californian Plants"; another by Andrew Garrett on new species of Hawaiian fishes, and another by Dr. Cooper in continuation of his series on "New Genera and Species of Californian Fishes." E. Mathewson was elected a resident member.

On JANUARY 18, a paper was presented from Dr. W. Newcomb describing nine new species of *Helix* inhabiting California. On motion of Dr. Cooper a committee was appointed to report on the advisability of a course of lectures in aid of the funds of the Academy. FEBRUARY 1, Wm. M. Gabb presented a paper on a new species of *Virgularia*, Professor Brewer, one on plants found growing in hot springs in California, and Dr. Newcomb on a new species of *Pedicularia*. A proposition for the election of Dr. Henry Gibbons, one of the founders of the Academy, who had withdrawn with his brother Dr. Wm. P. Gibbons in 1855, led to a discussion as to the reasons for his withdrawal, and at the next meeting his name was temporarily withdrawn. FEBRUARY 15, Robert E. C. Stearns and Henry Thyark were elected resident members. On MARCH 7, the committee on lectures reported that the Rev. Thomas Starr King had consented to deliver a lecture for the benefit of the funds of the Academy, but that his death, on March 4, had deprived them of his valuable services. Dr. Behr read a paper on California butterflies, Lepidoptera, in continuation of former papers; and Dr. Trask a paper on "Earthquakes in California during 1863 and February and March 1864." The latter paper elicited a lively discussion on the subject and drew out many incidents connected with recent shocks.

MARCH 21, John G. Kellogg and Jacob Deidesheimer were elected resident members. Resolutions of respect for the memory of Rev. Thomas Starr King were adopted. A discussion on the popular opinion that there was very little lightning and thunder in California took place; and several members remarked that while this was true as to the great valleys and near the ocean, there were many electrical displays in the high and more mountainous regions, especially in the northern part of the State. Trees were very often seen that showed the effects of lightning and particularly so in the Siskiyou mountains. This was followed by a further discussion on the subject of



Robert Edwards Carter Stearns
Bancroft Library, University of California, Berkeley

earthquakes. Dr. Behr called attention to *Aspidium argutum*, which grows in the vicinity of San Francisco. He said he had used the root since 1852 as a remedy for tape worm with better results than attended the use of the European species of *Aspidium*.

APRIL 4, Professor Whitney read a paper by Major Williamson, giving the methods of determination and results of measurements of depressions below sea level in Death Valley from barometrical observations made in 1860 by the California and United States Boundary Commission. Professor Whitney said that a party had at that time been fitted out to run the eastern boundary lines of California northward from the Colorado River and \$70,000 had been expended; but that no accurate work had been done, and none of the results printed. The field notes and papers had been left in a hotel in San Francisco, and, after much delay, had come into the hands of Major Williamson. It appeared that the party, after leaving the Colorado River and following the boundary line for some distance, finding water scarce, had turned westward, passed through Death Valley, and then gone to Visalia by way of Walker's Pass. Barometrical observations were made and journals kept by two members of the party, but their journals threw but little light on the geology of the region and contained some positive errors, as for example that fossil reptiles were found in obsidian. He exhibited a map drawn by Van Dorn, the topographer of the expedition, which probably gave the general topography in the main correct; but it was utterly irreconcilable with the maps of the United States land surveys. It was the first map, so far

as known, that correctly represented the course of the Amargosa River, which passes through a mountain chain westward, then turns again to the north and sinks in Death Valley. According to the United States Land-office maps, the valley of the Amargosa had been sectionized; but the course of the river had not been correctly given; and in Van Dorn's fine map confirmed, what was generally believed, that the land-office maps of that region were grossly incorrect. Col. Ransom added that it was generally conceded that the official maps of the region were incorrect, and that gross frauds had been practiced on the government in regard to those surveys.

Professor Whitney also stated that Major Williamson had for ten years been engaged under the auspices of the government in an examination of the fluctuations of the barometer on the Pacific Coast, exercising great care and labor in investigating the laws governing those fluctuations. This, he said, was an exceedingly important work as was evident from the many discrepancies in determinations of altitude on this coast. The barometrical measurements of Monte Diablo, for example, which had been made by the State Geological Survey with great care and which agreed well with one another, showed the mountain 20 feet higher than it was found by leveling. APRIL 18, W. S. Brigham and Horace Mann, about to leave for the Sandwich Islands, were elected corresponding members. Dr. Trask presented a paper entitled "Earthquakes in California from 1800 to 1864." He said that since 1850 earthquakes had occurred on 110 days; but that this number was probably not so large as that of those occurring in the same period on the eastern coast of the United States. He had records of Eastern earthquakes for five years commencing with 1850 and the number was forty-four while those in California were only thirty-seven. Dr. Trask's paper called forth a discussion, as was usual at the end of his papers, on earthquakes; and, among other statements made, Dr. James Blake mentioned a report that a crack had been opened through Telegraph Hill in San Francisco by one of the recent earthquakes; but, so far as known, it was never pointed out.

MAY 2, Dr. Behr exhibited a small bottle of oil, said to have been extracted from the seed of a California plant by a Frenchman, who claimed to have made a great discovery and wished to sell the secret. Dr. Trask and Dr. Kellogg said that they had some years before obtained a precisely similar oil from the seed of a plant called *Megarphiza*, which grew on the driest of sandy soil; but it was doubtful whether the oil was worth the cost of making it. A paper was presented from W. M. Gabb on Cretaceous fossils from Sonora, Mexico. Dr. James Blake made remarks on the barometrical measurements of altitudes and the errors incident to them caused by high winds. Professor Brewer exhibited the carpels of a Mexican plant which, on drying in the office of the State Geological Survey, exploded with great violence scattering the fragments about the room. MAY 16, Rev. J. M. Neri of Santa Clara was elected a corresponding member. Dr. Trask stated that in a recent case he had tried the roots of *Aspidium argutum*, recommended by Dr. Behr at a recent meeting as a remedy for tape-worm and with complete success. He had used five drachms of the grated root in two doses, four drachms being first administered and in an hour afterwards one drachm more. The proper effect was produced in four and a half hours

without griping or nausea. It was stated that the plant was abundant in swamps; but that hogs were rapidly destroying it. Dr. Cooper said that the Indians of Oregon used the root as medicine. Dr. Trask turned the discussion to ferns and said that in the mines the young shoots of a species of fern had been much used as a pot-herb; that it resembled asparagus; boiled easily and was nutritious. Dr. Behr remarked that several species of fern were eaten in Australia. The talk about ferns was followed by a discussion on other California plants used as food, such as miners' lettuce, *Claytonia perfoliata*, and some others. Professor Brewer called attention to certain specimens of coal, presented to the Academy on February 15 and said to have been found on mountains east of the Colorado River about 25 miles from La Paz, Arizona. On the occasion of their presentation Professor Wm. P. Blake had said that the coal was of very good quality, but seemed too brilliant for surface coal. He also expressed a doubt about the occurrence of coal associated with obsidian, as was stated to be the case with those specimens. Professor Brewer now said that, on the authority of J. Ross Brown and others acquainted with the locality, there was no coal there and that the specimens brought to the Academy were in fact English coal that had been carried up the Colorado River by speculators for the purpose of swindling the public by selling stock in a fictitious coal mine.

JUNE 20, C. W. M. Smith and Dr. A. T. McClure were elected resident members. JULY 11, a paper was received from Philip P. Carpenter of Warrington, England, describing new marine shells from the coast of California. JULY 18, Col. Ransom, on behalf of John Wilson, presented part of a foot and hair from different Indian mummies, a string of beads made of bone and a few blue stones, part of a belt and tassel, and a piece of very strong cloth, all taken from a cave near the ancient Pueblo of Chiricahui in Chihuahua, Mexico. There were said to be many mummies there in a remarkable state of preservation, although there was no sign of any embalming substance having been used. Dr. Cooper remarked that he had been present at Shoalwater Bay, Washington Territory, in 1854, when Captain C. J. W. Russell removed an Indian mummy dried there by the action of the air while protected from the weather by a cedar canoe inverted over another containing the body. No preservative of any kind had been found with it. The mummy, he said, had been presented to the Academy on January 26, 1856.

On SEPTEMBER 5, Professor B. Silliman, Jr., Dr. Eichler and Mr. Ehrenberg were present as visitors. Professor Silliman spoke of a recent visit to Arizona along the 35th parallel and said he had seen evidences of glacial action in the eastern flanks of some of the mountains there. He believed that no evidence of glacial action had been observed on the Pacific slope so far south. Professor Wm. P. Blake remarked that this was the first observation upon glacial phenomena in Arizona, but that he had noticed evidence of glaciers in the Sierra Nevada as far south as Tejon Pass in latitude 35°. Dr. Behr read a paper on California *Satyrides*; Professor Wm. P. Blake a paper on a nugget of gold, weighing 187 ounces Troy, found near Michigan Bluffs on the Middle Fork of American River; one on *Ammonites* or *Ceratites* from Oregon Bar on the same river, and one on a remarkable find by him of the fossil remains of teeth of an

elephant and teeth and jaw of a horse of a primeval age in the face of the cliff-shore of Mare Island. Gideon E. Moore presented a paper on "Brushite," a new mineral occurring in phosphate guano. SEPTEMBER 19, Professor Rudolph A. Philippi of Santiago, Chile, was elected an honorary, and Warren B. Ewer, a resident member. The Smithsonian Institution donated a box of shells containing 120 species from Panama. Dr. C. F. Winslow made some interesting remarks on his experiences during recent travels in South America. OCTOBER 3, Professor Brewer gave an account of recent explorations in the Sierra Nevada by a party connected with the State Geological Survey and the exploration extended from Kern River to Yosemite Valley and was rich in scientific results. The crest of the Sierra was very high along the whole of this distance, all the higher peaks rising to about 13,000 feet, the culmination being between the sources of the Kern and Kings Rivers, where there were a number of peaks over 14,000 feet, and one above 15,000 feet. Along the whole of it there were abundant traces of glaciers, some of gigantic proportions, surpassing anything else of the kind found in the State. The cañons of all the principal streams were very deep and abrupt. The big trees, *Sequoia gigantea*, were found over a large area, extending "perhaps 25 miles" (so says the record, but he probably said at intervals for 200 miles, which would be nearer the fact) along the western slopes on the tributaries of the San Joaquin, Kings, Kaweah, Tule, and Kern Rivers. The amount of snow on that part of the Sierra was apparently much less that season than usual. Professor Wm. P. Blake read a paper on Fossils in the Auriferous State of the Mariposa Estate.

Among the donations, made OCTOBER 17, were fossil teeth of the elephant and horse from Walker's River near Wellington's Station on the road from Carson Valley to Aurora in Nevada. Professor Bolander stated that Edward Bosqui offered to do \$200 worth of book binding for the Academy in consideration of being elected a life member, and he was thereupon proposed as such by Dr. Kellogg. NOVEMBER 21, Edward Bosqui was elected a life member, Rev. Horatio Stebbins a resident member, and G. E. Wellington of Nevada, a corresponding member. Wm. M. Gabb presented a paper on some fossils from the gold-bearing slates of the Mariposa Estate, and one on fossils from the San Luis Obispo quick-silver deposits. A paper was presented from Professor James D. Dana on the crystallization of "Brushite"; and one from Philip P. Carpenter on California marine shells. DECEMBER 5, Frank E. Brown was elected a resident member. DECEMBER 19, Professor B. Silliman, Jr. was elected a resident member. It was stated that Major A. W. Bowman had collected in the previous July on Raft River in Idaho, about 40 miles west of Fort Hall, a species of cactus infested with a cochineal insect. It was also stated that Dr. Cooper had learned from Eastern gardeners that *Opuntia* in green-houses was likewise infested. Dr. Behr remarked that cold weather proved less destructive to this insect than a surplus of rain. Dr. Behr and E. F. Lorquin spoke of the unusual number of albinos of various kinds observed during the latter part of the year. which it may be remarked in passing was, as well as the preceding one of 1863, a remarkably dry one.

Chapter VI: Years 1865-1866

1865

The annual meeting of 1865 took place on JANUARY 9, having been adjourned to that date. Theodore H. Bloomer was elected a resident member; and, at the annual election held directly afterwards, he was chosen recording secretary in place of Professor Brewer, most of whose time was engrossed by the State Geological Survey. The other officers of the previous year were continued in office, with the exception that Professor Henry N. Bolander became curator of botany in place of Dr. Kellogg; E. F. Lorquin, curator of zoology in place of Dr. Cooper, and Robert E. C. Stearns, curator of conchology in place of Dr. Trask. The reports for the year 1864 of the various curators were ordered on file, and no items from them appeared upon the minutes. It was by this time keenly felt that the quarters occupied by the Academy at No. 622 Clay Street were not adequate to the needs of the association; and a committee was appointed to inquire into the possibility of procuring new rooms. At the same time, however, the treasury was in a depleted condition; and, by way of seeing if anything could be done to improve it, a revision of the list of members was ordered. Papers were presented from Dr. Behr on Californian Lepidoptera; Dr. W. Newcomb on new species of land shells; Wm. M. Gabb on new species of California marine shells, and Dr. Trask on California earthquakes during 1864. JANUARY 16, Melville Attwood was elected a resident member. Wm. M. Gabb, chairman of the committee on procuring new rooms, reported in favor of a subscription among the members to procure the necessary funds and the committee was continued with instructions to carry out the plan recommended. FEBRUARY 6, Charles F. Hoffman was elected a resident member and J. D. Dana of Yale College a corresponding member. Professor Wm. P. Blake presented a paper on the "New Mineral Oil Regions in the Tulare Valley," and another on the "Occurrence on Sphene in the Granites of the Sierra Nevada."

Notwithstanding the want of funds and the need of new members to supply or increase them, the Academy manifested very considerable care, and in most cases probably proper discrimination, as to who should be admitted to membership. At a meeting of the previous year, July 18, 1864, the proposal of an applicant, after much discussion, was indefinitely postponed; and on December 19, 1864, that of another rejected. Now, on FEBRUARY 20, the election of an applicant was reconsidered; and, at the next meeting, MARCH 6, his name was withdrawn. William Hillebrand of

Honolulu, was elected a corresponding member. On MARCH 20, Dr. E. Cohn and Otto Schmidt were elected resident members. The committee on rooms was instructed to wait upon the agent of the Phoenix Block building, which in the meanwhile appears to have passed from the ownership of Palmer, Cook & Co. to that of Pioche, Bayerque & Co., in regard to the rent. A paper was read from Major Edward Preiss of Mazatlan, Mexico, on the efficacy of *Euphorbia prostrata* as a remedy for the bite of the rattlesnake and venomous insects. The plant, he said, grew in the United States, particularly in New Mexico and Arizona, and in the northern States of Mexico where it was known as "Gollindrinera." Its milky sap was given internally and its bruised branches applied to the wound externally; and it was generally considered a certain remedy. He had himself tried it with success as a remedy for the bites of poisonous insects. On APRIL 17, a resolution on the death of President Lincoln, offered by Robert E. C. Stearns, was adopted and ordered spread upon the minutes, and at the next meeting directed to be enclosed in heavy black lines:

Whereas - Our hearts are burdened with grief by the untimely death of that great and good man, Abraham Lincoln, President of the United States

Ordered - That as a mark of respect for the memory of the deceased we do now adjourn.

MAY 1, among those present were Messrs. Kennicott and Dall and other gentlemen connected with the Western Union Telegraph Company's Russian-American Telegraph Expedition. A communication was received from Professor Brewer, stating that the minutes of the Academy for the meeting of October 3, 1864, recently published, omitted remarks made by him on that occasion in reference to the occurrence of fossils in the auriferous rocks of California, and he would like to have them recorded. He had stated "that fossils had been found by the Geological Survey in the rocks associated with gold along a line nearly 300 miles in length extending from Pitt River to the Mariposa Estate; that the associated rocks, bearing gold, had been traced upwards of 550 miles in the Sierra Nevada; that Jurassic fossils had been found in the 'auriferous slates' along a belt of 200 miles of this distance, and that both Jurassic and Triassic fossils had been found in considerable numbers near and in Genessee Valley, Plumas County." MAY 15, John Klippart of Columbus, Ohio was elected a corresponding member. Professor Bolander made remarks upon the isolated position of the redwoods, *Sequoia sempervirens*, upon the hills back of Oakland in Alameda and Contra Costa counties. This was a very interesting subject, and particularly so in view of the fact that before the American occupation the entire crest of the range back of Oakland was covered with redwoods, some of the trees being upwards of twenty feet in diameter. JUNE 5, a communication was received from Dr. William P. Gibbons in reference to the establishment of a scientific journal, and the subject matter was referred to a special committee. JUNE 19, a discussion took place upon the adaptation of certain semi-tropical plants to the climate of California. A paper was presented from W. H. Pease of Honolulu "On the Existence of an Atoll near the West Coast of America, and Proof of its Elevation." The locality he referred to was that of "Clipperton Rock," in latitude 10°17' north and longitude 109°10' west, discovered by Captain Clipperton in 1705. It had been visited by Captain Morrell in



Robert Kennicott
Smithsonian Institution Archives (43604)



William Healey Dall (July 9, 1865)
Smithsonian Institution Archives (SA-1156)

1825 and by Sir Edward Belcher in 1839. In 1861 it was examined by Lieutenant Griswold in the course of a cruise off the west coast of Mexico in search of guano; and he found it to be a true atoll with coral reefs all around it.

JULY 3, the Academy was visited by Professor John Torrey, Horace Mann, William H. Dall, Robert Kennicott, and Captain Wright. A discussion took place as to the motions of the flying-fish. Mr. Kennicott and Dr. Behr discussed the relation of the Esquimaux to the North American Indians. Dr. Behr said that the Esquimaux could be considered a kind of Indians, their language being of the same structure and their different habits being due to physical influences. He further said that according to old reports they formerly lived farther south. Mr. Kennicott remarked that, from his own observations and from information derived from Madam Roshkin and from St. Zagoshins' Report, he believed the natives for some hundreds of miles up the Yukon or Kvichpak River were Esquimaux rather than Indians, making a clear distinction between the two. Professor Torrey spoke of the California snowplant, *Sarcodes sanguinea*, and said that he found it rather indifferent as to what plant it fixed itself upon or derived its nourishment from. He had found its fibers penetrating into the roots of a *Rumex* and never into the roots of *Sequoia gigantea*. He also spoke of the great beauty and fragrance of the California white lily, *Lilium washingtonianum*. JULY 17, the committee on Dr. Wm. P. Gibbons' proposition to establish a scientific journal reported against its feasibility; and the subject, on its recommendation, was indefinitely postponed. On account of the difficulties experienced in housing and preserving the cabinets, Mr. George W. Minns suggested that steps should be taken to remove them to the upper hall of the Lincoln School building of Fifth Street; and, on motion to that effect, he was authorized to confer with the Board of Education in reference to the matter. AUGUST 7,^{6.1} Dr. Ayres spoke of the appearance of a species of *Sphyrena argentea* off Point Conception. Dr. C. T. Jackson read a paper on measurements of heights and circumferences of the big trees of Calaveras County. AUGUST 21, Mr. Minns made a verbal report in reference to the proposed removal of the cabinets to the Lincoln School building; and, on his recommendation, a committee of three was appointed to confer with members of the Board of Education. Robert E. C. Stearns called attention to the fact that Gideon E. Moore, curator of mineralogy, had removed from the City; and, on his nomination, Henry G. Hanks was elected to fill the vacancy occasioned thereby. Professor Bolander submitted a paper by C. J. Croft of the First Cavalry of California Volunteers on "The Grasses of Arizona." They were chiefly what were commonly known as "grama grasses." Theodore Bradley was elected a resident member. SEPTEMBER 4, a paper was presented from Professor Wm. P. Blake on the abundance of iron ore on Williams' Fork of the Colorado River in Arizona; and one from Philip P. Carpenter on new marine shells of California in continuation of previous papers. Wm. M. Gabb resigned his position on the publication committee, and Mr. Stearns was elected to

^{6.1} Not mentioned in the Hittell manuscript but recorded in the published account of the August 7th meeting are the following interesting donations to the "Cabinet: Three boxes of shells; Duplicate fossils of the U.S. Exploring Expedition; Types of Dana's Geology; Fossils from the Upper Missouri; Miscellaneous fossils of the United States, received from the Smithsonian Institution . . ." (*Proc. Calif. Acad. Nat. Sci.*, 1866, 3(3):203.)

fill the vacancy. SEPTEMBER 18, P. M. Randall was elected a resident member. OCTOBER 2, Treasurer Samuel Hubbard was authorized to make arrangements in regard to rent. OCTOBER 16, Professor Bolander presented a paper on California trees, principally pines, sequoias, and oaks. DECEMBER 4, Major Edward Preiss and Count Oswald Thun were elected corresponding members. William H. Dall gave an account of the progress of the Russian-American Overland Telegraph Expedition and a description of the country traveled over by it. DECEMBER 18, Dr. Ferdinand Stoliczka, palaeontologist to the Geological Survey of India, was elected a corresponding member. Wm. H. Dall was elected a resident member. Professor Wm. P. Blake presented a paper on a peculiar astringent gum or coloring substance in the cones of the *Sequoia gigantea*; also one on ammonites in the auriferous slates of Bear Valley, Mariposa County.

1866

As the first Monday in 1866 was New Year's Day, the annual meeting was adjourned to JANUARY 8, when the election of officers for the year took place. It resulted in the choice of Col. Leander Ransom as president; Robert E. C. Stearns, first vice-president; Dr. Wm. O. Ayres, second vice-president; Samuel Hubbard, treasurer; Professor Henry N. Bolander, corresponding secretary; Theodore H. Bloomer, recording secretary; and Professor J. D. Whitney, librarian. The curators were the same as the year before. The publications committee consisted of Whitney, Minns, and Stearns, the finance committee of Hubbard, Stearns, and Fisk. It appeared that the treasurer and finance committee had found it advisable to remove the collections and hired a room for their safe keeping; and, on motion of Dr. Ayres, their action was approved. The treasurer was authorized to have the collections and library insured at an expense not exceeding \$50. A committee, consisting of Hanks, Hubbard and Stearns, was appointed to take measures to procure money in aid of the Academy from the State Legislature. Resolutions of respect to the memory of Thomas Bridges, who died at sea September 9, 1865, on a voyage from Nicaragua, were adopted. Wm. H. Dall read a biographical sketch of the deceased, stating his services to science; and, among other things, said of him: "With all impartial naturalists Mr. Bridges and such as he, who bear the burden and heat of the day, are entitled to honors, if not precisely of the same character as those due to the students who in their comfortable libraries work up the results of the collector, still to honors quite as high." JANUARY 15, Professor Bolander, as curator of botany, presented his annual report, in which he spoke of additions made during the previous year to the herbarium, and the assistance rendered in arranging and classifying them by Dr. Kellogg and H. G. Bloomer. At his suggestion he was authorized to have the botanical specimens poisoned, so as to preserve them from insects. FEBRUARY 5, a paper was read from Dr. Colbert A. Canfield on the horns of the American antelope, *Antilocapra Americana*, showing the manner in which the new horns grow when the old ones are shed.

Professor Wm. P. Blake read a paper on fossils found in the auriferous slates of Mariposa County, and also made remarks on a remarkable spider, which had been brought from Georgia. Col. Ransom presented the name of Dr. Henry Gibbons, who had withdrawn from the Academy in 1855, for resident membership.

On FEBRUARY 19, Dr. Henry Gibbons and Henry Janin were elected resident members and Colbert A. Canfield of Monterey a corresponding member. Dr. Trask presented a paper "On Earthquakes in California during 1865." Professor Whitney made remarks on the nature and distribution of the meteorites which had been discovered on the Pacific coast and in Mexico. He said it was remarkable that no meteoric stones had ever been discovered either on the Pacific coast, or, as far as known, west of the Rocky Mountains, while masses of meteoric iron were known to exist in various localities and many of them of large size. There seemed to be good authority for reports that there were large masses of such iron on the mountain ranges next east of Tucson in Arizona. It was further remarkable fact, he said, that, so far as known, no meteorite either stony or metallic had been found within the borders of California. A piece of iron found by Dr. Trask on Honcut Creek was for a time supposed to be meteoric; but on further examination it proved to be ordinary cast iron. From all that was known, the localities of meteoric iron lay in a nearly straight line extending from the northwest to southeast for twelve hundred and fifty miles, or from the Colorado River near La Paz in Arizona to San Luis Potosi in Mexico. The distribution along this line indicated strongly a common origin, as if all had been fragments of one immense meteor, which had passed diagonally across the continent, throwing off masses on its way. A large mass, that had been discovered near Port Orford in Oregon,^{6.2} was in the same general path. Professor Wm. P. Blake called attention to the discovery of a flowing oil-well on the coast of Southern California. On motion of Professor Whitney, it was resolved that any corresponding member of the Academy who might take up his residence in San Francisco, might become a resident member by notifying the recording secretary that such was his wish. MARCH 5, a paper was presented from Wm. H. Dall on the buccal plates or mandibles of *Octopus punctatus*; and another of considerable length and thoroughness by A Rémond "On Geological Exploration in Northern Mexico." MARCH 19, W. H. Dall reported that Dr. Cooper had discovered several species of *Helix* in the vicinity of Santa Cruz as well as *Margaritana falcata* in small rivulets nearby. He also reported that he had examined a specimen of *Trochiscus norrissii* and concluded that it was not a proboscidean, as had been thought by several naturalists

The difficulty about proper accommodations seemed to grow acute. The portion of the old Phoenix Block building on Clay Street, where the Academy had been holding its meetings at the generous sufferance of Pioche, Bayerque & Co., the proprietors, had been cracked by the earthquake of October 8, 1865, to such an extent as to induce those in charge of the library and collections to pack them up and store them where they would not be exposed to the weather. On APRIL 2, W. G. Bloomer

^{6.2} See "The Port Orford, Oregon, Meteorite Mystery," edited by Roy S. Clarke, Jr., *Smithsonian Contributions to the Earth Sciences*, 1993, no. 31, 43 pp., for an interesting discussion of this elaborate hoax perpetrated by the "meteorite's" discoverer, John Evans, who claimed to have found the mass in 1859.

proposed that the Academy should form a union of some kind with the Mechanics' Institute. This led to considerable discussion, and one result was a resolution empowering the committee on rooms to hire such apartment as they should consider proper for the present accommodation of the collections. H. G. Bloomer and Royal Fisk were also appointed a committee to investigate and report upon the feasibility of forming a connection with the Mechanics' Institute or any other institution. H. G. Bloomer presented diatoms, possibly belonging to the genera *Melissa*⁶³ and *Meridion*, found growing on calcareous sea-weeds on the coast of California. Wm. H. Dall presented a paper from Dr. Cooper on a new California *Helix*. APRIL 16, Horace F. Cutter was elected a resident member. Mr. Stearns of the Committee on Rooms reported that he had hired rooms on the southern corner of Montgomery and Sacramento streets at a rent of \$25 per month. The building referred to, since torn down, belonged to Joseph A. Donohoe, and its lower floor was occupied by his Banking House. The rooms hired were on the fourth and top story. At the same meeting it was resolved, in acknowledgment of eminent and valuable services rendered the Academy, that Dr. Albert Kellogg should be declared a life member, and that any and all of his arrearages of dues should be remitted. MAY 7, the Committee on Rooms reported that the rooms in the Donohoe Building would be ready for occupancy at the next meeting. Wm. H. Dall was appointed recording secretary *pro tem* in the absence of Mr. Bloomer. Dr. Henry Gibbons made remarks, in connection with a series of tables showing the variations of rainfall at San Francisco, about the connection or parallelism between the rainfall and the phases of the moon. He said that the greatest fall of rain took place immediately before the time of full moon and that, following the day of full moon, the diminution was very rapid. The observations, from which his tables were prepared, extended over a period of fifteen years. A discussion followed his statements.

On MAY 21, the Academy met for the first time in its new rooms on the corner of Montgomery and Sacramento streets. There being need of much fitting up, Professor Whitney contributed \$100 and Robert E. C. Stearns, Dr. James Blake and Wm. H. Dall smaller sums for the purpose and Messrs. Whitney, Ashburner and Janin contributed \$100 jointly for procuring additional scientific periodicals. It was also reported that a large number of foreign scientific publications had been received through the medium of the Smithsonian Institution. Wm. H. Dall presented a paper on a new sub-family of fluvitile mollusca. Professor Whitney made remarks upon the "Geology of the State of Nevada." JUNE 4, a number of resident members were elected including C. R. King, Frederick Gutzkow, Theodore Blake, W. A. Goodyear, Charles Bonner, C. W. Leightner [in *Minute Books*, but Lightner in published *Proceedings* {Eds.}], Hugo Hochholzer [in *Minute Books*, but Hochholzer in published *Proceedings* {Eds.}], and James T. Gardiner⁶⁴ [in *Minute Books*, but Gardner in published

⁶³ *Melissa* in both handwritten *Minute Books* and published proceedings (*Proc. Calif. Acad. Sci.*, ser. 1, vol. 3, p. 258, but properly *Melosira* [fide P. Kociolek, CAS].

⁶⁴ In the membership book, the name is spelt Gardiner. But in all references to Gardner, including the King 40th Parallel Survey reports, the Hayden Survey reports and in William Goetzman's *Explorations and Empire* (Alfred A. Knopf, New York, 1966), the "i" is not present. This is a recurrent problem with Gardner.

Proceedings {eds.}. W. H. Dall spoke of the shells that had been collected at Monterey and gave 263 as the number of species known to have been found there. He spoke of having visited a small island off Cypress Point, accessible only at low-tide, which was the original locality for *Helix Californiensis*, and found the species nearly exterminated there, caused apparently by a large millipede, which was very plentiful and extremely voracious. Professor Whitney made remarks on the absence of the so-called Northern Drift from the western coast of North America and from the interior of the continent throughout the region southwest of the Missouri River. He was inclined, he said, from information so far received to draw the line which limits the Northern Drift on the south and west approximately from the mouth of the Ohio to the headwaters of the Saskatchewan River. JUNE 18, Baron F. von Richthofen, E. B. Dorsey, W. W. Palmer, W. S. Keyes, M. L. Stangroom, J. T. Watkins, Jr., W. G. W. Harford, and Louis Falkenau were elected resident members. H. G. Bloomer stated that he had identified the plant commonly known as the pepper tree as *Schinus mollis*. Wm. H. Dall called attention to errors in regard to the coast of California in Agassiz' "Sea Side Studies in Natural History," recently published. He also announced that the building containing the collections of the Chicago Academy of Sciences had been destroyed by fire and offered resolutions of sympathetic concern and be sent to the Academy. R. E. C. Stearns mentioned that in an hour and a half at Baulines Bay in Marin County he had collected some fifty species of mollusca. Dr. Henry Gibbons spoke of the progress of his observations on the connection of the phases of the moon and the weather. His remarks were followed by an animated discussion.

JULY 2, Vitus Wackenreuder, Sherman Day, Thomas Price, and E. Wertheman were elected resident members. Wm. H. Dall, acting recording secretary for the meetings, announced the loss of the New York Lyceum of Natural History in the fire at the Academy of Music in New York. Dr. James Blake offered a resolution, which was adopted, that the Academy forward to the society copies of *Academy Proceedings* as far as disposable copies permit. Dr. Henry Gibbons called attention to the experiments and deductions of Dr. Salisbury of Ohio in regard to malarial diseases and their supposed vegetable origin. A discussion followed in which Drs. Behr and Blake participated. Dr. Hillebrand gave an account of the Botanical Garden of Batavia. He said it contained, among other plants, 262 species of palms. He also gave an account of the introduction of the *Cinchona* of various species into India and Java. JULY 16, Dr. S. Pawlicki was elected a resident member and Dr. P. Comrie^{6.5} of H.M.S. Sparrowhawk, a corresponding member. Mr. Stearns presented a paper on shells collected a Baulines Bay in June 1866. Professor Whitney read a paper on a human skull found at Altaville, near Angels' in Calaveras County by James Matson a shaft at a depth of 130 feet. He was of the opinion that the bed in which the skull was said to have been found, was deposited at a time when the volcanoes of the Sierra Nevada were still in vigorous action, previous to the age of the mastodon, to the glacial epoch of the Sierra and to the erosion of the canons of the present rivers. Dr.

^{6.5} Spelt Condie on p. 374 and Comrie on p. 376 of *Minute Books* for years 1853-1866.

Macgowan, a visitor, made remarks upon earthquakes in China. He said that, though frequent there, they had not, during the historic period, done any great damage. Dr. Kellogg stated that on a trip from San Rafael to Baulines Bay he had found an oak said to be equal to the "live-oak" of the coast for ship building. AUGUST 6, Dr. D. J. Macgowan was elected a corresponding member. Dr. Behr presented a paper on the California species of *Lycaena*; Mr. Stearns a paper on shells collected at Santa Barbara and San Diego; and Professor Whitney a paper on the occurrence of a tungstate of lime and copper in Lower California. Dr. Ayres called attention to the carcass of a black-fish, which was lying at the Potrero and could be purchased at small expense; and, at his suggestion, a subscription was raised among the members for that purpose. Professor Whitney exhibited a branch of redwood, *Sequoia sempervirens*, from a small tree near San Rafael, the leaves of which were entirely white. He said that similar blanched redwoods existed in other localities, a peculiarity confined to the redwood species alone; but that no satisfactory explanation had yet been given for this abnormal condition.

On AUGUST 20, William H. Knight and A. Godefroy were elected resident members. Professor Wm. P. Blake presented a paper on fossils found on the line of the Central Pacific Railroad, two miles below Colfax and in the heart of the main gold belt of the State; also on the tooth of an extinct elephant found near Michigan Bluffs in Placer County; also on sharks' teeth and other marine remains on the hills on the east side of Tulare Lake, and on a quarry of gold bearing slate rock near Lincoln in Placer County. He also stated that a mastodon tooth had been found about 3 miles from Antioch, near Monte Diablo; and that he had in his possession a portion of a human skull said to have been taken from a depth of 250 feet near Columbia in Tuolumne County. Mr. Stearns read a paper on the *Helix*, its anatomy, geographical distribution, and use as an article of food and for medicinal purposes in both ancient and modern times. SEPTEMBER 3, John Swett was elected a resident member. Dr. Kellogg called attention to a fungus, *Polyporus igniarius*, found growing upon the California laurel, *Oreodaphne Californica*, and spoke at length about fungi in general. Alphonso Wood, sometimes called "Professor" Wood, a visitor who had recently returned from a botanical trip to Oregon, gave an account of his ascent, with a few other persons, of Mount Hood. He carried along with him a few instruments, which were evidently not very reliable. He stated that the boiling point of water on the summit was 180°, and that this would indicate a height of 17,640 feet! As is well known, his estimate was more than 5,000 too high. He admitted its disparity with other estimates; and he hoped his results might be tested by the barometer and by triangulation; but "until then," he concluded, "we must adopt the estimate here made as the height of that sublime peak, and accord to Mount Hood the distinction of being the highest land in the United States, if not the highest upon the North American continent."

SEPTEMBER 17, B. P. Avery, James Spiers, and B. R. Norton were elected resident members. Dr. Cooper presented a paper on a new species of *Pedipes* inhabiting the coast of California, and spoke of it as "a very interesting shell, being one of the links

between the land and marine mollusca." A communication was received from Dr. Colbert A. Canfield giving an account of the discovery in Monterey Bay of a fish, pronounced to be a new species of *Bdellostoma*, a genus not previously known to exist nearer than the coast of Chile. Louis Falkenau made remarks upon the use and value of the spectroscope in chemical analysis and other scientific investigation. OCTOBER 1, A. Winslow Boynton and T. C. Leonard were elected resident members, and Royal Fisk resigned his membership. Dr. Behr made remarks upon *Lepidoptera* and, among other things, said that the period of the egg state of the California silkworm, *Saturnia ceanothi*, was so brief that it was impracticable to successfully transport its eggs in good condition to New York or Europe. Professor Bolander made some corrections of his paper on "California Trees," presented October 16, 1865. He had called a small pine growing between Mendocino City and Noyo, which was in fact a *Pinus contorta*, a *Pinus muricata*. So also he called a *Quercus wislizeni*, a well-characterized species with biennial fruit, a *Quercus agrifolia*, which on the other hand has annual fruit. The *wislizeni* oak grew chiefly in the lower Sierra and the valleys east of the redwoods in Mendocino County, while the *agrifolia* was found almost exclusively in the vicinity of San Francisco Bay and streams flowing into it and extending southward, approaching the coast more closely near Monterey.

OCTOBER 15, A. L. Bancroft was elected a resident member. Professor Wm. P. Blake read a paper on various minerals, kerargyrite and proustite, found in the "Poorman Lode" in Idaho; copper ores from "Red Cap Claim" in Del Norte County; danaite from Meadow Lake, Nevada County, and cinnabar in calcite from Idaho. Mr. Stearns presented a memorial on the death of Robert Kennicott, who had died in the previous May at Nulato Bay in Russian America. He had traveled extensively in the Northwest and rendered great service to science. At the time of his death, he was in the employ of the Western Union Telegraph Company in its efforts to establish overland telegraphic communication between America and Europe by way of Behring's Strait. Dr. Henry Gibbons made remarks on the relations of the California climate with that of Great Basin and the Eastern States. NOVEMBER 5, Rev. S. D. Simonds and Dr. J. Morrison were elected resident members, and Dr. Wm. P. Gibbons a corresponding member. Dr. Henry Gibbons called attention to the approach of the season when "meteoric showers" might be looked for. A discussion ensued, in which various ideas and theories were advanced. NOVEMBER 19, J. B. Russell and Dr. E. Belle were elected resident members. A paper was presented from Wm. M. Gabb "On the Subdivisions of the Cretaceous Formation in California." Professor Wm. P. Blake read a paper on fossil fish in the Great Basin, Nevada, and called attention also to fossil vertebrae collected by him in Tulare County, which he believed belonged to marine saurians. He had found them associated with sharks' teeth and other marine remains at least 1500 feet above the present ocean level. Professor Whitney remarked that the remains of the crocodile and *Ichthyosaurus* had been discovered on this coast by the State Geological Survey, "and the fact published a year ago." Professor Whitney read a paper "On the Occurrence of the Silurian Series in Nevada." Professor Blake referred to Dr. Newberry's statement of the existence of Silurian rocks at the

base of the series of strata along the cañon of the Colorado River, and to his own statement of the probably existence of pre-Silurian rocks in that region. DECEMBER 3, Professor Whitney read extracts from letters just received from A. Rémond, giving an account of his geological exploration in Peru and Chile. Professor Whitney spoke of the importance of this investigations, especially in reference to the age of the Chile coal, and observed that the same Triassic formations that carried coal there had been found to bear coal in northern Mexico; and he added that the vast extent of Triassic rocks in Arizona, New Mexico and Nevada gave a peculiar interest to every discovery of this kind. DECEMBER 17, Dr. F. Hansen was elected a resident member. Dr. J. G. Cooper donated ninety-six volumes and pamphlets, chiefly on natural history, from the library of the late William Cooper of New York.

By this time, the rooms occupied by the Academy in the Donohoe Building on the corner of Montgomery and Sacramento streets were found to be so entirely inadequate that the Committee on Rooms reported in favor of going back to the Phoenix Block building at 622 Clay Street, where the old rooms previously occupied had been repaired and refitted and afforded greater conveniences than before; and the committee was directed to procure them. It accordingly rented the new rooms, consisting of a main hall, 50 feet by 20, with an arch in the center, and an additional room, 20 feet square, intended for library and reading-room. They were carpeted; and to these the Academy removed in time for the next meeting.

Chapter VII: Year 1867

The Academy met in annual session in its new rooms at No. 622 Clay Street on JANUARY 7, 1867. Dr. John B. Trask was elected a life member, and Dr. George D. Cleveland and George O. Whitney resident members. The various officers made reports, most of them verbal. Mr. Hubbard stated that the Pacific Mail Steamship Company would transport exchanges of specimens for the Academy to and from New York, Japan, and China free of charge. The annual election resulted in a number of changes in the officers. Professor Josiah D. Whitney was chosen president; Col. Leander Ransom, first vice-president; Robert E. C. Stearns, second vice-president; Theodore Bradley, recording secretary; Warren B. Ewer, corresponding secretary; Samuel Hubbard, treasurer; and Dr. Albert Kellogg, librarian. The curators of the previous year were continued in office, except that W. S. Keys took the mineralogy department in place of H. G. Hanks, and W. G. W. Harford the conchology department in place of R. E. C. Stearns. Whitney, Hubbard, Ashburner and Stearns served on the finance committee; Whitney, Ayres and Stearns on publications; Janin, Gibbons and Kellogg on the library committee; and Keyes, Bolander and Bosqui on proceedings. JANUARY 21, Governor R. C. McCormick of Arizona and R. C. Jacobs of Chihuahua, Mexico, were elected corresponding members, and Adolph Sutro, H. P. Carlton, J. W. Kidwell, A. F. Mason, and H. C. Bidwell resident members. Dr. Kellogg exhibited specimens of the heart-leaf meadow parsnip, *Thaspium cordatum*, common on this coast and used as a remedy for chronic rheumatism; and also a beautiful willow herb, found in the Sierra Nevada near the Kearsage mines, which he considered a variety of *Epilobium obcordatum*. Dr. James Blake read a paper "On the Nourishment of the Foetus in the Embiotocoid Fishes." Professor Bolander exhibited the cones of many species of pines growing in California and spoke of the peculiarities of the different species and their geographical distribution. Mr. Hubbard suggested the propriety and feasibility of securing rooms for the Academy in the new Merchants' Exchange Building on California Street; and a committee on that subject was appointed; but, for lack of funds, nothing came of the project, and the Academy remained for some years longer on Clay Street.

FEBRUARY 4, Joseph P. Le Count,^{7.1} C. von Liebenau, A. F. Bell, W. C. Walker, George H. Powers, Dr. Thomas Bennett, L. Gilson, Delos J. Howe, Col. R. S. Williamson, R. D'Heureuse, Rev. John F. Harrington, Henry C. Hyde, G. B. Hitchcock, and Jacob Bacon were elected resident members. Adolph Sutro donated a copy

^{7.1} Not to be confused with Joseph LeConte of the University of California, who came to California from the University of South Carolina in 1869, as did his brother John.

of Humboldt's "Essai Politique sur la Nouvelle Espagne," with atlas. Professor Whitney read a paper "On the Fresh Water Infusorial Deposits of the Pacific Coast and their Connection with the Volcanic Rocks." He spoke of how these deposits were formed and combated Ehrenberg's opinion that they were of eruptive origin. He also thought, from the deposits found in Nevada, that a large portion of the country there, extending from Walker's Lake to the Des Chutes River, a distance of about 400 miles in length and not less than 100 miles in width, was at one time, probably during or immediately after the glacial epoch, occupied by a chain of fresh-water lakes. Dr. Kellogg read a paper on "Fungi," their nature, distribution and uses. E. F. Lorquin exhibited two ducks, one of which he considered a hybrid between the mallard and the pintail, and the other a hybrid between the pintail and the teal. FEBRUARY 18, Dr. J. G. Cooper was elected a life member, and I. W. Raymond, Rodmond Gibbons, Thomas H. Selby, Daniel Knight, Dr. F. A. Holman, Edmund Scott, Henry Edwards, John Melville, George Daly, Robinson Gibbons, Gregory Yale, James Howden, George H. Fillmore, Marshall Hastings, John L. Eckley and Lee J. Ransom, resident members. Professor Wm. P. Blake read a paper on fossil elephants' teeth found at the mouth of the Yukon River and on St. Paul's Island near the middle of Behring's Sea. He spoke of similar fossils as having been found at various places in California, the most southerly point being at San Pedro in Los Angeles County. L. Falkenau read a paper on peat, its origin, distribution and uses. A discussion followed, in which Professor Bolander stated that no valuable beds of peat had so far been discovered in this State. Dr. Behr and W. S. Keyes commented on reported discoveries, and it seemed to be the general opinion that the climate of California was unfavorable to the development of this material. Dr. Henry Gibbons made remarks on the simultaneity of storms on the two sides of the continent.

Professor Whitney made remarks upon the height of American mountain peaks. He spoke of Mr. Alphonso Wood's estimate of the height of Mount Hood in Oregon (17,940 feet) and gave various reasons why little or no credit should be attached to it. He said that Wood's estimate would make Hood nearly 4,000 feet higher than Shasta, whereas experienced observers had concurred in stating that Hood was not only not so high as Shasta, but not so high as Adams or Rainier, the latter of which, according to Wilkes, was only 12,800 feet. Vansant had given the height of Hood as 11,934 feet, less than that of Adams, which was measured with the same instruments. He said further that Wood had given the limit of forest vegetation on Hood as 9,000 feet, which it was well known that on Shasta it was 8,000 feet; and it should be lower on Hood on account of its being so much further north. Again, taking Wood's figures and plotting his distances traveled and the angles of the slopes as given by him, it would be found that, to correspond with his statements, Mount Hood would have to be no less than 33,400 feet high! Professor Whitney concluded that there was as yet no satisfactory evidence to invalidate his previous statements "that we have in California the highest mountain in the United States, and the grandest and largest mountain mass in North America, although one or two of the volcanic cones of Mexico rise to higher altitudes than any of our peaks." Dr. Henry Gibbons made



Henry Edwards
E. O. Essig Collection,
California Academy of Sciences Special Collections

remarks on the inferior quality of the macadam used on the San Francisco streets and asked if any person knew of better in the vicinity. Professor Whitney replied that the nearest locality where good macadam material could be procured was near Petaluma, where an excellent quality of traprock or basalt was to be had in great abundance and convenient for shipment.

MARCH 4, J. M. Sibley, William Norris, Henry Pickel, John W. Nystrom, Ross E. Brown,^{7.2} Cornelius B. Miller and Theodore P. Painter were elected resident members. Professor Whitney presented a memorial paper on the late Professor Alexander Dallas Bache, great grandson of Benjamin Franklin, giving an account of his life and eminent scientific services. Mr. Stearns read a paper on a remarkable instance of vitality in a snail. It had been brought from Cerros Island off the coast of Lower California by Dr. Veatch in 1859 and was named *Helix Veatchii*. Dr. Veatch gave it to Mr. Bridges, who died in 1865. After Mr. Bridges' death, a portion of his collection, including this snail, passed into the hands of Mr. Stearns, who, to his great surprise, found that it was alive and apparently as well as ever. Professor Bolander called attention to a statement made by Mr. Alphonso Wood, published over his own signature in the *San Francisco Evening Bulletin* newspaper, that he had collected in five months in California 1,490 species of flowering plants, and that during his whole

^{7.2} Shown in the Membership Records Book as Ross E. Browne. Could this be in error for J. Ross Browne, Special Commissioner for the Collection of Mining Statistics, who arrived in San Francisco on September 3, 1866 under an appointment from H. McCulloch, Secretary of the Treasury, to "collect reliable statistical information concerning the gold and silver mines of the western States and Territories." Browne had contact with Whitney, Brewer, Gabb and other members of the California State Geological Survey, and it seems likely he would have been introduced to the Academy while resident in San Francisco.

journey in California and Oregon he had collected 15,000 specimens representing 2,794 species of plants. His journey occupied about eleven months, including the time coming from and returning to the East. His route on this coast was from San Diego along the stage road to Los Angeles and San Bernardino; then to San Luis Obispo and Santa Cruz, and then north through the Sacramento Valley, past the base of Mount Shasta, and along the stage road to the Columbia River. Professor Bolander considered it probable that there were not over 500 species of flowering plants actually existing in that part of California passed over Mr. Wood and in which he said he had collected 1,490 species. It appeared from Professor Brewer's careful investigations that over fifty botanists had been collecting in California and Oregon during a period extending back for more than seventy years. Some of them were collectors of long experience and had much better facilities than Mr. Wood, and they had very thoroughly explored a far greater area than Mr. Wood had, yet the total number of species obtained by them all, up to Wood's visit in 1866, was only about 800, where he claimed only 2,416 species of plants in the eighteen northern United States and Canada East, embracing at least 500,000 square miles of territory. California and Oregon together included only about 250,000 square miles, a very small portion of which could have been thoroughly explored by Mr. Wood. How unlikely, then, that he should have obtained in nine months 358 more species in 250,000 square miles than all the botanists in the East had ever been able to find in more than double that area! It was very evident that Mr. Wood was no more competent to determine species than he was to estimate the height of Mount Hood. Dr. Henry Gibbons made remarks on the rainfall at San Francisco for the previous seventeen years. Frederick Gutzkow exhibited a sheet of pure silver, three feet in diameter, which had the appearance of white writing paper, and explained how he had produced it in a leadlined tank from a solution of protoxide of iron saturated with sulphate of silver.

MARCH 18, Elisha Brooks, Ellis H. Holmes, Dr. Levi C. Lane, John C. Pelton, Dr. J. M. Sharkey, John A. Bauer and Robert Hagen were elected resident members and W. H. Dall, corresponding member. Dr. Cooper presented an elaborate paper on "The West Coast Helicoid Land Shells." Professor Wm. P. Blake read a paper on the "Origin of the Submerged Forests in the Columbia River, Oregon." Mr. Stearns read notes of measurement of a sunfish, *Orthogoriscus analis*, weighing 637 pounds, which he had seen in the Italian Fish Market of San Francisco in October 1866; he then made some remarks on the true habitat of *Helix Ayresiana* on Santa Cruz island. Professor Whitney exhibited supposedly Cretaceous-age coal from Webber Cañon, Utah, and pure rock-salt from Salt Mountain on Muddy River about a hundred miles south of Pahrangat in Southeastern Nevada presented by Maj. S. S. Lyon, formerly of the Kentucky Geological Survey, who was present. Gregory Yale spoke of the reports of gold mines in Africa, said to be worked by the Emperor Napoleon III and kept secret from the world in general. A discussion ensued in which Professor Whitney and Mr. Ashburner expressed doubt as to the possibility of the locality of any extensive mining operation being long concealed and disbelief of newspaper



Elisha Brooks
Bancroft Library, University of California, Berkeley

statements to that effect. The subject of field-meetings of the Academy was discussed, and the curators were designated as a committee to superintend them.

APRIL 1, Samuel I. C. Swezey, J. D. Farwell, Frederick Madge, D. J. Littlefield, Archibald Cooper, Samuel Pillsbury, Dr. Arthur W. Saxe,^{7.3} and Bernhard Marks were elected resident members. Mr. Stearns presented a paper on "Shells collected at Santa Barbara by W. Newcomb, M. D. in January, 1867" and one on "Shells collected at Purisima and Lobitas (in San Mateo County), California, October, 1866." Professor Silliman read a paper "On Naphtha and Illuminating Oils from Heavy California Tar (Maltha), and on the Probable Origin of Petroleum." Professor Wm. P. Blake read a "Note upon the Brown Coal Formation of Washington Territory and Oregon," and an "Analysis of Mt. Diablo (California) Coal." H. G. Hanks presented an analysis of rock-salt from Salt Mountain on Muddy river in southeastern Nevada, which he pronounced of great purity. Professor Bolander stated that the snow-plant, *Sarcodes sanguinea*, was not confined to coniferous groves. The first field-meeting or excursion under the auspices of the Academy was held on Angel Island on Saturday, APRIL 6. On APRIL 15, the collections made in the course of the excursion to Angel Island were exhibited and commented on. Professor Silliman read a paper entitled "Notice of a Peculiar Mode of the occurrence of Gold and Silver in the Foot-Hills of the Sierra Nevada, and especially at Whiskey Hill, in Placer County, and Quail Hill, in Calaveras County, California." Mr. Falkenau read a paper "On the Spirit of the Age and its Influence in the Department of the Natural Sciences."

^{7.3} In the Membership Records Book, which is a secondary compilation from the handwritten recordings in the *Minute Books*, Albert is pencilled in for Saxe, Dr. A. W. (Arthur Wellesley Saxe).

Professor Bolander exhibited specimens of *Apocynum*, found on moist land subject to overflow in Round Valley and extensively used by the Indians for fish-lines and other purposes. A field excursion of the Academy was made to the neighborhood of the Twelve Mile House in San Mateo County on APRIL 20.

MAY 6, D. F. Thomas, Silas A. White, B. Smith, M. J. McDonald, William Patten, and Philip Prior were elected resident members. Dr. C. L. Anderson of Santa Cruz, California, Henry Walter Bates, Royal Geographical Society of London, Prof. J. H. Balfour of Edinburgh University, Dr. John Alexander Smith of Edinburgh, James Haswell, Geological Society of Edinburgh, Capt. J. B. Caldbeck of Singapore, and Sir Roderick I. Murchison, Royal Geographical Society of London, were elected corresponding members. Mr. Stearns presented a paper from J. Rowell on a new species of *Pisidium*, a shell found on Angel Island. Mr. Stearns also read a note upon a recent "Exhibition of Parhelia," witnessed by him about 5 o'clock p.m. on April 17. The diameter of the halo around the sun and halo north and south, displayed at each point of intersection a parhelion or mock sun of very considerable brilliancy and continued for upwards of half an hour. A discussion followed upon sun and moon halos, in the course of which Dr. Henry Gibbons combated the popular notion that a halo around the moon was an infallible sign of rain. In some seasons these signs invariably failed, and he thought no rule could be established on the subject. A paper was presented from Professor Silliman entitled "Notice of New Localities of Diamonds in California." He sent for exhibition four small diamonds, one from Forest Hill in El Dorado County, one from French Corral in Nevada County, one from Fiddletown in Amador County, and one from Cherokee Flat in Butte County. Professor Whitney remarked that there were fifteen or twenty localities in California where diamonds had been found; but they were all of small size, the largest, weighing only 7- $\frac{1}{4}$ grams, having been found at French Corral. Most of the diamonds found in California were twenty-four sided, the facets being usually curved. He said it was a mistake, resulting from confounding hardness with toughness, to suppose that a diamond could be struck a heavy blow on an anvil without breaking.

At the same meeting, Professor Whitney read a paper "On the Geological Position of Coal," the object of which was to show how completely the results of modern geological explorations and discoveries had done away with the old idea that valuable beds of coal were confined to any one member of the series of geological formations. He spoke of the principal coal-fields of the world as being divided into two great groups on opposite sides of the globe; those of Europe and the Eastern United States belonging to the Paleozoic age, while those of India, China and Australia were Mesozoic. The coal of the Pacific Coast of North America belonged chiefly to the Cretaceous series, a geological formation that in other parts of the world had been found substantially barren of combustible materials. A paper was presented from Baron F. Richthofen "On the Natural System of the Igneous Rocks." Professor Whitney exhibited a canine tooth from deep gravel deposits at Douglas Flat near Murphy's in Calaveras County, different from a tooth of any animal before found in this state either living or dead. He thought it belonged to a hyaena; and, if so, it was

the first notice of the occurrence of this animal on the American continent. Dr. Cooper stated that Mr. Ridgeway, who had accompanied the government exploration of Russian America, found on that coast birds nearly identical with species living in Asia – a fact of much interest because none of the same species were found on the East Coast. It suggested a former intimate relation between Western America and Eastern Asia.

MAY 20, John P. Cairns, J. W. C. Maxwell, Constantine Heusch, William Fischel, E. W. Burr, Archibald C. Peachy, J. P. H. Wentworth, C. P. Stanford, Dr. Henry Gibbons, Jr., and Dr. P. M. Randall were elected resident members. Mr. Stearns read a paper on “Ancient Mining on Lake Superior.” Professor Bolander exhibited a branch of *Pinus tuberculata* and pointed out that two whorls of cones had formed in the last year’s growth. JUNE 3, G. H. Mumford and A. S. Gould were elected resident members, and Tryon Reakirt of Philadelphia and Lorenzo G. Yates of Alameda County, corresponding members. Mr. Stearns announced the death of Auguste Rémond, who had contributed various valuable papers to the Academy. A communication was received from Lorenzo G. Yates on the remains of an elephant found near the Mission San Jose. Dr. Wm. P. Gibbons read a paper on the remains of a redwood forest on the Contra Costa Range east of San Francisco. Mr. Nystrom presented a paper on the origin of Table Mountain in Tuolumne and Calaveras Counties. JUNE 17, Wm. M. Gabb presented a paper on the “Geology of California,” also a letter from Antonio Raimondi of Lima, describing the great mountains of Peru. JULY 1, a communication was received from Professor Wm. P. Blake stating that the fossil remains found in Tulare County and exhibited by him to the Academy on November 9, 1866, were not those of saurians, as he then supposed, but of a large species of *Delphinidae*. Dr. Wm. P. Gibbons again spoke of the redwood forest that formerly covered the crest of the Contra Costa Range east of San Francisco. JULY 15, W. A. S. Nicholson, Dr. Arthur B. Stout (an early member who appears to have dropped out), and Dr. C. W. McCormick were elected resident members. Dr. Henry Gibbons made remarks on the effects at Watsonville of an earthquake, which occurred on October 6, 1866. He also spoke of the absence of worms from California fruit. Mr. Stearns and Mr. Yale made remarks upon the ancient mines of Lake Superior and the race who probably worked them. AUGUST 5, Professor Bolander gave an account of a recent trip to Humboldt County and his botanical observations in that region. Dr. Henry Gibbons called attention to the meteoric display expected about the 10th of the month, which, however, either did not come or was not observed. At the next meeting, AUGUST 19, he made remarks on the distribution of clear and cloudy days at San Francisco. Mr. Stearns exhibited a species of *Pholas* and described its method of boring.

SEPTEMBER 2, Professor Whitney gave an account of a recent visit to Oregon, Washington Territory, Vancouver Island and British Columbia. He said he had ascertained by rough trigonometrical measurements that Mount Hood was at least 2,000 feet lower than Mount Shasta. He had intended to ascend Mount Hood in order to measure it barometrically; but, learning that Col. Williamson proposed doing so,

he resolved to await his measurement, which would be authoritative. Dr. Ayres spoke of explosive sounds recently heard by him during perfectly clear weather in the vicinity of Borax Lake in Lake County. They seemed to come from beneath the surface and recalled subterranean noises which had been heard in the neighborhood of Mount St. Helena. SEPTEMBER 16, a paper was received from Col. R. S. Williamson, giving an account of his ascent in August, 1867, and measurement of Mount Hood. He found its height to be 11,225 feet; and this, beyond doubt, is the correct figure, or very close to it. OCTOBER 7, on motion of Dr. Stout, a committee was appointed to consider the subject of providing a new building and increasing the facilities and usefulness of the Academy. OCTOBER 21, J. G. Burt was elected a resident member, and Prof. W. D. Alexander of Honolulu a corresponding member. Prof. Whitney read letters from Wm. H. Dall dated at "St. Michael's, Russian America, August 14th, 1867" in which he said he had "traveled on snowshoes, with the thermometer from 8° to 40° below zero, about 400 miles" and "Paddled in open canoes up stream 650 miles and down stream 1300 miles" in Alaska, then called Russian America as shown in the address. He spoke of the geological formations along the Yukon River for 1,300 miles above its mouth. There was a broad patch of volcanic eruptive rock near the lower bend and from there to the sea. Near the bend was a seam of good coal but so small as to be useless. Granite and mica were rare; and he found no traces of glacial action. Dr. Cooper and Professor Whitney made remarks upon the probability of present volcanic activity in Oregon and Washington Territory. The evidence seemed to be conflicting so far at least as showers of ashes were concerned. There was no doubt, however, of the existence of solfataric action on Mount Hood, Mount St. Helens and probably on Rainier and Baker. He also exhibited several photographs taken of the upper Tuolumne Valley by Mr. W. Harris. A paper was read from C. F. Hoffman, describing in some detail the Hetch-Hetchy Valley on the Tuolumne River.

NOVEMBER 4, George C. Johnson was elected a resident member. Dr. James Blake read a paper "On the Organs of the Male of the Embiotocoid Fishes." Professor Whitney made remarks upon the species of minerals occurring in California and on the Pacific Coast of America in general, noting the absence of a number. He said there was a remarkable resemblance in the conditions, which had influenced the formation and segregation of the accidental minerals found accompanying the stratified and eruptive masses through the vast extent of the regions in question, making another fact going to show the unity of the Cordilleras of North and South America as a geological result. Professor Bolander said that the absence of many mineral species from this Coast found a parallel in a similar absence of many botanical groups. Dr. Cooper did not think there was any poverty with respect to animal species, and suggested that the absence of certain groups of plants might be due to the absence of certain mineral constituents from the soil. Dr. Behr thought the California Lepidoptera more nearly conformed to European and Mexican types than to those of the Eastern states. A committee was appointed, on motion of Mr. Stearns, to consider the propriety of amending the constitution of the Academy. It consisted of Stearns, James

Blake, Bosqui, Ewer, and Bolander. NOVEMBER 18, R. H. Stretch and Dr. Gustav Holland were elected resident members and Mr. L. C. Schmidt of Eureka, Humboldt Co., a corresponding member. Professor Whitney read a paper, in continuation of his remarks at the last meeting, on the elemental minerals occurring in California. He also spoke about the depressions in Death Valley and mentioned reports, which cited Mr. Gabb as authority, that no depression below ocean level existed there. In reply he would say that the valley visited by Mr. Gabb was near the head of the Amargosa River, while the true Death Valley was at the sink of that river, where the amount of depression might be safely assumed to be not far from 175 feet below sea level, as given on Col. R. S. Williamson's authority. Professor Bolander stated the number of true species of pine in California as fifteen, and of fir as four. Dr. Stout, of the committee on providing a new building, presented a memorial to the State Legislature; asking that the use of Yerba Buena Cemetery in San Francisco, the ground on which the new city hall now stands, be given to the Academy.

NOVEMBER 27, a special meeting was called to listen to remarks of Professor George Davidson, Assistant to the U. S. Coast Survey, on a recent trip to Alaska. He gave a general account of the geography, climate and natural resources of that country. Dr. Kellogg, who accompanied the party as botanist, made remarks upon the flora of the Northwest Coast. DECEMBER 2, S. W. Holladay, Henry R. Goddard, and Henry K. Moore were elected resident members. Professor Silliman read a paper on three new localities of tellurium minerals in California and some mineralogical features of the Mother Lode. Mr. Stearns read a paper on shells collected at Bodega Bay in June, 1867, and another on Shells collected by the U. S. Coast Survey Expedition to Alaska in 1867. Mr. Bolander presented a paper submitted by Léo Lesquereux, "A Catalogue of the Mosses found . . . on the Northwest Coast of the United States, and especially in California." Professor Whitney gave an account of the work performed by the State Geological Survey. Dr. Henry Gibbons exhibited a species of pork, containing entozoa, erroneously supposed to be Trichinae, but which he believed to be cysticeri. They had the appearance of soaked peas and were not injurious, he said, when cooked. He also took occasion to remark that if the tules of the Sacramento and San Joaquin Valleys were permitted to undergo the natural processes of growth and decay, instead of being annually burned over, the land might in time become sufficiently elevated to be inhabited. Robert L. Harris, who had recently run a new levee from Vallejo to Sacramento, reported that the height of the Sacramento level above sea-level, instead of being 56 feet as commonly supposed, was but 21 feet, and that the low lands in the vicinity of Sacramento were only a foot and a half above sea-level. The committee on amendments to the constitution reported a new constitution, which was laid over for action at the next annual meeting.

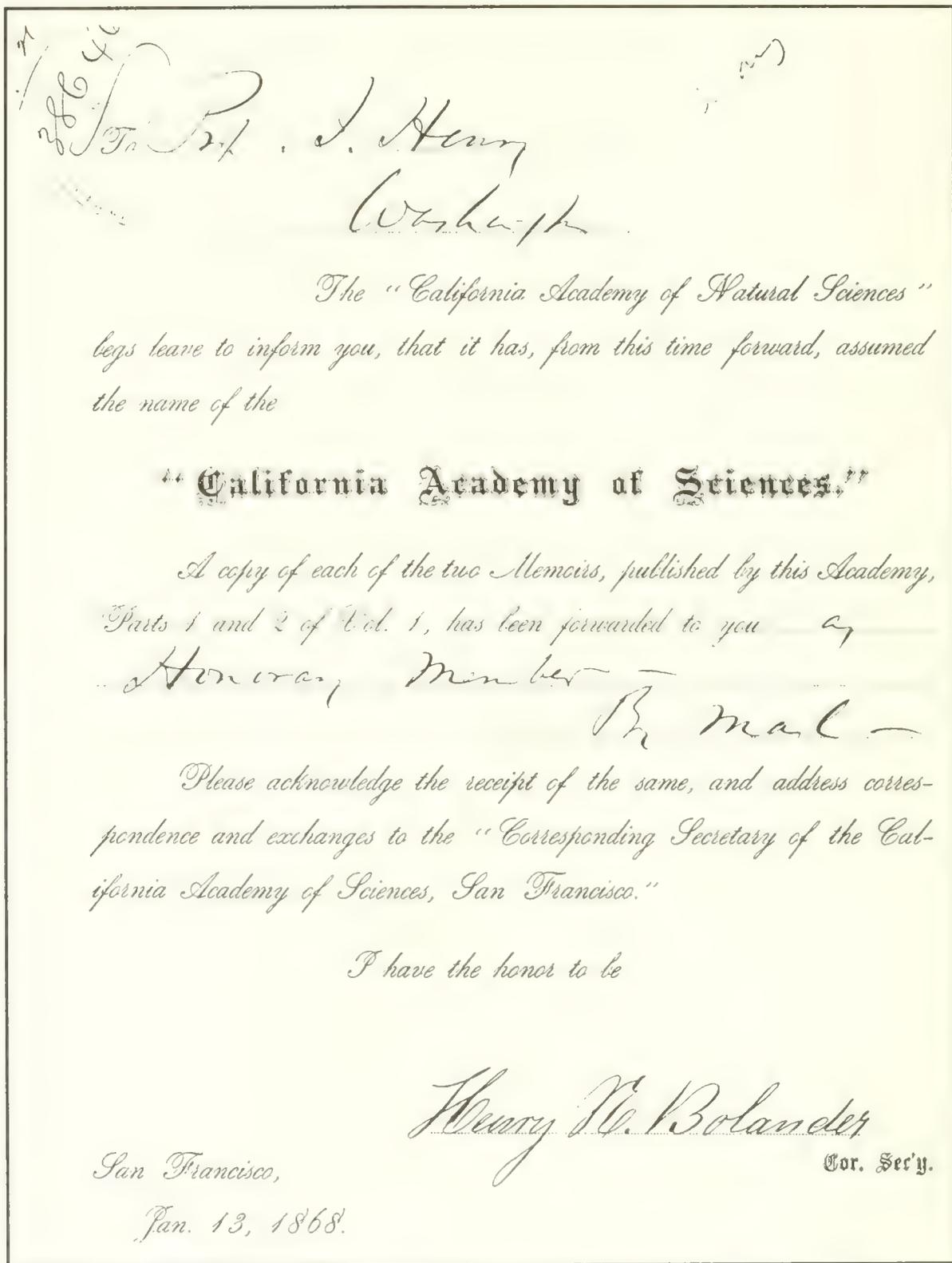
DECEMBER 16, William Hamel, P. B. Cornwall, Horace D. Dunn, and W. B. Rising were elected resident members. Copies of the proposed new constitution were distributed. W. A. Goodyear read a paper on the "Salt Spring Valley and the Adjacent Region in Calaveras County"; Professor Silliman a paper "On the Occurrence of Glauberite at Borax Lake," and Hiram G. Bloomer, a paper on the scientific names

of the "Big Tree." Dr. Henry Gibbons called attention again to the pork containing entozoa, exhibited at the last meeting, and said that some of the members of the Academy had pronounced them Distomata; but he was still satisfied, after further examination, that they were cysticeroi. Dr. Henry Gibbons, Jr. gave a detailed statement of reasons for assigning them to the genus *Cysticercus*. At this last meeting of the year 1867, the attendance of members was thirty-seven; and the attendance at all the meetings of the year had been good. This, as well as the number of new members who joined during the year, indicated that a new interest in the Academy had been awakened and that it was attracting more and more attention.

Chapter VIII: Year 1868

This year the annual meeting commenced on JANUARY 6,^{8.1} with thirty-three members present. Benjamin M. Hartshorne was elected a life member, W. W. McFarland, William Bailey, George F. Allardt, Dr. A. F. Sawyer, and Dr. Isaac Rowell, resident members, and W. C. S. Belcher and W. D. Christie, corresponding members. The president, Professor Whitney, delivered an address, giving in brief the history and progress of the Academy. Mr. Hubbard, the treasurer, presented his annual report to the effect that \$1624.14 had been received in 1867 and \$1,546.17 paid out, leaving on hand \$79.97. The curators of botany and conchology also presented reports. The new constitution was next taken up, read section by section, amended in some particulars, and adopted as amended and as a whole. The meeting was then adjourned to JANUARY 13, when the constitution was slightly amended and again adopted as a whole. The new constitution provided that the name of the society should be the “California Academy of Sciences,” dropping the word “Natural” of the old title. Its object was to be “the promotion of science,” and “this was to be accomplished by the holding of meetings for scientific intercourse and discussion, by the reading and publication of papers containing original contributions to science, by the establishment of a museum and library, and by other suitable means.” Members were to be resident, life, corresponding, and honorary. Resident members were to be elected from among persons residing within 150 miles of San Francisco, and every resident member might become a life member by paying \$200 into the treasury. Corresponding members were to be elected from persons not residing within 150 miles of San Francisco; and a method was provided for changing, in proper cases of change of residence, corresponding membership into resident membership, and vice versa. Honorary members were not to exceed forty in number, twenty to be residents and citizens of the United States, and twenty, foreigners. The business of the Academy was to be exclusively managed by, and its officers selected from, resident and life members. The names of candidates for resident membership should be proposed by at least two members; posted in a conspicuous place in the Academy for at least two weeks, and balloted for only at a stated meeting. Honorary members could be elected only at an annual meeting, but had to be proposed by the Council and posted at least four weeks before election. Four-fifths of the members present were necessary to elect, and only one candidate could be balloted for on one ticket. No person rejected as a candidate was to be eligible for one year afterwards. A member might be expelled

^{8.1} Published in vol. 4, p. 1 of the *Proceedings* as January 4th, 1868, in error. The meeting was held on January 6th, the “first” Monday of the month (as recorded in the handwritten minutes of those meetings; Academy Archives: *Minute Books*, Jan. 6th, 1868-Jan. 2nd, 1872).



Notification of change of name to the California Academy of Sciences
sent to Joseph Henry, Secretary of the Smithsonian Institution
Smithsonian Institution Archives

for cause and after due hearing by vote of at least two-thirds of the members present; but expulsion proceedings could be instituted only at a stated meeting, which, however, might be adjourned from time to time, but not beyond the next stated meeting. No person expelled should ever again, under any circumstances, become a candidate for election. The officers were to consist of a president, vice-president, corresponding secretary, recording secretary, treasurer, librarian, and director of the museum, who should together constitute the Council; and as many curators as the Council should from time to time determine. Officers were to be elected by ballot at the annual meeting on open nomination, and only one officer elected at one balloting.

The president was to preside when present at all meetings of the Academy and Council, name all committees not otherwise provided for, and, with the Council, direct the general business of the Academy. At the annual meeting he should report on the condition and progress of the Academy, and also announce the deaths of members dying during the preceding year, accompanying the announcement with biographic notices in the case of persons eminent in science. The duties of other officers were likewise prescribed. The president, vice-president and treasurer were to be the official Trustees and act as a sub-committee on finance; and the president and secretaries were to act as a sub-committee on publication in the Council, with power to add two to their number; and the duties of these committees were to be regulated by the Council. Vacancies in office were to be announced to the Academy by the president and an election to fill the vacancy held at the next meeting. The annual meeting was to be held on the first Monday of January; but, if that should be January 1, then on the next day; stated meetings were to be held on the first and third Mondays of every month; field-meetings or excursions at such time and place as the Academy might direct, and special meetings, in case the Council deemed it desirable, at any time on the call of the president. Any annual or stated meeting could be adjourned from time to time for the purpose of closing up unfinished business, but not beyond the time of the next stated meeting. Meetings of the Council might be held at any time and place at the call of the president, and he was to call a meeting when requested by any member of the Council. Resident members were required to pay \$3 as an initiation fee and \$3 quarterly in advance towards defraying expenses. No member in arrears should take part in the business of the Academy; and the names of members more than one year in arrears should be stricken from the rolls and such persons be ineligible to re-election for one year after such dismissal. Publications were to be directed, as to style and amount, by the committee on publication under the general supervision of the Council; and resident, life and honorary members were to be entitled to receive, free of cost, one copy each of all publications issued during their time of membership. Amendments to the constitution had to be presented in writing to the Council at least one month before being acted on. The Council was required to present them to the Academy with a report on the question of adoption and with such amendment as it might see fit. The Academy might then, at any stated meeting, adopt any such amendment by a two-thirds vote of the members present.

At the same adjourned meeting of January 13, the election of officers under the

new constitution took place and resulted in the choice of Professor J. D. Whitney as president; Dr. James Blake, vice-president; Professor H. N. Bolander, corresponding secretary; Theodore Bradley, recording secretary; Edward Bosqui, treasurer; Dr. A. Kellogg, librarian, and R. E. C. Stearns, director of the museum. At the meeting of the Council held the next day, JANUARY 14, H. N. Bloomer was appointed curator of botany. Also, the Council approved sending the Smithsonian Institution fifty copies of the *Memoirs*, parts 1 and 2 of volume 1 for distribution. JANUARY 20, an offer of the proprietors of a suburban resort, called the "City Gardens," to donate to the Academy the use of one of its buildings was declined. Five hundred copies of the new constitution, list of members and president's address were ordered to be printed. Announcement was made of the appointment by the Council of the following curators: Dr. Cooper on general zoology; W. G. W. Harford, conchology; Dr. Trask, Radiata; R. H. Stretch, entomology; W. A. Goodyear, geology; H. G. Bloomer, botany. Copies of the second memoir of the Academy were distributed. Dr. Cooper read a paper on "Some Recent Additions to the Fauna of California," Theodore A. Blake "Notes on the N. W. Coast of America," in which he called attention to the erosive action of glaciers as well as many inaccuracies in the charts of the coasts, and Professor Whitney a paper on the system adopted by the State Geological Survey of naming mountain peaks in California. Dr. Kellogg exhibited specimens of Siberian plants, including *Rhododendron*, *Campanula*, *Linnaea borealis*, and a new species of the gooseberry family combining in its fruit the qualities of the gooseberry and currant.

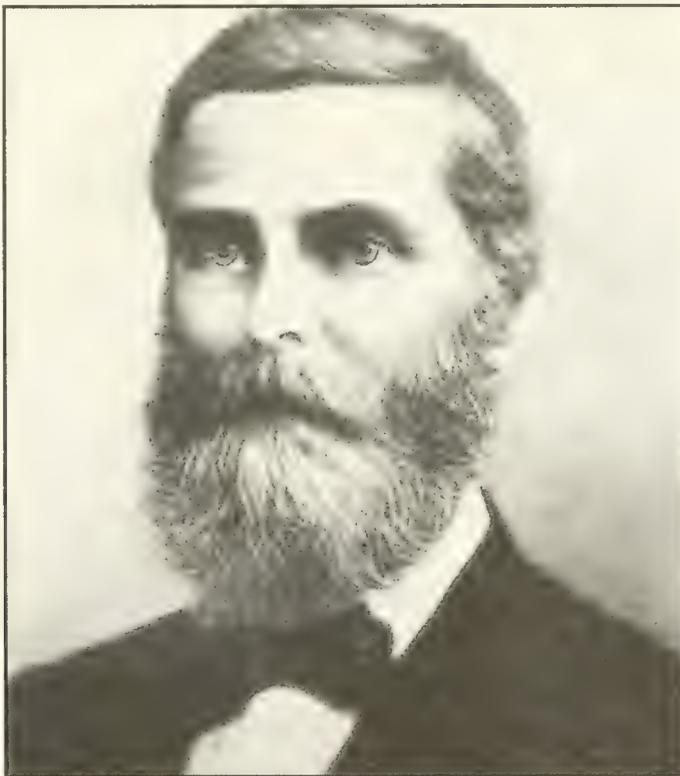
FEBRUARY 3, George Lette, P. Hueme, Ottakar Hoffman, Charles Beseler, and



Watson A. Goodyear
California Academy of Sciences Special Collections

Dr. Justus Fuchs were elected resident members; and two candidates were rejected. Among the donations was a wild duck's gizzard, containing, with gravel, grains of placer gold; also a specimen of the pulu-fern. Dr. Stout reported on the progress made by the committee on a new building. Dr. Kellogg exhibited the stem of *Panax horridum* of Alaska, allied to the ginseng plant. Professor Whitney, Dr. Henry Gibbons and others made remarks about the mulberry, *Morus multicaulis*, and the speculations to which it had given rise. FEBRUARY 17, Dr. Thomas M. Logan, Rev. Albert Williams, R. B. Swain, and William Hayes were elected resident members. Dr. Parry of the Southern Pacific Railroad gave an account of some of the natural features along parallel of latitude 35°, and the probabilities of coal being found on it. He also briefly compared the flora of the Rocky and Sierra Nevada Mountains. Clarence King, chief of the Government Survey on the parallel of 40° gave an account of that region. Drs. Cooper, Henry Gibbons and James Blake spoke of the winds prevalent in Southern California and on the West Coast generally; and Gibbons, Behr, Cooper, Kellogg, Bolander, and White discussed the harmless and harmful action of frost upon plants.

MARCH 2, Nathan Porter, Emile Sutter, and H. D. A. Schieffler were elected resident members. Professor Bolander delivered an address upon the value of a properly conducted botanical garden as illustrated by the great good accomplished by the botanical garden of Melbourne, Australia. The subject evoked discussion upon the utility of new plants that had been or might be introduced into California. A resolution was adopted, on motion of Gregory Yale, appointing a committee consist-



Charles Christopher Parry
George Sprague Myers Portrait Collection,
Department of Herpetology, California Academy of Sciences

ing of Messrs. Yale, H. Gibbons, Stearns, Stout, and Veatch to prepare a succinct recommendation, as the sense of the Academy, for the continuance by the legislature of the State Geological Survey. A strong and unanimous feeling was manifested in favor of the continuation of the Survey, and the retention of Professor Whitney at its head, as necessary for the material interests, culture, and good name of the State, no less than for the general interests of science. Dr. Stout announced that he had safely transmitted to Paris a specimen of the snow-plant, *Sarodes sanguinea*, in carbolic acid, and that it arrived there retaining the natural vividness of its colors. MARCH 16, a memorial to the Legislature in favor of the continuance of the State Geological Survey was presented, adopted, and ordered transmitted to the San Francisco delegation at Sacramento, Professor Bolander donated a large collection of ferns and grasses, in number about fifteen hundred specimens, of which one hundred and thirty-five were Californian, the others from the East Europe, Australia, and Chile, all fully identified. Remarks were made upon the importance of a catalogue of plants introduced from abroad and successfully cultivated in California. Bolander stated that those most extensively cultivated had been introduced from the Mediterranean regions, and that they were found in the Spanish colonies generally.

APRIL 6, H. S. Craven, Dr. A. J. Bowie and Howard Crittenden were elected resident members and Col. Ezekiel Jewett of Utica, New York, a corresponding member. Dr. Stout, of the committee on providing greater facilities for the Academy, reported on the failure to obtain from the Legislature any portion of Yerba Buena Park for a building site, though the San Francisco Board of Supervisors approved the project. He suggested the formation of a sinking fund to furnish means to purchase a lot. Objections to this plan were made on the ground of the inadequacy of the income of the Academy. Dr. Ayres proposed a special monthly contribution. Dr. Stout urged the importance of securing a building site while the price of real estate remained low, and said that a purchase at that time would give the Academy the benefit of the advance in prices that was sure to come. The whole subject, however, was referred back to the committee. Joshua E. Clayton called attention to some specimens of fossil coral from Silver Peak Basin in Nevada, and a new trilobite found there. He also spoke of the vast quantities of rock salt found in the same vicinity and stated his opinion that it was not, as commonly supposed, of oceanic origin, but came from the decomposition of saline rocks. Dr. Ayres called attention to a specimen of sponge, called "Venus' flower-basket," *Euplectella speciosa*, from the Philippine Islands. A committee consisting of Messrs. Stout, Logan, Yale, Ayres, and Stearns was appointed, on motion of Dr. Stout, to draw up a report on the "abrupt and shabby" discontinuance of the State Geological Survey; and at the next meeting, APRIL 20, a report was presented strongly condemning it, which was accepted, approved and adopted by the Academy. As the discontinuance of the Survey deprived Professor Whitney of his occupation in California and necessitated his return to the East, he resigned his office as president of the Academy and accompanied his withdrawal with a few farewell remarks.^{8.2}

MAY 4, Dr. C. T. Deane, Joseph Paxson, Gen. John F. Miller, Anton Roman,

Theodore A. Mudge, John B. Felton, Dr. Isaac Bluxome, Thomas A. Barry, Dr. R. Beverly Cole, Calvin Brown, Frank M. Pixley, H. L. Davis, Julius Bandmann, Thomas M. Cash, John Hucks, J. F. Lohse, J. W. Willard, Benjamin A. Patten, Justin P. Moore, August Emory, and A. Harpending were elected resident members. Dr. James Blake, on nomination of Mr. Stearns, was elected president in place of Professor Whitney, who had resigned. At the suggestion of Professor Bolander a committee was appointed to arrange a course of short lectures, one to be delivered at each regular meeting of the Academy, the subject of each lecture to be open to general discussion by the members after its delivery. Mr. Stearns stated that he was obliged to be absent from the State for a year and therefore resigned his office as director of the museum, though he designed upon his return to again put his hand to the plow and labor for the Academy. Rudolph D'Henreuse read a paper on the "Proper Use of Air with Reference to Industry and Medicine." Dr. Stout gave notice of a proposed amendment of the constitution, reducing the fee for life membership from \$200 to \$100. MAY 18, Dr. J. G. Cooper was elected vice-president in place of Dr. James Blake, who had been elected president. Dr. Kellogg exhibited specimens of the holly-leaved wild cherry, *Cerasus ilicifolia*, and also of the choke cherry, *Cerasus Virginiana*, both from the neighborhood of San Francisco. He remarked that the former was called by the Indians *Islais*, which had given name to the creek so-called in the southern part of the City. He also mentioned a report that cattle could eat its leaves when fresh with impunity, but would die if they ate them when wilted on account of the production in such leaves of hydrocyanic acid. A discussion ensued as to whether hydrocyanic acid existed or was produced in the leaves of the cherry and kindred plants.

JUNE 1, Milton S. Latham, Frederick Townsend, Dr. Benjamin D. Dean (in the published *Proceedings*, but "Deane" in the handwritten minutes {p. 46} [Eds.]) and Dr. W. A. Grover were elected resident members. The committee on lectures reported arrangements and assignments for seven lectures to be delivered by Drs. Blake, Gibbons, and Cooper and Messrs. Falkenau, Bolander, Bloomer, and Bradley, respectively. An amendment to the constitution, reported favorably from the Council, was adopted, reducing the fee for life membership from \$200 to \$100. H. G. Bloomer was elected director of the museum in place of Stearns, resigned. A committee was appointed to confer with the San Francisco Board of Supervisors on the subject of providing rooms for the accommodation of the Academy. R. W. Raymond, U. S. Commissioner of Mining Statistics, delivered an address on the relations of the government to the mineral lands and mining interests of the country. JUNE 15, L. Falkenau read a paper on "The Part we should take in Furthering the Mining Interests

^{8.2} Between 19 Jan. 1866 and 22 Jan. 1871, Henry Bolander corresponded with William Henry Brewer, then at Yale but formerly J. D. Whitney's assistant on the California State Geological Survey, keeping Brewer up-to-date on events in California. Among the 18 letters written during this period (Yale Univ., Sterling Library Archives: Group 100, ser. 1, box 5, folder 168), Bolander noted how he, Kellogg, and Behr had themselves withdrawn from taking part in survey activities because of the treatment accorded Whitney (letter dated 5 Feb. 1867); in a letter dated 28 March 1868, Bolander observed that "Whitney will go east next month also Stearns [Robert Edwards Carter {Eds.}] to return no more . . . Well, what next. A *Pacific Republic!*"; in another letter dated 9 July 1869, Bolander writes "The stopping of the State survey is now also much regretted. I should not wonder if Prof. Whitney would find a willing ear this year."

of the Pacific Coast." Dr. Stout, of the committee on providing greater facilities for the Academy [Building Committee], reported in favor of accepting an offer of the Paul Tract Homestead Association of a block of land in the City and County of San Francisco, on condition that the Academy would expend \$15,000 in putting up a building on it or otherwise improving the same; but, after some discussion, the matter was postponed to an adjourned meeting. JUNE 22, at the adjourned meeting, the discussion was resumed with the result that the matter was again laid over for final action at a special meeting to be held on June 29. Also at the adjourned meeting of June 22, Dr. Victor Fourgeaud was elected a resident member; and Theodore Bradley resigned his office of recording secretary on the ground that he did not have time to properly attend to its duties. JUNE 29, the definite question, "Will the Society accept the offer made to it by the Paul Tract Homestead Association?" was put and, after a lengthy and free discussion, was decided in the negative. The land was considered entirely too far out of the inhabited part of the city to be of any value to the Academy, and, besides, it had no money to comply with the condition imposed. At this meeting, though expressly a special one, H. T. Livermore, James Deering, J. S. Phillips [Phillips in the handwritten minutes {Eds.}], E. R. Howes, and Dr. R. H. McDonald were balloted for and declared elected resident members. Elisha Brooks was elected recording secretary in place of Theodore Bradley, resigned. A human skull, supposed to be centuries old, exhumed near extensive ruins at the junction of the Gila and Salt Rivers in Arizona, was presented by Dr. P. M. Randall. It was found with an "ojo," or earthen water jug, inverted over it, which seemed to have served as a preserver, for the remains of the other portions of the skeleton were so far decayed as to crumble at the touch. Dr. Randall stated that it bore no resemblance to the skulls of any of the present Indian tribes of the region, and that those Indians said it did not belong to any living tribe, but was a "Montezuma."

JULY 6, George A. Treadwell was elected a resident member. Dr. Blake read a paper on the "Chemistry of Digestion," which was followed by a discussion on the subject and by remarks from Dr. Henry Gibbons on the injurious effects of chewing and smoking tobacco. Dr. Ayres reported on a sponge from the Sea of Japan as a species of *Hyalonema* that is parasitic on other sponges. Professor Bolander, as corresponding secretary, stated that he had received two letters from scientific men in the East, commenting in such violent terms of condemnation on the recent action of the Legislature in superseding the State Geological Survey that he declined to read them publicly. JULY 20, William J. Shaw and E. J. Schellhouse were elected resident members. Dr. Cooper delivered a lecture on "Edible Mollusks of the Pacific Coast." Gregory Yale made remarks on the evidences that the San Francisco peninsula was, at a time not far distant in the past, an island or series of islands. Edward Bosqui, treasurer, presented a report on the condition of the finances of the Academy, showing an indebtedness of over \$500. Professor Bolander tendered his resignation as corresponding secretary for the reason that he had not time to attend to all the duties of the office; but he was induced to withdraw it on the understanding that he would be furnished with an assistant.

AUGUST 3, L. L. Treadwell was elected a life member, and A. L. Wolf and A. Warren, resident members. The president stated that the Council had appointed Dr. Kellogg special assistant to the secretaries and treasurer at a small salary, which was to be raised by subscription. Among the donations was an *Octopus*, found near Fort Point, and some fossil pine cones from lignite beds near the Ocean House in San Francisco. Dr. Henry Gibbons delivered a lecture on "Microscopic Parasites." AUGUST 17, J. Silver, C. L. Houghton, and H. S. Crane [shown as H. S. Craven in the handwritten minutes but corrected to H. S. Crane in the published *Proceedings*, eds.] were elected resident members. Professor Bolander delivered a lecture on the "Flora and Agricultural Resources of the County around Eureka, Humboldt Bay." Dr. Stout moved that an assessment of \$5 be levied on each member of the Academy for the purpose of paying off its debt. After much discussion, the subject was laid over until next meeting.

SEPTEMBER 7, Dr. Lorenzo Hubbard was elected a resident member. Theodore Bradley exhibited a stone image of an eagle nearly two feet high, said to have been found imbedded in clay, covered with eight feet of alluvium, on the bank of Willamette River, two miles above St. Helens, Oregon. H. G. Bloomer delivered a lecture on "Classification and Generalization." Dr. Stout's proposition to levy an assessment to pay the debt of the Academy was taken up and again laid over "until next meeting," and in that condition it seems to have been allowed to lie. Additions to the cabinet included a collection of plants received from M. René Le Normand of Viré, France, and a collection from New Caledonia donated by Prof. Meissner of Basle, both through Dr. Kellogg. SEPTEMBER 21, E. N. Boynton, John M. Buffington, and Milton Andros were elected resident members. A catalogue of the library, made by Elisha Brooks, was presented by him. Dr. Blake made some remarks on the peculiar state of the atmosphere which had prevailed for some days. He alluded to the pale pink color and haziness. The discussion dismissed the possibility of smoke from the burning forests in Oregon or in Marin County. Other explanations were considered. Dr. Stout exhibited dissections of a cuttle fish, *Octopus*. He alluded to Victor Hugo's description of the animal in his "Toilers of the Sea" and said it was evident the novelist had never seen one nor properly understood the beauty of its physical construction. The animal, which seems to have been caught near San Francisco, measured eleven feet between the tips of its extended arms. S. A. White remarked that one had been captured some years before at Victoria, Vancouver's Island, the arms of which were as thick as a man's leg and measured fourteen feet in length.

OCTOBER 5, William H. Dall gave a detailed account of Alaska, where he had been exploring and studying the geography, geology, climatology, ethnology, and natural history of the country for two years. He spoke of the only gold up to that date found there as coming from the mouth of the Porcupine or Rat River near Fort Yukon, and being in very small quantities. He said that the natives all came under the general designation of Esquimaux, though they differ very much from the Esquimaux of the eastern side of the continent. They are tall, athletic people, very intelligent and

ingenious, and superior to the American Indians of the interior. Though they belong to the same general race as the little eastern Esquimaux, having words that are the same, they are evidently later comers. Mr. Dall also said that, after a careful study, he was satisfied that there is no open Polar Sea and that an unbroken sea of ice stretched over from America past the North Pole to Asia.⁸³ OCTOBER 29, Theodore Bradley delivered a lecture on the "Value of the Study of Science in its Historical Relations."

NOVEMBER 2, Mr. Bloomer moved to adjourn on account of the small attendance and the political excitement. Gregory Yale objected, and the motion was withdrawn. Amos Bowman was elected a resident member. Mr. Yale spoke of the necessity of gathering reliable information in regard to the recent earthquake of October 21, the severest felt since the American occupation of the country.⁸⁴ NOVEMBER 16, L. Falkenau delivered a lecture on "Analytical Chemistry," illustrated with experiments. A discussion of the recent earthquake followed, preliminary to future full reports upon the subject. DECEMBER 7, Emile Grisar and J. J. Owens were elected resident members. J. E. Clayton read a paper on "Earthquakes in the Kern River Region, as observed by Dr. Farnsworth." He gave the observation of Dr. A. Farnsworth on a series of shocks that occurred on the headwaters of Kern River on September 4, 5, and 6 when there were five hundred in all, and thereafter for five or six days one or two shocks every hour. Other parties reported frequent shocks at intervals of an hour or two during the remainder of the month. A discussion ensued on the various theories as to the igneous, chemical and magnetic causes of earthquakes; and it seemed to be the general opinion that they were caused by chemical and igneous agencies in the interior of the earth. DECEMBER 21, Dr. Blake exhibited a map showing the directions in which the earthquake of October 21 struck different places in the vicinity of San Francisco Bay and stated that they all tended towards a center near Haywards in Alameda County.

⁸³ The sheets (pages 30-37, pls. I-II of the *Proceedings of the California Academy of Sciences*, vol. 4, 1868-1872) containing Dall's remarks were printed in part in November 1868 and in January 1869 and placed in circulation. It is not known how seriously his observations on the extent of the Arctic ice pack were taken by others in planning expeditions to the Arctic via the Bering Straits (e.g., the *Jeannette* [q.v.]

⁸⁴ For a discussion of the abortive attempt to gain information and write a report about this earthquake see Aldrich, M., B. Bolt, A. Leviton, and P. Rodda, 1986. The "Report" of the 1868 Haywards Earthquake. *Bull. Seismol. Soc. America* 76(1):71-76.

Chapter IX: Year 1869

The annual meeting was held JANUARY 4. The president read his annual address, giving the condition and progress of the Academy during the preceding year. The treasurer reported the receipts during 1868 at \$1,760, and the disbursements at \$1,636, leaving a balance of \$124; but that there was an outstanding indebtedness of \$440. The librarian reported the library in good condition; but the director of the museum complained of great deficiency of room and conveniences for the rapidly increasing collections. Dr. Gibbons commented on the reports and gave it as his opinion that more money ought to be devoted to the museum and less to publication. The annual election resulted in the choice of Dr. James Blake, president; Dr. J. G. Cooper, vice-president; Leo Eloesser, corresponding secretary, Theodore A. Mudge, recording secretary; Elisha Brooks, treasurer; Dr. A. Kellogg, librarian; and H. G. Bloomer, director of the museum. Professor J. D. Whitney was elected an honorary member, and G. W. Dunn, a corresponding member, was placed on the list of resident members. Among the donations was the rattle, containing thirty rings, of a rattlesnake, eight feet long, captured by Dr. P. M. Randall^{9.1} in Arizona. In his annual report on the condition of the museum, Mr. Bloomer complained of the want of rooms to display the collections. Dr. H. Gibbons commented that more money should be devoted to the museum to make a better showing before the community. In the Council, G. W. Dunn was appointed curator of entomology, W. G. W. Harford, curator of conchology, and Dr. Trask, curator of Radiata. JANUARY 18, W. Frank Stewart and Professor George Davidson, Chief of the U. S. Coast Survey for the Pacific Coast, were elected resident members. Dr. Cooper moved the establishment of divisions of members, such as conchological and mineralogical, and they would hold separate meetings and publish their proceedings. Dr. Kellogg proposed a botanical division to include meetings in the field.

FEBRUARY 1, Max Waizman was elected a resident member. H. G. Hanks read a paper on the mineral resources of Owen's River and adjacent districts, particularly Inyo and Death Valley districts and the "Gun Sight" lead, the first silver found in California of which any record existed. He said that an emigrant party in 1849 reported having seen on their way over that region fabulously rich silver mines and were said to have brought in specimens of pure silver. In 1850, a Dr. French and party went out in search of these mines, but were unsuccessful; and they had since been known only in story. Mr. Hanks exhibited specimens of argentiferous galena from

^{9.1} Spelt Randle in the published minutes (*PCAS* 4:41 [Feb. 1870]) but Randall in the handwritten minute book (*Minute Books* Jan. 6, 1868 to Jan. 2, 1872, p. 83.). The published minutes are probably in error.



James Blake

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the region and some ores from the northern end of Owen's River Valley showing free silver. Dr. Henry Gibbons spoke of the remarkable effects of rain upon adobe land near Redwood City in San Mateo County and how its swelling and shrinking, under the influence of moisture and drought, caused cracks in the walls of houses built upon it, which were often erroneously attributed to earthquakes. Gregory Yale spoke of the importance of the erection of an observatory in California and hoped the Academy would have the honor of its establishment. FEBRUARY 15, J. W. Hobson, Dr. J. J. Stevenson, and Smythe Clark were elected resident members. Dr. Blake read a paper on the "Lower Forms of Organic Matter." Dr. Kellogg presented specimens of the fruit, foliage and wood of the canon live oak, *Quercus chrysolepis*, from the neighborhood of Baulines Bay in Marin County. He spoke of the solidity, strength, toughness, and durability of its timber as equaled only by the southeastern live oak, *Quercus virens*. In his view of the subject, it was a "burning shame" to have such valuable timber shipped to San Francisco for firewood, out of sheer ignorance of its value. He also referred to the mustard plant in California and commented upon the difference between it and the English species.

MARCH 1, Dr. George Hewston, Rev. A. Aaronstein, J. F. Breed, and O. W. Easton were elected resident members. Dr. Henry Gibbons spoke of the peculiarities of the climate of California; there were in fact, he said, three different climates, one in

southern California near Mexico; one in northern California near Oregon, and one in Central California, each of which he briefly characterized. He then spoke of the value of the telegraph as an indicator of coming storms. He said that on one occasion he was with Professor Henry at the Smithsonian Institution in Washington, where daily and sometimes hourly reports of the weather were received from all parts of the Atlantic States. Professor Henry, and he while there, could sit down before a large relief globe and locate storms as they were reported; and in that way follow and trace them as they were approaching, hundreds of miles away, until they finally burst upon the city. Had he been five hundred miles above the earth, looking down upon the atmosphere, he could not have obtained a better idea of the progress of a storm. In this State, where the prosperity of almost every interest depended upon the rains, the knowledge of storms was of especial importance. Our chief prognostic of rain so far was the occurrence of three hot days following a Northerly, when rain, in the proper season of the year, was to be expected. Dr. Kellogg exhibited specimens of meat that fell from the sky near San Jose. It was said that the atmosphere was clear at the time, and the fragments of meat fell over an area of twenty acres. Much discussion ensued; but the general opinion was that the strange shower had been disgorged by vultures or buzzards flying so high in the air as to be invisible. The pieces of bone found seemed to be too large to have been taken up by a whirlwind, which it was suggested might have caused the phenomenon; but Mr. Beardsley stated that at Gold Hill, Nevada, in 1862, a whirlwind had taken up 4,000 feet of lumber and torn it to shreds. A letter from W. F. Stewart described a remarkable magnetic storm near San Jose on February 23. The weather was dry and sky cloudless, when the magnetic needle suddenly began to turn and was greatly deflected to the east for some time. Dr. Blake stated that when making observations in reference to the recent earthquake, he had noticed the needle dip far more in San Ramon Valley near Monte Diablo than near San Francisco Bay.

MARCH 15, Gregory Yale exhibited specimens of copper pyrites taken at a depth of 208 feet from an artesian well that was being bored on Commercial Street in San Francisco, and made remarks upon the strata penetrated by the auger. He also announced the discovery of a nearly entire skeleton of a mastodon near Petaluma in Sonoma County. A letter was received from W. F. Stewart of San Jose on the recent shower of meat near that place. He confirmed the theory that the fragments had been disgorged by vultures or buzzards. He said that in 1863 a similar fall of meat was observed in the valley below San Jose, the ground for some half a mile being covered with fragments. That was the year when thousands of cattle perished for want of food, and myriads of buzzards would so gorge themselves with the flesh of the dead animals that they would be obliged to vomit in their flight. He had on more than one occasion known them to drop pieces of meat upon himself and horse when riding under them. APRIL 5, Dr. W. F. McNutt was elected a resident member. Among the donations was a series of stereoscopic view of Indian inscriptions on rocks near Cisco in Nevada County from Charles Crocker. Professor Davidson described experiments for obtaining longitude by the use of the telegraph. The old method was by the use of

chronometers carried from point to point or by astronomical observations and calculations. He said that he had, in eighty-two hundredths of a second, made a telegraphic circuit from San Francisco to Cambridge in Massachusetts and back, a total distance of 7,200 miles. The exact difference in time between the two places was found to be three hours and twenty-five minutes. APRIL 19, L. A. Gould and Captain Edward Pinnor were elected resident members. Dr. Kellogg exhibited several new and beautiful plants from near the mouth of the San Joaquin River. A discussion took place on the subject of inscriptions found in various places on rocks; but no satisfactory explanations of them was given.

MAY 3, Rev. Siegfried Simon, Hermann Simon, Eugene Arnstein were elected resident members. H. P. Carlton read a paper on shells found at Antioch and vicinity in Contra Costa County. Dr. Henry Gibbons made observations upon silk culture and the manner in which it had been attempted in California. He also spoke about the ramie plant of China, *Boehmeria nivea*, and the value of its fiber. He further said that the fiber of the common nettle was used by the Indians in Southern California for making fishing nets, and that its thread was very strong and not injured by water. He thought there were no true farmers in California but only raisers of cereals and that in time ramie would be found of more importance for cultivation than wheat. He also spoke of the possibility of acclimatizing Eastern fish, such as shad and other species not then existing here. Dr. Blake said there was no country in the world where an acclimatizing society might be made so useful as in California. Professor Bolander stated that a company had already been formed in San Francisco to introduce shad. He also spoke of the ramie plant and New Zealand flax, *Phormium tenax*, as worthy of naturalization and well adapted for the tule lands in the interior of the State. He likewise recommended extensive cultivation of the basket-willow, *Salix viminalis*, and of the Australian gum-tree, *Eucalyptus*, especially for piles. He also mentioned the opium poppy and teazle as likely to reward cultivation, and thought that much more could be made out of California if it were cut up into ten acre pieces of land and devoted to special products. Among native plants that were deserving of attention was a very good celery, *Pimpinella apiodora*, which grew on hillsides among dry rocks. MAY 17, R. Heynemann⁹² was elected a resident member. Gregory Yale spoke of the advisability of starting a subscription for a permanent abiding place for the Academy, and said that the members represented \$3,000,000 of wealth, among whom \$300,000 ought to be raised. Professor Davidson remarked that the Academy of Sciences of the wealthy city of Philadelphia with the most vigorous efforts had been able to raise only \$20,000 or about one fifth of what was required there. Dr. Blake referred to the difficulty of raising funds for any scientific purpose; as exemplified in the trouble of collecting money enough to investigate the recent earthquake. As from these expressions of opinion it seemed apparent that nothing could be done in the way of a subscription. Mr. Yale moved the appointment of a committee to examine and report upon an Outside-Land lot, near the corner of Point Lobos and First

⁹² R. Heynemann in the published minutes (PCAS 4:53) but H. Heynemann in the handwritten minute book (*Minute Books*, Jan. 6, 1868 to Jan. 2, 1872, p. 101)

Avenues, near Lone Mountain, which had been reserved and set aside by the San Francisco authorities for the purposes of an "Academy of Sciences."

JUNE 7, Theodore A. Mudge resigned his office of recording secretary on account of other engagements. Mr. Yale asked further time to investigate the supposed title of the Academy to the Outside-Land lot reserved by the City for an "Academy of Sciences." Dr. Blake stated that he had visited the locality near Petaluma of the mastodon remains reported at a previous meeting; but he found that they had been so scattered that none of any value could be obtained. He, however, found that the houses built in Petaluma on a rocky foundation suffered much more from the earthquake of October 21, 1868, than those built on alluvial soil. The Council, at its meeting, transacted only routine business. JUNE 21, Edward Cohn, Hugo Eloesser, Arthur Eloesser, Frederick Reichling, George A. Elliott, and Dr. John Vansant were elected resident members. Henry P. Carlton was elected recording secretary in place of Theodore A. Mudge, resigned. Among the donations was a large lizard, *Heloderma horridum*, said to be poisonous, from Guaymas, Mexico; an Indian mortar, weighing 35 pounds, from a mound at Raccoon Straits, Marin County; a fossil oyster, *Ostrea titan*, said to have been found fifty feet below the surface on Telegraph Hill, San Francisco, and imperfect peat from a salt marsh near San Francisco Bay. Robert Schlagintweit, the traveler and explorer, being present and asked to address the Academy, described many incidents of his journeys. He spoke, among other things, of a remarkable mineral, nephrite, found in the coal quarries of Turkistan. It was so soft when first taken out of the ground that it could be cut with the finger-nail; but, when exposed for a time to the air, it became so hard that it would cut glass. The inhabitants there made idols, pipes, and handles for tools of it. He also spoke of his travels in the Himalaya Mountains, where he found people living at an elevation of 16,000 feet and occupied in raising sheep. He found the snow-line lower on the southern side of these mountains than on the northern, which he explained by taking into account the difference in humidity on the respective sides.

JULY 12, at a meeting adjourned from July 5, A. T. Winn and Isaac Wormser were elected resident members. Professor Bolander gave an account of a trip to the Sierra Nevada and a description of Emigrant Gap and Bear Valley in Nevada County. The latter he pronounced produced by glaciers. He exhibited a large number of plants collected by him. H. P. Carlton, who had accompanied Bolander, spoke of shells he had found on the Truckee River and in that vicinity. A communication was received from J. M. Upham devoted principally to the subject of the reclamation of Sherman Island near the mouth of the Sacramento River, where 47 miles of levee 5 feet in height, had been thrown up at a cost of \$80,000. A discussion ensued in reference to the reclamation of the tule lands of California in general and their adaptability for agricultural purposes. JULY 19, David Hughes, Samuel A. L. Brannan, W. W. Dodge, and Dr. W. H. Titcomb were elected resident members. Among the donations were two slabs of limestone from Treasure City, White Pine County, Nevada. The side of one was covered at regular intervals with protuberances the size of buck-shot and that of the other with corresponding depressions, which suggested to some members the

idea that it was a fossil hail-storm. Dr. Cooper thought the name not altogether inappropriate as the depressions were probably caused by the beating down of hailstones on soft sand, which hardened, the depressions being afterwards filled with overflowing mud, which likewise hardened into limestone. There was also exhibited a section of a pine log from Puget Sound, nearly two feet in diameter, having a leaden ounce-ball in the center but without any trace of its course or how it got there. The growth-rings of the log, supposing them to be annual, indicated that it was 110 years old when cut. It, therefore, seemed as if the ball must have been fired before the time of Lewis and Clark's Expedition, or even before Vancouver's voyages. R. W. Raymond, U. S. Mining Commissioner, spoke about mining countries, mining laws, and the importance of mining schools. At a separate meeting of the Council, held three days later, on JULY 22, Mr. Samuel Brannan offered to put the zoological collections in order. His offer was accepted and he was appointed curator of zoology in place of Mr. Lorquin. The Council also declared the position of Dr. Trask as curator of Radiata vacant.

AUGUST 2, several Indian relics were presented which indicated great age; and Dr. Blake remarked that they tended to prove a remote antiquity of the human race in California. Dr. Henry Gibbons exhibited apples grown in Alameda County, which had been buying out under evergreen oak trees for over a year and were still perfectly sound and fresh. AUGUST 16, Maurice Dore was elected a resident member. A discussion took place "as to the scientific name of the so-called poison-oak," which it was finally decided to record as *Rhus toxicodendron*, though it is now known as *Rhus diversifolia*. A lively discussion also took place in reference to the apparently smoky condition of the atmosphere, which Dr. Henry Gibbons attributed to forest fires in the region of Puget Sound, Washington Territory. It was not clear what brought the smoke down the coast, as the ordinary winds would not do so; but there certainly was smoke in the air, and he could smell it. Dr. Blake inquired whether Dr. Gibbons' smoke was not a kind of hazy fog. He could not detect any smoke. His impression was that the atmosphere was clear in the mornings. Dr. Gibbons was very certain that it had not been clear but on the contrary very hazy that morning; and in proof that there was smoke in the air he said that the sunsets were very red. As to the fog theory, he had recently been on the eastern side of Monte Diablo, quite out of the reach of the fog, and found the atmosphere smoky there. Dr. Blake thought, if there was much smoke, it was unnecessary to look to Washington Territory for it, as it might come from tule fires much nearer. Dr. Behr said that in other countries, Australia, for instance, smoke from great fires did not spread over vast surface distances. Dr. Blake said there ought to be some instrument by which the density of smoke in the atmosphere could be measured as moisture was measured — a smoke-meter, for instance. Dr. Gibbons suggested "or a meat-smoker." It was remarked that perhaps the reason why smoke did not travel far in Australia was that the combustible material there did not contain so much carbon as the wood in America. Dr. Behr replied that the amount of carbon in plants was about the same in all parts of the world. Dr. Gibbons said that smoke and wind were incompatible and that in the East

the first day of brisk wind dispelled the haze of Indian summer. Dr. Behr said the state of the atmosphere had a great effect upon smoke; on some days it would rise straight up and on other days it would creep along the ground. Some one asked, "What is smoke?" Dr. Gibbons answered that it was unconsumed carbonized vegetable matter. Dr. Behr thought there were several other ingredients entering into the composition of smoke. Dr. Blake said that eminent geologists had decided that smoke issuing from volcanoes contained no carbon whatever. Dr. Gibbons replied that smoke from volcanoes was probably partly ashes, but chiefly unconsumed mineral matter. Dr. Gibbons next made some remarks about earthquakes. He said that in his opinion the area [San Francisco] had enjoyed an unusually long immunity from earthquakes of any magnitude, the earthquake of last October having been a very critical one. According to one newspaper account of the meeting, Dr. Gibbons thought that the October earthquake of last year had given vent to the accumulated gases and hence no shakes of any consequence were felt since, but he would not be surprised if another earthquake occurred in the near future. It was reported that Dr. Gibbons did not want to alarm members of the society, among whom the matter was discussed. The Academy Secretary said that he did not think it best that discussions of a scientific body, such as this, upon the question should be published.^{9.3}

SEPTEMBER 6, among the donations was a piece of wood perfectly preserved, taken at a depth of 288 feet from an artesian well at Santa Clara, Santa Clara County. Dr. Blake called attention to the peculiar light in the heavens, observed throughout the State a few weeks previously, soon after sunset. He attributed it to a vaporous or smoky medium at a high altitude, which reflected the sun's rays. Dr. Cooper presented an elaborate paper on "The Fauna of California and its Geographical Distribution."^{9.4} On SEPTEMBER 7, the Council met but transacted only routine business. SEPTEMBER 20, W. H. Haskell was elected a resident member. Attention was called by Gregory Yale to shells from a so-called Indian shell-mound near San Quentin in Marin County. He was of the opinion that the mound was not the work of Indians; but was simply an upheaval, and that such mounds in general were originally under tide-water when the shell deposits were made. Drs. Blake and Cooper, Professor Bolander and others said that shell-mounds made by Indians did evidently exist in many places, and that their depth of shell deposits and other characteristics showed that they had been artificially formed.

OCTOBER 4, W. H. Collie and George Hobson were elected resident members. Among the donations were specimens of the "wild parsnip" from Nevada. A letter about them from Lieutenant D. L. Carpenter of Ruby Valley, Nevada, stated that two miners there had been poisoned by eating the root. Dr. Stout said that he had prepared a concentrated tincture of the root and found it had no effect on a frog when introduced into its blood, but, when put into its stomach, caused complete paralysis in one minute. Professor Davidson called up the subject of Indian shell-mounds and said that some

^{9.3} In an insert to the article, the "Reporter" stated that "The question of suppressing Dr. Gibbons' earthquake opinions was not further discussed, and publication not prohibited." *Mining and Scientific Press*, August 17, 1869.

^{9.4} See *Proc. Calif. Acad. Sci.*, 1870, 4:61-81.

years previously he had examined such a mound ten feet high near Sausalito in Marin County, and found 30 skulls in it; and he concluded that the Indians have had something to do with the elevation. OCTOBER 18, B. Christensen was elected a resident member. Mr. H. Davis⁹⁵ of San Francisco presented fragments of Indian skulls and implements from a shell-mound near San Rafael in Marin County. He said there were a dozen or more such mounds in the vicinity, one of them about 300 feet long by 175 feet wide and 20 feet high. He had opened it and found human skeletons at various depths in successive strata of ashes, soil and shells evidently slowly accumulated; also flint implements, circles of stones used for fire places, ornaments of abalone shell, various kinds of bones and other evidences of human occupation. He was disposed to think, however, that further researches in these mounds were not likely to be productive of any valuable results. He had pursued his own labors in them at the request of persons in the East, who had manifested an interest in them; but he did not regard them as of much importance. Dr. Cooper was of the opinion that the investigations might be of great value in determining the origin, character and condition of the people who occupied the mounds. The relics indicated that the people had not advanced beyond the "Stone Age," and were of the same race as the "Diggers" of the Great Basin east of the Sierra Nevada; but the tribes north of California and those south of it differed from each other, and each differed from the Indians of California. It was a question, he said, whether there had ever been any connection between the people of the west coast of America and the east coast of Asia. A Chinese junk was said to have visited Mexico before the time of Columbus, and there was evidence that the Japanese had visited the Northwest Coast; but as yet there had been nothing found to indicate any ancient communication with California. Professor Davidson remarked that there were records of at least four shipwrecks of Japanese vessels on this coast within a period of only one or two centuries, and it was probable that many more had occurred previously. The coast might have been colonized from Asia, and there might be evidences of it in the mounds.

NOVEMBER 1, many scientific publications were received through the Smithsonian Institution at Washington, which continued, as it had been doing for years, to distribute publications of the Academy and receive for it publications of other institutions. Dr. Kellogg gave an account of a recent trip to Humboldt Bay and exhibited plants collected on it; and, among them specimens of Whitney's primrose, *Oenothera Whitneyi*, discovered by Professor Bolander. He complained that his whortleberry-leaved oak, *Quercus vaccinifolia*, had been ascribed to Dr. W. Hooker, and had also been considered a dwarf variety of *Quercus chrysolepis*, and wished to correct both these errors. He also spoke of a species of *Ceanothus* as a producer of cream when fed to cows, and said that land covered with the plant was considered most valuable by dairymen. Dr. Cooper said that a species of the *Ceanothus* in the East had been used for tea in the time of the American Revolution. H. G. Bloomer reported that the "wild parsnip," presented on October 4, was the *Cicuta maculata*,

⁹⁵ F. Davis in the published proceedings (*Proc. Calif. Acad. Sci.* 4:83) but H. Davis in the handwritten minutes (*Minute Books*, Jan. 6, 1868 to Jan. 2, 1872, p. 122). This is probably Mr. Horace L. Davis, elected a resident member of the Academy on May 4, 1868.

usually called “water-hemlock,” and well known in the East as a deadly poison. NOVEMBER 15, Col. Leander Ransom read a paper on “Shell-mounds” accompanied with sketches of four near San Pedro Point in Marin County. He said that all he had seen were in the neighborhood of beds of mussels or other shell-fish, either on the banks of bays or streams or not far off. A favorable spot, he went on to explain, was selected; a basin-shaped depression made, and a sort of lodge constructed, in which the Indians lived and around which they threw out the refuse of their shell-fish and other food. After years of such deposits and accumulations of offal, when the stench became too oppressive and the fleas and other vermin unbearable, they would set fire to the lodge and, after a thorough “purging by fire,” build a new habitation and commence another series of years and deposits. The results in centuries were the shell-mounds. Mr. Yale read a paper on “Meteoric Showers” and said that, while looking for a display on the night of November 13, he had, about a quarter before 5 o’clock in the morning, seen the largest and most brilliant meteor he had ever witnessed. It moved from east to west and illuminated the heavens and the earth on the line of its track. It exploded at length with a fan-like shape, but he could hear no explosive noise.

DECEMBER 6, the Council met and the following names were advanced for honorary members, James D. Dana, Jeffries Wyman, George Engelmann, Benjamin Peirce, T. H. Huxley, Henri Milne-Edwards, Prof. Bunsen, Prof. Helmholtz, and Dr. J. D. Hooker. At the Academy’s regular biweekly members meeting,^{9,6} John Taylor and Arthur W. Bowman were elected resident members. Dr. Behr spoke of *Eucalyptus marginata* as growing plentifully in Australia and thought it might be imported with advantage for use as piles, as the wood was not attacked by the teredo. Professor Bolander spoke of the Coniferae of California and said that their 33 species had now been settled, and there was, he said, no such variety and richness in any other part of the known world. Professor Whitney said that in the Rocky Mountains of Colorado, where he had spent the last summer, he had observed only 6 species. He also read a letter from Baron Richthofen on the geology of China and one from J. E. Clayton on the White Pine Mineral District of Nevada. Professor Bolander spoke of a reported rise of 6 feet in the level of Mono Lake, a freshening of its water, and the disappearance of the dense clouds of flies, the larvae of which had formerly been so abundant on the lake shores. Professor Whitney said that the level of Mono Lake, as indicated by water-marks, was once 600 feet higher than now. He added that Great Salt Lake and Pyramid Lake had also risen very much in the past two years. He thought there were periodical rises and falls in the lakes of the Great Basin, corresponding with periodic climatic changes. He said there had been an unusually large rainfall east of the Sierra Nevada in the past year. A discussion ensued as to whether the large rainfall east of the Sierra had any connection with the uncommonly small rainfall in California. DECEMBER 20, Professor Whitney gave an account of geological explorations in

^{9,6} In the handwritten *Minute Books* (Jan. 6th, 1868 to Jan. 2nd, 1872, p. 130), the meeting is shown as taking place on Dec. 7, but this is probably in error. The biweekly meetings of the Academy were held on Mondays, usually preceded by a meeting of the Council. In the Council minute books, the date is given as Dec. 6, 1869.

the Colorado portion of the Rocky Mountains in the summer of 1869.⁹⁷ His party consisted chiefly of professors and students from the Mining School of Harvard University; but he was also accompanied by Professor Brewer of the Yale Scientific School and by C. F. Hoffman. They had ascended and measured the highest peaks there and found the highest points in the Rocky Mountains to be Mount Harvard, which was 14,270 feet; Gray's Peak, 14,245; Pike's Peak 14,216; Mount Lincoln, 14,123; Mount Yale, 14,078; and Long's Peak 14,050. No peak had been found as high as several in the Sierra Nevada. Dr. Cooper presented an elaborate paper, the first of a series, on "West Coast Fresh-Water Univalves." Professor Bolander read a paper on eight species of grass of the genus *Melica* found in California. Dr. Carl von Scherzer, Chief Commissioner of the Commercial and Scientific Department of the Austro-Hungarian Embassy to Eastern Asia and America, was introduced and gave an account of his journey around the world, and efforts in China to establish a treaty. Among other things relating to that country, he spoke of the difficulty which his friend, Baron Richthofen, had experienced there, in endeavoring to make scientific explorations, on account of being opposed at every point by government officials, who were still jealous of foreign enterprise.

⁹⁷ Whitney published these comments in "Explorations in the Rocky Mountains by J. D. Whitney," (1870), *Amer. Jour. Sci.*, ser. 2, 49(147): 398-399. It is noted in the opening paragraph that, "Professor J. D. Whitney has given the California Academy of Sciences some of the results of explorations under his direction in the Rocky Mountains during the summer vacation of 1869."

Chapter X: Year 1870

At the annual meeting of JANUARY 3, 1870, Professors Henri Milne-Edwards, Robert Bunsen, H. L. F. Helmholtz, Thomas H. Huxley, and Dr. Joseph D. Hooker, of Europe and Professors James D. Dana and Benjamin Peirce and Drs. Jeffries Wyman and George Engelmann, of the United States, were elected honorary members. Dr. Blake, as president, read his annual address upon the condition and progress of the Academy, which was received with satisfaction and applause. Elisha Brooks, treasurer, in his report on the finances showed "that the Academy was free from the burden of debt for the first time." The librarian and the director of the museum reported their departments in good condition. At the annual election the officers chosen for 1870 were Dr. James Blake as president; Dr. A. Kellogg, vice-president; Leo Eloesser, corresponding secretary; H. P. Carlton, recording secretary; Elisha Brooks, treasurer; Dr. J. D. Cooper, librarian, and H. G. Bloomer, director of the museum. Dr. Henry Gibbons introduced the subject of earthquakes, giving his views of their cause, and illustrating them with a diagram upon the blackboard. A discussion ensued, participated in by Messrs. Heynemann, Holladay, Blake, and Stout. JANUARY 17, Donald Bruce was elected a resident member and J. C. Brevoort of Long Island, New York, a corresponding member. Dr. E. Palmer, of the U. S. Agricultural Bureau, gave an account of recent journeys in Arizona and Sonora, and spoke of the habits of the Indian tribes, the ruins of ancient towns, and the relics of former inhabitants found there. Dr. Stout exhibited globular concretions, some from near Mokelumne Hill, Calaveras County, and others from Fossil Hill, Nevada. He contended that the larger stones were of volcanic origin and had been formed by being thrown out in a melted condition by craters and cooled in spherical form, like leaden shot, when falling. His theory elicited a lively discussion as to the origin and formation of the concretions. Professor Whitney concluded his earlier remarks on his explorations in the Rocky Mountains with an account of his visit to South Park, Colorado. He also read a letter from Baron Richthofen giving more details on the geology of China.

FEBRUARY 7, Professor W. J. W. Williams, Col. Charles D. Gibbes, Abner Doble, Thomas Nelson, and Charles C. Rueger were elected resident members. A bronze medal was presented to the Academy from the Royal Academy of Christiania, Norway, having on it the inscription, "*Exhaustu Olympico valentior.*" A suitable reply was ordered to be forwarded. The library reported receiving a large number of foreign scientific publications through the Smithsonian Institution. Dr. Behr read a paper on the extinction of plants in the neighborhood of San Francisco by the progress

of settlement and the encroachment of foreign weeds. Dr. Blake read an abstract of a paper by Carl Vogt on prehistoric man, in reply to which H. G. Bloomer read an abstract from an address by President Stokes before the British Association to prove that man originated from the special design and creation of Divinity and was not a development from an ape or any other inferior form. He evidently took no stock in Darwinism, which was turning the scientific world upside down. FEBRUARY 21, Thomas W. Newcomb and A. A. Hazeltine were elected resident members. Benjamin M. Hartshorne donated a number of valuable books. Mr. Easton gave a verbal account of his theory of the structure of the Coast Mountains and their lateral spurs. He supposed that coal was formed in the basins between the spurs that ran into the ocean. In his opinion, the same formation extended to the Isthmus of Darien, and that the lateral valleys there afforded natural passages for ship canals across from ocean to ocean. He thought, if his views were correct, that they would throw light upon many geological puzzles.

MARCH 7, among the donations were two specimens supposed to be the globes of human eyes dried into hard balls, taken from the graves of Chilean aborigines, which had been opened two years previously by an earthquake, but on examination they proved to be vegetable productions. Dr. Blake read a paper on the "Climate of California," particularly on the peculiar weather of the preceding winter. It evoked an animated discussion, in which Drs. Gibbons and Cooper participated. MARCH 21, Dr. William P. Gibbons, one of the old members who had withdrawn in 1855, and S. H. Herrin were elected resident members. Dr. Blake read extracts from a paper by M. Gintrac of the Academy of Sciences of Paris, France, on the advantages of raising silkworms in the open air and attributing many of their diseases to confinement in too close rooms. He said they would thrive well in any temperature from 47° to 104° and were not injured by the direct rays of the sun, nor by sudden changes of weather, nor by thunderstorms, as was commonly supposed. Dr. A. W. Saxe made remarks upon the sea-currents of our coast, giving it as his opinion that a warm current up the coast caused the moderate climate peculiar to California. Dr. Cooper said that the warm current was several hundred miles outside. Dr. Gibbons and others entertained similar views. A few days after this meeting the general dissatisfaction with the discontinuance of the State Geological Survey, which had been expressed in many other quarters besides the Academy, bore fruit in the enactment of a new statute by the State Legislature, adopted March 25, 1870, directing the State Geologist (Professor J. D. Whitney) to proceed and with all reasonable diligence complete the survey and the publication of its results, and appropriating \$2,000 per month, payable monthly, for two years to pay the expenses of survey and publication. The work was accordingly soon afterwards resumed, and the Academy had the benefit, for a couple of years longer, of the presence and cooperation of the scientists connected with it.

APRIL 4, Charles Geddes and William J. Fisher were elected resident members. Remarks were made on an auroral light observed about midnight on March 28, and on an earthquake which occurred on April 2. APRIL 18, Dr. Blake read a communication from Captain C. F. Hall, the Arctic explorer, asking the concurrence of the

Academy in a petition to Congress for an appropriation of \$100,000 in aid of his proposed third expedition to the Polar Seas. On motion of Dr. Henry Gibbons the petition was signed and transmitted to the California delegation in Congress. Professor Whitney made some remarks on the boundary line between Oregon and California. He also asked that a committee be appointed to inquire as to the best instrument for recording earthquake phenomena and the proper place for it. Whitney, Gibbons, Davidson, and Williamson were thus appointed. A lively discussion then took place in reference to Dr. Henry Gibbons' theory of earthquakes. He thought them occasioned by gases or rather steam produced by water percolating into the hot interior of the earth. In his opinion, such places as the Geysers furnished a vent and there were no earthquakes there. Professor Bolander said that the earth did shake at the Geysers. Dr. Gibbons replied that the shakes there were only miniature earthquakes; but if the escaping gases were pent up they would cause a prodigious convulsion. Heynemann asked, if the earth were as solid as granite, where were the caverns, spoken of by Dr. Gibbons to be found? The earth was said to be much heavier than granite, but the gases, if they were the causes of earthquakes, must come from somewhere, and must just as certainly get out through some opening, so that there ought to be caverns. But the question was, where and how were these gases produced and where were these caverns? Dr. Blake was inclined to think that gases, if engendered, would surge upwards at once rather than travel along the strata. He did not believe that traveling gases would have the power to shake the country up in so uncommon a manner as did the earthquake of 1868. Professor Bolander thought the theory of gases wrong. Gas, he said, would not travel with the same rapidity that earthquakes do through the rocky ridges of the interior of the earth, disturbing the surface as they went along with a wave-like motion. He thought electricity was at the bottom of the unpleasant movements. Volcanoes might possibly have some connection with earthquakes, but the usual causes were local.

Dr. Stout said he was satisfied with the gaseous theory, but he had some doubt as to its force. He had no doubt the center of the earth was in an igneous condition; but he could not believe that the gravity of gas produced by the dripping of water into it would be sufficient to cause the convulsions noticed in earthquakes. His opinion was that they were produced by electricity alone. Dr. Gibbons thought that electricity was a convenient name for solving difficult phenomena – a safe refuge for those who gave the subject only slight study. Mr. Heynemann said that the earthquake question was a very interesting one; and he would like to know how to account for them. It was said that the earth's temperature increased one degree for every thirty-four feet of descent into it; and at that rate the temperature at a depth of 20,000 feet would be 600°. Now fossils had been brought up from about that depth in the ocean, and they did not appear to have been burned, and he would like to hear the phenomenon accounted for. Another member answered that the water of the ocean kept the bottom cool, but, if Mr. Heynemann would descend 20,000 feet below the bottom, he would be likely to find hot weather. Another member suggested that a curator of earthquakes ought to be appointed, whose duty it should be to collect specimens of earthquakes

and place them in the museum, taking care, however, to purge such specimens of their gases to avoid dangerous consequences. Still another members suggested that, for the protection of the City of San Francisco, an artificial volcano should be got up in the neighborhood for the escape of the gases coming this way and producing so much uneasiness. Besides, he said, as the lava from a volcano was reported to be so food a fertilizer, the advantages of such an institution near the sand hills of the City would be inestimable. Dr. Gibbons said that the arguments of the last speaker were convincing, and he would therefore move the appointment of a committee to get up such a volcano in the new Golden Gate Park for the purpose of fertilizing it. The chair asked time for consideration in the appointment of so important a committee; and the Academy adjourned.

MAY 2, among the donations was a section of the trunk of a lemon-verbena tree, *Aloysia citriodora*, showing its luxuriance in this climate, its diameter being seven inches. Professor Davidson exhibited photographs of the last total eclipse of the sun, taken at Springfield and Shelbyville, Illinois, and spoke of the great improvement in accuracy of observation thus secured. He also spoke of the slight rainfall at and about Los Angeles and the likelihood that the crops there would be an entire failure; while, if proper attention and energy were directed to the subject, abundant water for all necessary irrigation could be obtained there by boring artesian wells not more than 70 feet deep. Dr. Cooper gave an account of observations made by him, in the course of a recent trip to the Sierra Nevada, on the absence of frost in the ground under the snow and the rapidity with which animals and vegetables sprang up when the drifts were but half melted. Flowers blossomed on the very edge of the retreating snow; the tops of ant-hills, still half buried, were covered with active insects, and small animals came out of their winter burrows as soon as the sun's rays struck the bare soil. Many birds and quadrupeds were constant residents of the summits through the entire winter. Professor Whitney exhibited an impression of a fossilized leaf, apparently a fan palm, from a volcanic sedimentary deposit near Placerville in El Dorado County. It was the first specimen of the kind, he said, so far found in California and indicated a sub-tropical climate in the Tertiary era. MAY 16, Gregory Yale called attention to the death of Dr. John A. Veatch, who had been one of the most active and valuable members of the Academy. He also spoke of a shell-mound that was being opened near the terminus of the Bay View Railroad in the southern part of the City and County. He still maintained that these so-called mounds were not true mounds or built for burial purposes, but were natural elevations or formed by successive deposits of shells and refuse without any design to form mounds or burial places. The deposits in most of them were not deep enough to admit adults to be buried in a sitting posture, as was usual in Indian burials. Dr. Cooper spoke of the so-called Alabaster Cave in El Dorado County and the absence of any human or other animal remains found in it. Mr. Yale suggested that the dampness there might favor decomposition and said that the caves of Europe, where animal remains had been found, were all very dry.

JUNE 6, G. R. Throckmorton and J. T. Brown were elected resident members. Professor Davidson exhibited the skull of a sea-lion killed near Punta Arena in

Mendocino County, and also a stone, as large as a child's head, which he said was one of several found in the animal's stomach. He had been told by the hunters that in the breeding season the males of this species eat no food, but swallow stones instead, and are consequently very thin afterwards, furnishing very little oil. He said that the Aleutians made a similar statement in reference to the fur seals, which are allied to the sea-lions. Dr. Stout referred to the fact that he had exhibited to the Academy, at a previous meeting, a piece of basalt taken from a well 128 feet deep in the Western Addition of the City, and said that it indicated the existence, beneath the superficial and characteristic rocks of the San Francisco Peninsula, of an underlying stratum of basaltic rock something like that found near Petaluma. JUNE 20, Thomas C. Banks, J. B. McChesney and Charles B. Turrill were elected resident members. Dr. Stout presented a copy of Captain C. M. Scammon's book on the *Cetaceans of the West Coast of America*, with remarks upon the author's laborious devotion to the work. He also spoke of the process of preserving specimens with carbolic acid and said that birds might be preserved entire by injections of that fluid. Dr. Cooper remarked that such specimens were liable to be spoiled for all useful purposes by shrinking out of shape. Dr. Stout next exhibited a piece of rock, which he called basalt, found in a well in the City 75 feet deep. Professor Whitney said it was a very hard, metamorphic sandstone, not uncommon on this peninsula. Dr. Blake spoke of a remarkable hailstorm, which occurred near Pleasanton in Alameda County on June 12. The hailstones were large enough to kill birds. The storm was accompanied with lightning and thunder.

JULY 11, at a meeting adjourned from July 4, Dr. C. N. Ellinwood and J. F. Gray were elected resident members. Col. R. S. Williamson asked for information as to the prevention of the movement of the sand-dunes around the formations of the lighthouse at Toke Point, Cape Shoalwater, Washington Territory. He said there was a long reach of sand coast at that point extending for many miles, which during storms of wind drifted so much as to cause apprehensions that the light-house might be undermined. Professor Davidson spoke of a similar case on the coast of France, where they had to protect the exposed building by heavy masonry sunk below the drifting sand. Professor Bolander thought that protection might be secured by planting such vegetation as could be made to grow in the sand; and he named several plants that could be successfully rooted and would afford a basis for other vegetation. Professor Davidson said that in some cases the sand had been known to change level fifteen feet in a single night, and this would render the growth of plants of any protective value difficult. Dr. Cooper said that several of the plants named by Professor Bolander, if they could be protected from cattle, could be successfully grown. Dr. Blake suggested the planting of annuals of rapid growth, which would hold the surface while larger, denser and more durable plants could become rooted. Professor Davidson made some remarks about whales, additional to what the work of Captain Scammon had given. He referred to the attacks made upon them by the thresher shark, which he said would manage to get above the whale's head and keep it under water thus preventing him from breathing until he was suffocated. He also spoke of the

“sounding” of the whale, when struck with the harpoon, and said that in shallow water the animal would strike bottom violently and come up covered with mud, and frequently so stunned as to give the whaler an opportunity to strike again; and this was one of the reasons why whaling in such seas was the most successful. Professor Davidson said that he had measured the angle between two sides of the specimen of supposed basalt that had been presented at a previous meeting, as found in San Francisco by Dr. Stout, and found it to be 140° , which would make a nine-sided prism. Professor Whitney said that so far as his knowledge went, there was no basalt in San Francisco County.

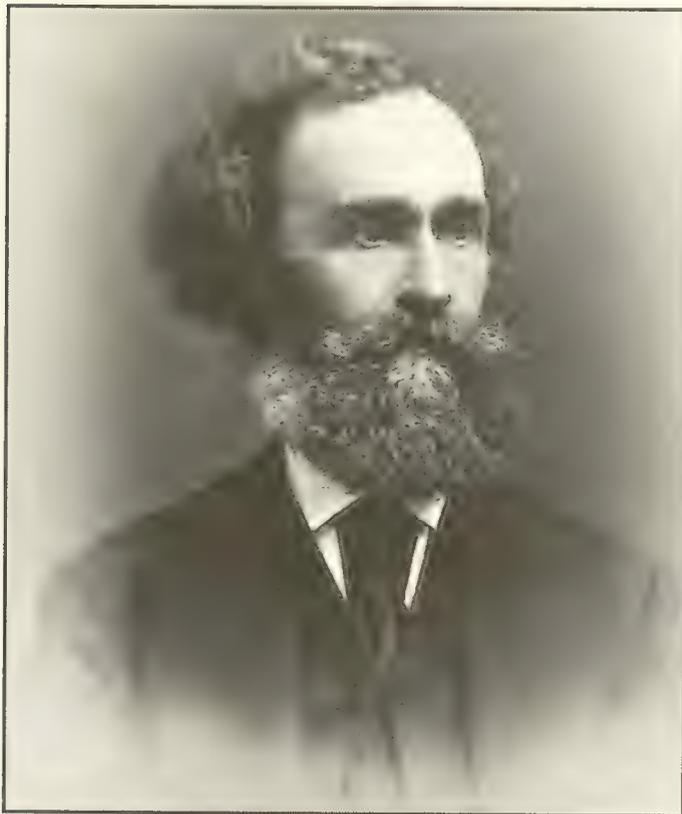
JULY 18, Henry Hemphill was elected a resident member. Leo Eloesser resigned his office of corresponding secretary, and H. G. Hanks was elected to fill the vacancy. Dr. Blake read a paper on the “Climate of the North Pacific Ocean,” based upon observations of Captain Doane of the Pacific Mail Steamship “China,” made on the course of six consecutive round voyages between San Francisco and Japan from November 1869 to June 1870. Gregory Yale read a paper on two shell-mounds in the lower part of San Francisco County, one of which had been examined by several members of the Academy. He exhibited a diagram of the mound, but said he was not yet ready to give a complete description. He said he thought there should be a systematic series of observations made on those and other mounds so as to arrive at definite conclusions regarding them, their origin and purposes. It was his intention, he said, to at some time write out a complete account of his own observations. Dr. A. W. Saxe spoke on the subsidence of artesian water in Santa Clara Valley. He incidentally mentioned the fact that fish occasionally came from the wells, and sometimes saw-dust. He was satisfied the fish did not belong originally to subterranean streams, but had in some manner found their way from surface streams through underground channels. Professor Davidson stated that workmen of the Central Pacific Railroad Company, in boring for water at Oakland Point in Alameda County at a depth of 205 feet, had passed through a redwood log 7 feet in diameter. Both the wood and the bark were fresh and sound. At the depth named the flow of water in the well was materially influenced by the state of the tide in the Bay, the pressure of high tide causing an increased flow. H. G. Hanks stated that borate of lime had been found in considerable quantities at a point beyond Virginia City, Nevada, and that there was a probability that valuable deposits of nitrate of soda would be found associated with it.

AUGUST 1, at its regular members meeting, Professor John LeConte,¹⁰¹ Professor Joseph LeConte, E. Durand, Charles H. Dennison, and James R. Smedberg were elected resident members. Dr. Ellenwood moved to invite the American Association for the Advancement of Science to hold its next meeting in San Francisco. The president said that the matter must be brought before the Council, and called a meeting for 4 o'clock the next day. Dr. Stout made remarks upon the subject of preserving animal bodies by the use of carbolic acid. He exhibited specimens of birds and fish

¹⁰¹ Elder brother of Joseph LeConte; not to be confused with John Lawrence LeConte, the entomologist and cousin of John and Joseph LeConte, or John Eatton LeConte, Jr., father of John Lawrence. For details of the LeConte family line see Lester Stephens' biography of Joseph LeConte (1982).



Joseph LeConte
Bancroft Library, University of California, Berkeley



John LeConte
Bancroft Library, University of California, Berkeley

preserved for over a year without indications of decay by simply removing the contents of the abdomen and filling the cavity with cotton soaked in fluid carbolic acid, reduced with alcohol to 95 per cent. He claimed that the largest animals could be so preserved. He had himself been called upon, when Captain Pearson died some years previously, to embalm the body from preservation, and he did so by using carbolic acid; and he had no doubt that one hundred years hence, if the body were examined, it would be found in a good state of preservation. Professor Davidson said that, if Dr. Stout's facts and theory were correct, the carbonic acid preparation was a valuable one for collectors who had not time or skill to skin specimens or in case of vultures, buzzards and other animals where the work was offensive. Dr. Cooper thought it might answer for temporary purposes but doubted its value for any great length of time on account of the evaporation of the acid. Dr. Stout said it was true the acid would evaporate; but in doing so it seemed to permeate every particle of the tissues and even preserve the brain. The body desiccated and became very light, and decomposition appeared to be arrested. He said the principal preserving substance used in the embalming of the mummies of Egypt was undoubtedly carbolic acid in a crude state. Dr. Cooper said it dried the body and contracted it so that he did not think specimens so prepared could ever be set up by a taxidermist. Professor Davidson spoke about sea-lions and said that the females remain on the coast all the year and go in schools to feed regularly, while the males come only for a short time, about two months, and during these visits do not feed. He mentioned a male that had been shot at Punta Arena in Mendocino County, in the body of which was found embedded an Alaskan spearhead and part of a sinew line attached, so that it must have traveled about 1200 miles. Dr. Cooper described a recent trip to "Castle Peak," an elevation of something over 9,000 feet in the Sierra Nevada and four or five miles north of Summit on the Central Pacific Railroad. The peak consisted of a castle-like row of vertical cliffs which, he said, were of basaltic and volcanic conglomerates. AUGUST 2, by order of the president, the Council met to consider three matters: an offer by Mr. R. B. Woodward to erect on his property at the Mission a building of suitable dimensions to house all the property of the Academy; the motion by Dr. Ellenwood to invite the American Association for the Advancement of Science to visit California and hold their next annual meeting in San Francisco, which was approved; and, if asked, to allow the San Francisco Microscopical Society to become a section of the Academy.

AUGUST 15, Professor A. Poey, who had been director of the observatory at Havana, Cuba, was introduced and spoke about meteoric showers and their periods and also about sun-spots. He said that extraordinary physical phenomena on the earth, such as great storms, seasons of heat and cold, diseases, and even crimes, occurred in cycles, usually of nine or ten years or more, and corresponded with astronomical cycles of meteoric showers, which were closely connected with sun-spots. Professor Whitney read a letter recently received from Baron Richthofen describing the immense development of loess deposits in northern China. He said that the geological conditions under which these subaerial deposits form is still not understood. He also

made some comments on the geology of the “Castle Peaks” of the Sierra Nevada, which were recently visited by the Survey.

SEPTEMBER 5, H. E. Highton and Dr. C. M. Hitchcock were elected resident members, and Professor A. Poey, a corresponding member. The library reported receiving a large donation of foreign scientific publications through the Smithsonian Institution. Dr. Augustus Le Plongeon read a paper on the aboriginal ruins of Peru and exhibited artifacts taken from the ruins. Dr. Stout called attention to a proposal by a group known as the “Bolivia Colonization Society” to establish a settlement 400 miles from the mouth of the Amazon and to keep open lines of communication with the Pacific shores by highways across the Andes. He expressed the hope that the some special good for science would come out of this effort. SEPTEMBER 19, the Rev. William Alexander of was elected a resident member and Drs. Miguel de los Rios and A. J. de los Rios of Lima, Peru, corresponding members. Professor Bolander stated that Dr. George Engelmann had written him that he had received a notification of his election as an honorary member of the Academy and that he would have made a formal reply in writing, but he could not make out the name of the secretary. Mr. Yale desired to say that the Regents of the University of California had made a verbal proposition to incorporate the Academy as a part of the University.^{10.2} Dr. Stout made extended remarks upon the subject and very decidedly objected to and protested against any such movement. The Academy decided to take no further notice of the proposition unless and until it came in written form and with proper authority. Mr. Hanks said that the American Association for the Advancement of Science^{10.3} had accepted the invitation of the Academy to hold their meeting in San Francisco in 1872. OCTOBER 3, Judge S. Clinton Hastings,^{10.4} Jacob R. Snyder and Dr. N. R. Davis were elected resident members. Professor Esmark from Christiania, Norway, who spoke at the Academy meeting on September 19, was elected a corresponding member. Following the display of several objects of natural history and comments thereon, and a discussion of some recent unusual meteorological disturbances by Dr. Blake the discussion focused on how best to entertain the American Association for the Advancement of Science when it meets in San Francisco in 1872.

NOVEMBER 7, Gen. David D. Colton and Dr. John Hewston were elected resident members. After a brief paper by Dr. Kellogg on a new Californian *Dicentra*, Judge Hastings read a paper on earthquakes, propounding the theory that they were caused by the falling in of walls of caverns beneath the crust of the earth. He thought that

^{10.2} This matter must have come up earlier, but it is not mentioned in the *Minute Books*. On March 24, 1871, James Cooper, who was not known for mincing words, in a letter to Spencer Fullerton Baird said, “. . . the Academy is flourishing considering the hard times and laughs at the wise professors and regents of the University [of California] who kindly informed us that we must be swallowed up in that Asylum for rebel Professors or be extinguished. On the contrary they have managed so recklessly that their President admits they are on the verge of bankruptcy, and nothing but a liberal appropriation by the Legislature will save them! This will be had . . . as the University is a popular hobby & will probably swallow up all that the state has to give . . .” (SIArchives, RU52, Box 29, Folder 13.)

^{10.3} Reported in the newspaper {*The San Francisco Bulletin*} account of the meeting of October 3 and referred to as the “National Association for the Promotion of Science”

^{10.4} Serranus Clinton Hastings, former Chief Justice of the U.S. Supreme Court, came to California in 1849 and was appointed Chief Justice of the California Supreme Court (1849-1851). Afterward, he entered business and practiced law. He founded Hastings College of Law in San Francisco in 1878.



David D. Colton
Bancroft Library, University of California, Berkeley

the action of subterranean water might be an agent of these collapses. He believed that the cessation of earthquakes in countries once disturbed by them, like England, was due to the final settling in of the earth's crust and filling up of the vortices. He asserted that earthquakes were confined to countries where long dry seasons prevail and that the phenomena recurred at periods between the dry and rainy seasons, as in California where they were most marked in the Autumn and Spring. In reference to subterranean waters he said that the increase in the volume of springs and streams at the end of summer was to be explained by assuming that rains had swollen their far-removed sources and then, by hydrostatic pressure through subterranean conduits, had raised their distant outlets. Professor Davidson said that the theory of Judge Hastings about earthquakes being confined to dry and warm countries was not supported by facts. They were common in Alaska, where the climate was cold and of perpetual moisture. Dr. Henry Gibbons pronounced Judge Hastings explanation of the rise of springs and streams in autumn as equally untenable; and, on the contrary, he ascribed it to the diminution of evaporation, with the shortening of the days and lengthening of the nights in autumn, — view in which he was supported by Dr. Cooper and Dr. Kellogg. Dr. Gibbons further said that he had treated the subject in an elaborate paper, which was published in *Silliman's Journal* some twelve years previously,¹⁰⁵ and that his explanation had been accepted by scientific men as correct. Dr. Kellogg mentioned the results of experiments to test the amount of evaporation from the earth, which was ascertained to be very great in the driest season; and of

¹⁰⁵ Gibbons, Henry. 1864. On the rising of springs and streams in California before the winter rains. *American Jour. Sci.*, ser. 2, vol. 38 (Nov.), pp. 187-189.

course, when this evaporation was lessened by shorted days, there would be a gradual increase in springs and steams. Dr. James Blake thought the contraction of rocks with lessened heat might, by reopening fissures, permit a greater flow of water, and should be taken into the account; and he commented upon the increase of streams after an earthquake shock as the result of the opening of cracks. Dr. Gibbons in reply said that the increase of water occurred with the shortening days, when there was no abatement of heat; and he rather referred the flow coincident with earthquakes to the settling of the soil and rocks, which would squeeze out the moisture, or close its ordinary channels of escape under the surface.

Judge Hastings, with a smile, observed that he had advanced his theories only for the purpose of eliciting the discussion; but he thought he could vindicate them. In reply to a question by Dr. Gibbons, he said that he had been first led to attribute earthquakes to the falling in of cavern walls by a fact told him six months before by one of the sisters of San Juan Capistrano, who showed him where the hill there had sunk in at the time of the earthquake, which destroyed the Mission church in 1818. Dr. Le Plongeon made remarks on earthquakes in Peru and endorsed an opinion advanced by Dr. Gibbons that such phenomena were caused by the explosion of gases along spaces between the molten core of the earth and its crusts. Dr. Blake closed the discussion by remarking that what was wanted about earthquakes was facts, not theories. Unfortunately the circumstances usually attending these phenomena were not favorable to a careful collection of data, and our knowledge was not sufficient to afford a complete explanation.

Mr. Hanks referred to the reported finding of a ship on the Colorado Desert, alleged to have been stranded there centuries ago by the recession of the sea, and proposed that a committee should be appointed to investigate the subject. Professor Davidson said that the so-called ship was supposed to be a schooner, which Mr. Vise had attempted to haul across the desert on a large cart a few years ago but had been compelled to abandon. Mr. Hanks replied that Col. Albert S. Evans had described the ship in an article, published in *The Galaxy* a year before Vise's expedition, and testified that the vessel was a large one. Dr. Henry Gibbons said that he was willing to incur the risk of being "sold," in an endeavor to elicit truth. A motion was then carried that Col. Evans should be invited to address the Academy on the subject and Mr. Hanks should be appointed a committee to gather information on the same matter.

NOVEMBER 21,^{10.6} Dr. John Morrill [?Morrell] of Colima, Mexico, was elected a corresponding member. Mr. Hanks read a paper in reference to the reported ship on the desert. He said that his inquiries had elicited nothing but secondary evidence. There was positive evidence that numerous persons had seen at a distance of some

^{10.6} Hittell neglected to take note of the special meeting of the Council held on November 10. At that meeting several proposals were acted upon, including one by James Blake to send a petition to the Lighthouse Board in Washington asking that Lighthouses on the Pacific Coast be authorized to record meteorological observations. The proposal was approved. A request by Dr. Le Plongeon that the Academy publish his article on Peruvian antiquities was rejected. Lastly, Mr. H. P. Carlton proposed the appointment of a committee of Academy members who were "men of property and business habits" to solicit subscriptions for the purpose of purchasing a lot to be the property of the Academy upon which a building might be erected for use by the Academy. A list of 40 names was made out from which a committee could be selected. The proposition was carried. (*Minute Book of the Council*, Jan. 14, 1868-April 14, 1874, pp. 34-35.)

miles an object, which they believed to be the wreck of a large ship embedded in the sand; but it was in a spot that was muddy and inaccessible during portions of the year. A company had left San Bernardino some time before for the purpose of solving the mystery; but they had been unable to approach nearer than four miles on account of mud. It was said, however, that the Indians insisted on the existence of the ship. Under the circumstances Mr. Hanks suggested as a theoretical explanation, in the absence of direct proof, that the alleged ship might be only a mass of the curious travertine which forms in the alkaline lakes on the plains and southern deserts and grows into fantastic forms like coral. He had himself seen forms which could easily have been mistaken for almost anything. Professor Davidson, in allusion to an assumption that the alkaline valley containing the "ship" was seventy feet lower than sea-level, stated that the field notes of a party surveying for the 32nd parallel railroad showed the level of the western side of the desert to be seven hundred and fifty feet above the ocean. Col. Albert S. Evans, being present on invitation, gave an account of his observations on the supposed ship. He had crossed the desert several times. He had seen the object once from a distance of some ten miles and afterwards from a point within three miles; and from that distance had examined it with a glass. It appeared to be the hulk of a vessel, lying tilted on its side and partly buried in the alkaline mud that surrounded it. The locality was a salt plain which at certain seasons was covered with water and at others was quite dry. He had observed the old waterline on the surrounding hills and was surprised at the drifts of fine shells, spirals, such as are found in ocean beds. His impression was that the locality was above the present sea-level. The so-called "New River," which runs from the desert into the Colorado south of the ship, might have been formed by an immense cloud-burst or water-spout emptying upon the desert and cutting a channel to the river, which the drifting sands were then closing up. He mentioned several instances of water spouts that had precipitated rivers of water, cutting large channels in the earth and destroying everything in their course. He had heard the Indian story of the ship and the Indian tradition that the sea once flowed in there from the Gulf but did not attach much importance to them. He said that he did not know that the object seen by himself and others was a ship, but he thought it was; and, because he had seen it on several occasions, he knew it could not be the effect of mirage. Neither could it have been the schooner said to have been hauled to the desert on an ox-cart by Martin Vise for that went by a road far south of the place described and he had reason to believe it reached its destination and was then afloat. Furthermore, the supposed ship was mentioned before Vise ever started with his schooner. Col. Evans spoke of one person who claimed to have gone to the ship, to have examined it; and to have reported that it was built of teak-wood. At the conclusion of the speaker's remarks, some conversational discussion took place in reference to cloud-bursts and their effects; but the "ship on the desert" appears to have dropped out of the domain of science and passed over to that of fiction and romance.

DECEMBER 5, Professor Davidson called attention to the growth of oysters in San Francisco Bay from seedlings brought from New York and planted the previous

March. They seemed to have thrived well, had grown very rapidly, and were already several times larger than when planted. Mr. Throckmorton, Dr. Cooper, and others doubted their growth in the time specified; but Professor Davidson said the fact was based upon undoubted authority. Dr. Cooper expressed a desire to know why an imported species of oyster should grow so large while the oyster native to this coast and planted under the same conditions grew no larger than in an uncultivated state. Professor Davidson, passing from bivalves to jewels, said that two diamonds had been not long before been found in Arizona. The specimens had been brought by prospecting miners among a great variety of minerals, including rubies, garnets and so on. The miners, not knowing the diamond in the rough, had thrown away some large and valuable specimens. The largest brought by them to San Francisco would cut above three carats and according to Frontier, Pohlman and Bellemre, lapidaries would be worth about \$500 when cut. This discovery, the Professor said, indicated another industry in our country. Dr. Le Plongeon read a paper on earthquakes.

DECEMBER 19, at the regular meeting, Dr. Blake donated a femur and other bones of a mastodon from Inyo Co. and said he hoped to obtain the skull. Dr. Le Plongeon read a continuation of his essay on earthquakes. Professor Davidson stated that in studying the bars and entrances of all the rivers and bays opening directly upon the Pacific Coast of the United States a law was developed showing that the channels all tended to the northward directly in the face of the northwest winds and the northwest swell rolling in steadily all summer. He attributed the cause of this to the bottom sands being rolled along the coast by the eddy or inshore current, running as a rule to the northward, contrary to the direction of the great coast current, running to the southward off-shore. The in-shore current attained a velocity of two miles per hour and a width of about three miles. He illustrated the law by drawings of the entrances of San Francisco Bay, Humboldt Bay, and others. Dr. Cooper presented a paper, "On Shells of the West Slope of North America," in which he described a large collection of shells presented to the Academy by Dr. Robert K. Reid of Stockton.

Chapter XI: Year 1871

The annual meeting of 1871 took place on Tuesday, JANUARY 3. William Blunt was elected a resident member. Dr. Cooper, librarian, reported that the library had increased during the past year beyond all precedent, and the books contributed were all of great value. The treasurer, Elisha Brooks, reported that the receipts of the precious year had lacked about \$700 of equalling those of the year preceding, which fact he attributed to the general business depression. The receipts had been only \$1,355.00. The country members especially had not paid up. But nevertheless the Academy was out of debt and had on hand a balance of \$8.25. H. G. Bloomer, director of the museum, reported that the collections had greatly increased during the past year and the new accessions were interesting and important, but on account of want of room and conveniences could not be properly displayed. He went on to remark that as the collections had been made “for an unappreciative public, a rich and wealthy public, that had witnessed the meetings of the Society in their dingy rooms for eighteen years, without coming forward to aid the building up of an institution that would be an honor to our City, there needed be no wonder that the Museum of the California Academy of Sciences did not present a more satisfactory appearance, however enthusiastic members might be in the general work of the Association.” He further said that Professor Esmark of the Royal Academy of Christiania, Norway, was arranging the alcoholic specimens, and Henry Edwards the entomological collections. The report of the officers of the annual election that day held showed that the following officers had been chosen for the year 1871, and they were declared duly elected: president, Dr. James Blake; vice-president, Professor George Davidson; corresponding secretary, Rev. F. Hanson; recording secretary, H. P. Carlton; librarian, Dr. J. G. Cooper; director of the museum, H. G. Bloomer; treasurer, Elisha Brooks. The minutes of the last previous meeting of the Council^{11.1} were then read in reference to amendments of the Constitution, which were to be acted on the next month.

Dr. James Blake gave a description of a shell-mound, which he had recently visited at Lafayette in Contra Costa County. It was about one hundred feet above sea-level and eighteen miles from the salt waters of the Bay. In extent it was about one hundred yards long by fifty yards wide, and about ten feet high; and it was formed to a very

^{11.1} At a special meeting of the Council held on December 27, 1870, the following constitutional amendments were proposed: “Art 2, Sec. 1, append: The payment of the monthly dues of officers of this Academy, during their term of office shall be left *optional*.” Also, “Art. 2, Sec. 3, That the Council [changed to Trustees] shall have the privilege of nominating for election for gratuitous [changed to honorary] life memberships . . .” It was also proposed to seek a “competent and responsible” lawyer to advise on the legal status of the Academy. (*Minute Book of the Council*, Jan. 14, 1868-April 14, 1874, p. 36.)

considerable extent of the remains of salt-water shells. As to the question how the shells came to be found in such quantities at a point now so far inland, he said that in his opinion the Bay once extended to or near that point, and that the Indians had not carried them from the present shores of the Bay. Besides the shells there skeletons of Indians, and bones of deer and other animals, which had been split lengthwise probably by the Indians. There were also flint chips in large quantities among the debris of the mound. The geological evidence, he said, went to show that the whole valley was over the bed of the sea, sandstone being the prevailing rock. Professor Bolander said that in Mendocino County the Indians were accustomed to carry shells and fish to as great a distance as in this case from the sea. Professor Davidson, as a sort of parting salute to the "Ship on the Desert," said that on the authority of Col. Sedgwick the elevation of New River near the Colorado was some one hundred and fifty feet, and to get up there the ship must have ascended about that much uphill. Besides it had been stated that the ship was some two hundred and fifty feet long. If so, it would probably have registered two thousand tons. He added that he did not draw any conclusions; but upon these stubborn facts the public might draw its own.

Dr. James Blake presented his annual address as president of the Academy. He said that he had expected to resign the office and had prepared his address with that in view. He congratulated the Academy upon its financial condition. He said that it had been enabled to expend about \$400.00 on its museum during the past year, besides meeting all its ordinary running expenses. He spoke of the necessity of better quarters and the efforts that had been made and were being made to acquire a lot and building for the proper use of the institution. He called attention to the great and unobtrusive work accomplished by the association and the value of and great respect which had been paid to its publications throughout the entire scientific world. No other Society with the same small number of working members had accomplished so much for science during the same period; for, although the laborers were few, the ground we had to work in was virgin soil and had yielded an abundant harvest. He also said that within the last two or three years a change had evidently taken place in the community in respect to scientific culture. The increased attention given to science in modern education and the recognition of the value of scientific labor by government had not failed to act beneficially upon the Academy. During the year just passed thirty-four new members had joined the institution and the collections had very rapidly increased, while in the library only fifty-nine new works had been received in 1868 and one hundred and eighty-nine in 1869, the number of new books added in 1870 was three hundred and sixty-four.

JANUARY 16, Charles A. Spencer was elected a resident member and James S. Lawson, U. S. Coast Survey, a corresponding member. Gregory Yale read an opinion on the legal status of the Academy to the effect that before it could have a legal character and be able to proceed with the business of building as was contemplated, it should incorporate and elect trustees in accordance with law. He submitted forms for that purpose, which were adopted. The members present attached their signatures to an agreement for reincorporation, and the secretary was directed to advertise a

notice for the election of trustees to be held on February 6, 1871, at 7- $\frac{1}{2}$ o'clock p.m. at the Academy rooms, 622 Clay Street, San Francisco. Dr. Henry Gibbons made remarks on observations conducted by himself on an extemporized seismometer or earthquake gauge, consisting of a pound weight attached to the end of a wire. He said it was very sensitive to movements; but that there had been no indications of any movements in this locality for an unusually long period. Dr. Blake and Professor Davidson suggested that some of the oscillations previously observed by Dr. Gibbons in the night-time might be caused by atmospheric or hygrometric changes, which affect all buildings, even some of stone or brick, in support of which suggestion Professor Davidson advanced a number of facts, including the well-known contraction and expansion of Bunker Hill Monument. Professor Davidson then took occasion to state that the Coast Survey had determined the position of Mount Rainier in Washington Territory to be Lat. 46°51'09" North and Lon. 121°45'28" West. Previous locations had been twenty miles from being correct. Its elevation was definitely determined to be 14,444, making it four feet higher than Shasta and confirming the speaker's impression that it was the highest peak on the coast. In making his calculations, however, the Professor did not reckon with Mount Whitney. Attention was again called to the agreement for reincorporation of the Academy. Those who signed the agreement were the seven officers, and in addition to them Gregory Yale, Dr. George Hewston, Major Robert S. Williamson, Benjamin P. Avery, Dr. Henry Gibbons, Sr. and several others. The notice for the meeting for election of trustees on February 6, 1871, was dated January 16, 1871.

FEBRUARY 6, Henry Chapman was elected a resident member. The Smithsonian Institution of Washington, as it had frequently done on previous occasions, sent a large package of books, besides regular exchanges. The matter of the election of trustees came up. After a long discussion as to the number required, the following seven gentlemen were elected as the first Board of Trustees: Dr. James Blake, president, H. P. Carlton, Elisha Brooks, Dr. C. M. Hitchcock, Gen. John Hewston, F. L. A. Pioche, and Samuel Hubbard. The Board of Trustees, so elected was authorized to prepare a certificate of incorporation to be executed by them in accordance with law and filed in the proper office. Said certificate was to contain the name and objects of the association.

FEBRUARY 20, Dr. J. P. Whitney and G. A. Carnes were elected resident members. Professor Bolander presented the Academy with a large collection of dried European plants sent by Dr. Hooker of Kew Gardens. Dr. Kellogg exhibited a plate of a lily, which he proposed should be called *Lilium Bloomerianum*, and read a description of it. Professor Bolander said that he had received from Europe a description of a lily, which had been named *Lilium Humboldtii*, and he believed it to be the same as the plant described by Dr. Kellogg. Mr. Bloomer thought there were reasons for believing *L. Humboldtii* and *L. Canadensis* to be the same as *L. Pardalinum*, which had been described by Dr. Kellogg several years previously. Professor Bolander called attention to a statement, which he had recently observed in a newspaper, to the effect that certain parties were making arrangements to cut peat in the San Joaquin Valley, and

inquired if any real peat was known to exist in California. He thought the conditions here were not favorable to the formation of true peat. This substance was formed by the decay of vegetable matter constantly under water. When the vegetable matter was subjected to such overflows as were the case along the San Joaquin River, earthy matter must be deposited with the vegetable matter, which would prevent the formation of real peat. Dr. James Blake, recurring to what he had said at a previous meeting in reference to a shell-mound at Lafayette in Contra Costa County, stated that he had since learned from an old Californian that the Indians were formerly in the habit of gathering shell-fish on the coast and carrying them ten or fifteen miles inland for food. Dr. Henry Gibbons spoke of some observations he had been making regarding the rains in this State. He said that in the western States the rain begins in the quarter from which the cloud comes, while upon this Coast the rain begins to fall first in the quarter towards which the cloud is being blown.

MARCH 6,^{11,2} Professor Bolander stated that there were now known to be one hundred and forty species of grasses on this Coast. Only fourteen species had before been observed. This was probably owing, he said, to the rapidity with which observers had gone over the ground. Among the total number he included several species that were cultivated, such as timothy and grasses used for lawns. He had recently found a species which he believed to be identical with that found by Dr. Hooker at Magellan Bay when on his expedition to the Antarctic continent with Captain Ross. It is distinguished by a remarkably vivid green color and he would recommend it to the attention of persons who intended making lawns. The species grew abundantly from Cisco on the Central Pacific Railroad to the summit, and stock-raisers spoke of it as being of especial value for grazing. The grasses around Mono Lake he regarded as identical with species which were natives of Chile.

MARCH 20, Professor Davidson said that Professor Marsh of Yale College had prepared an article upon the silicified forest trees near Calistoga in Napa County, which would be published in an Eastern scientific journal. He asked if an article on the same subject had not been read in the California Academy of Sciences and, if so, what its character was, and its date. A discussion thereupon ensued about Eastern scientists appropriating discoveries, made on this Coast by residents, and claiming originality after descriptions had been published here. Dr. Henry Gibbons said that

^{11,2} For some inexplicable reason, Hittell neglected to record a discussion that took place at the March 6th meeting relating to claims by Clarence King that he and his party were the first to discover glaciers in the United States (on Sept. 11, 1870; see, for instance, Rabbitt, 1979, pp. 189-190). The following is quoted from the minutes of that meeting: "Professor Davidson [George Davidson, U.S. Coast and Geodetic Survey] called attention to an article in the *Atlantic Monthly* for March, in which Clarence King claims for himself and party the first discovery of glaciers in the United States. Mr. King had made valuable observations, but he has been preceded by other parties in the discovery of active glaciers. Lieutenant (now General) August V. Kautz, U.S.A., attempted to ascend Mount Rainier in 1856 or 1857, but found his way barred by great glaciers. Mr. King, in his paper, says it was possible that glaciers may be discovered upon Mount Baker; but this question was settled by Mr. Coleman, of the Alpine Club, who ascended the mountain in 1869. He published, in *Harper's Magazine* of that year, a description of glaciers on Mount Baker, and gave illustrations of them." With respect to additional discoveries of active glaciers in western North America [prior to King, Emmons, and Clark's ascent of Mt. Shasta], Davidson continued, "[that] he had received a letter from Professor W. P. Blake, in which he corrects the statement which had been made in the papers recently, that the Western Union Telegraph Company had made the first discovery of glaciers on the Stickeen [Stikine] river [British Columbia], in 1865. Professor Blake published a description of the same glaciers in 1863." (*Minute Books*, Jan. 6, 1868-Jan. 2, 1872, p. 188 [printout from *The San Francisco Bulletin* newspaper]. See also I. C. Russell [1896] and *Proc. Calif. Acad. Sci.*, 1872[1871] 4[4]:161-162.)

so long as we kept our light hidden under a bushel, we could not blame others in making our resources known. We did not publish in scientific journals the results of our discoveries, and we could not find fault with Professor Marsh or any one else for doing what we neglected to do. Other members thought differently, inasmuch as descriptions of California subjects had been published in Eastern journals as originals, when it was well known, or might have been, that the same had previously been published here. Professor Davidson then described an electro-thermal pile he had devised to measure sub-surface temperatures.

APRIL 3, there was talk about an earthquake that had occurred the precious evening, April 2, 1871. Nothing specially new or important was elicited except that Mr. Bloomer, quoting from Brigham's history of earthquakes in New England, stated that of the two hundred and thirty-one shocks recorded in New England from 1568 to 1870, one hundred and forty-eight were said to have occurred in winter and seventy-four in summer. The office of Corresponding Secretary having become vacant with Rev. F. Hanson's departure for the East, Dr. J. G. Cooper was elected to act until the Trustees should have completed the reincorporation and reorganization of the Association. Mr. Heynemann desired to have the state of the weather noted at the time of the earthquake, and said that the wind had changed after the shock to the south from the north. He wished, he said, to propound the following theory: If a moist current of air were above and a dry one underneath, the effect, if they were sufficiently pronounced, would be a thunderstorm. If a dry current were above and a moist one underneath, after a continued drought, the effect would be an earthquake. Dr. Gibbons and Dr. Blake said that they could not see any necessary connection between the state of the atmosphere and earthquake phenomena. APRIL 17, Henry Keller was elected a resident member. Drs. Ayres and Blake and Mr. Hanks each made brief remarks on a variety of subjects.

MAY 1, Dr. Blake stated that the Board of Trustees had decided to incorporate under a new constitution, which however was the same as the old constitution with a few amendments calculated to fit the altered circumstances. The new constitution would shortly be presented for consideration and adoption. MAY 8, Obadiah Livermore and Joseph Garland were elected resident members. Mr. Hemphill presented a collection of land shells from west of the Rocky Mountains, containing some new and rare forms. Because of low attendance, further business was postponed. MAY 15, the new constitution was read and adopted, section by section, and then adopted as a whole.¹¹³ The new instrument differed very little from the old constitution of January 18, 1868. It provided that, in addition to life members, who became such in the ordinary way, "the Trustees shall have the privilege of nominating for election for honorary life membership such members as have rendered valuable services to the Academy, such elections not to exceed two annually." It left out the provision of the previous constitution for a Council, consisting of the general body of officers, but provided for a Board of Trustees that the president, recording secretary, and treasurer

¹¹³ See *Minute Books*, Jan. 6, 1868 to Jan. 2, 1872, pp. 206-217. The handwritten copy of the constitution is out of order and follows the minutes of the regular meeting of the Academy held on June 26, 1871 (recorded on page 205).

should be ex-officio trustees. The curators were to be appointed by the trustees instead, as before, by the Council. The recording secretary was required, as a new duty, to furnish an abstract of the proceedings of the Academy for publication. All the duties imposed upon the Council in the old constitution were by the new instrument imposed upon the Board of Trustees. Meetings of the Board of Trustees were to be held quarterly on the second Mondays of January, April, July, and October, though meetings might be called at any time by the president; and he was required to call a meeting whenever requested to do so by any other trustee. Four members of the Board were to constitute a quorum for the transaction of business.

Recording Secretary H. P. Carlton made a statement to the effect that the minutes of the Academy were not in perfect condition. He said that he had kept the minutes, not by engrossing them, but by pasting therein the reports of each meeting as published in *The Bulletin*.^{11.4} Portions of the record, consisting of printed matter, had been removed from the *Book of Minutes* for the purpose of making up the annual report. He offered this statement, he said, to exonerate himself from blame in the future as he had furnished full and correct reports, which had been interfered with without his consent. Upon his explanation, the Academy by formal vote declared him free from blame. Mr. Carlton then stated that he was about to leave the city for some time and therefore begged to offer his resignation of the office of recording secretary, which he had filled for two years.

JUNE 5, A. D. Hodges, Jr. was elected a resident member. Professor Bolander read a paper on grasses of the genus *Stipa* in California. Dr. Cooper followed with a paper on a collection of shells made by Mr. Henry Hemphill, "Shells of the West Slope of North America, No. II." Professor Bolander read a communication from Dr. Asa Gray inquiring about the intended invitation of the Academy to the American Association for the Advancement of Science to meet in San Francisco. At the suggestion of Dr. Cooper, it was immediately resolved to reaffirm the invitation for the Association to hold its annual session in San Francisco in 1872. The matter was then referred to the Board of Trustees for further action. JUNE 19, Henry B. Janes and Charles E. Parker were elected resident members. A. D. Hodges, Jr. was elected recording secretary in place of H. P. Carlton, resigned. Professor Davidson exhibited the telegraphic apparatus and method in use by the Coast Survey for the determination of the difference of longitude between any two places. The death of Gregory Yale, a valued member of the Academy was announced, and Dr. Henry Gibbons appointed to draw up appropriate resolutions of respect to his memory. JUNE 26, election took place to fill the various offices, not already filled under the new constitution, and resulted in the choice of the following gentlemen: Dr. James Blake; president; Professor George Davidson, vice-president; Dr. J. G. Cooper, corresponding secretary; H. G. Bloomer, director of the museum; S. A. L. Brannan, librarian; Elisha Brooks, treasurer.

JULY 3, H. G. Hanks read a report on the "Fossil Ship" of the Colorado Desert. He said that the object, which had been supposed to be the wreck of a vessel, did not prove to be such. Its resemblance, when seen from a distance, to a stranded ship, was

^{11.4} *The San Francisco Bulletin*, a daily newspaper.

however, generally admitted. Prof. Davidson reported on his measurements of coast terraces between San Francisco and San Diego. He found four principal elevations, from 20 to 1500 feet high, running back as far as 6 miles from the present beach. Dr. Henry Gibbons presented resolutions of respect to the memory of Gregory Yale as an active, zealous and worthy member of the Academy, always ready to contribute his labor and his means to advance its purposes, and one whose amiable disposition and goodness of heart endeared him to his associates. On JULY 11, the Board of Trustees took up the question of inviting the American Association for the Advancement of Science to meet in San Francisco. Prof. Davidson was asked to determine if reduced railroad fares could be obtained for people to come to the meetings, and Gen. Hewston was asked to contact the San Francisco Chamber of Commerce to join in the invitation. JULY 17, Mr. Hodges, having left the city, B. P. Avery was elected recording secretary. Dr. Gibbons introduced Professor Smith, vice-president of the Royal Society of New South Wales, who made a few remarks about establishing relations between his association and the Academy. JULY 19, in the meeting of the Board of Trustees, Prof. Davidson reported that the Central Pacific and Union Pacific Railroads had agreed to offer half-fares to all accredited members of the American Association. It was also reported that a number of local merchants showed a friendly and liberal spirit to having the meeting in San Francisco. The following curators were elected: H. G. Hanks, mineralogy; E. Durand, paleontology; Prof. Bolander, botany; George Hewston, conchology; Harry [*sic*; Henry] Edwards, entomology; J. G. Cooper, zoology.

AUGUST 7, E. V. Joice was elected a resident member. A formal election of Trustees to serve under the new constitution for the remainder of the term and until the annual election in January, 1872, resulted in the choice of Dr. James Blake, B. P. Avery, Elisha Brooks, Gen. John Hewston, Dr. C. M. Hitchcock, F. L. A. Pioche, and Samuel Hubbard. C. B. Turrill presented a specimen of coal from Alaska, which he pronounced of superior quality. Professor Dall stated that he had examined the reported coal field and found it to be a very thin and shallow bed of Miocene formation and the coal of poor quality, being too much impregnated with shale and iron pyrites. Dr. James Blake read extracts from a letter from Mrs. Toland concerning a nest of young orioles which had been adopted as a family by the male canary. The conclusion arrived at was that the male canary had not the natural shrewdness of the females else he would not have suffered himself to be imposed on. In answer to an inquiry by Judge Hastings, Professor J. D. Whitney stated that since the survey of Great Salt Lake by Lieutenant [*sic*; Captain] Stansbury, twenty-two years ago, that lake had been steadily rising up to last year; but that then a subsidence had commenced. He said that the same phenomena of rise and subsidence had been observed in all the salt lakes of this country. Great Salt Lake, he continued, had at some former time covered the whole valley. Dr. [James] Blake stated that he had been attached to Stansbury's Expedition and that they had passed over large banks of salt which are now entirely under water. A discussion ensued as to whether Pyramid and other lakes in the Great Basin had ever had an outlet; but no definite conclusion was arrived at. Dr. Blake

also reported that the Chamber of Commerce agreed to join in the invitation to the American Association for the Advancement of Science and that an invitation had accordingly been sent. AUGUST 21, Professor Whitney gave an account of the investigations of the State's geological survey and expressed dissatisfaction with one of the aneroid barometers as a height-measurer. Dr. Blake read a short communication on diatoms from Pueblo Valley, Nevada and one on prismatic dolerite from Black Rock, Nevada. Mr. Dall read a paper on California mollusks.

SEPTEMBER 4, Dr. Harvey W. Harkness of Sacramento, was elected a member. Professor Henry of the Smithsonian Institution at Washington was introduced and made extended remarks on the rainfall and the results of observations for twenty years which were soon to be published in full, on his action as a member of the Light-House Board while here, and generally on the reasons why the wealth of this country should be generous in aiding and promoting science. Mr. Stearns read a paper on the habitat and distribution of several western American species of mollusks, being corrections to Mr. Robert's "Catalogues," published in the American Journal of Conchology. Dr. James Blake exhibited under the microscope specimens of diatoms from a hot-spring in Nevada having a temperature of 160° . He said they were more numerous proportionately there than in any other locality known, six or eight hundred occurring in a bit of mud the size of a pin's head. Most of them were identical with the fossil species described by Ehrenberg from near Salt Lake; but many new species occurred, particularly the red algae living in the spring and found in vast beds in many parts of the world. He found about sixty-two species, of which thirty were the same as Ehrenberg's, who mentioned about sixty-eight species. SEPTEMBER 18, Dr. Blake stated that he had found at Calistoga, Napa County, California a number of species of diatoms in a spring having a temperature of 168° ; also rotifera and oscillaria in a spring of 120° temperature. Many of the diatoms were identical with those found in Pueblo Springs, Nevada, and fossil at Salt Lake. The oscillaria found in the hottest waters were so small as to be hardly perceptible even under high powers of the microscope. He thought that when the fossil deposits of infusoria were made the water covering those regions was all of high temperature. Other species were found all in water of a lower temperature. At the Board of Trustees meeting held the next day, SEPTEMBER 19, Dr. Blake and Dr. Hitchcock were appointed a committee to investigate the purchase of the First Congregationalist Church property of Dr. Stone's congregation at the corner of California and Dupont for the use of the Academy.

OCTOBER 2, James S. Jamison and J. B. Easterbee were elected resident members. Mr. Hanks read a paper regarding a phenomenon reported by Captain S. P. Lund on board the vessel *Transito de Alvarez*. When in latitude $45^{\circ}33'$ North and longitude $125^{\circ}25'$ West, which would place it about eighty-five miles west of Cape Lookout on the coast of Oregon, the sun was obscured during the entire day by a peculiar yellow haze, which was occasionally so dense that it was found necessary to light lamps in the cabin. Birds from the land flew on board, showing every symptom of terror – some of them allowing themselves to be caught, while others died, as if from exhaustion or fear. During the obscurity a light dust fell, some of which Captain Lund

gave to Mr. Hanks, who subjected it to careful chemical and microscopic examination. The lighter portions, separated by test tube, proved to consist principally of woody fiber, probably scraped up from the deck of the ship. But the heavier particles proved under the microscope to contain particles resembling chloride of ammonium, insoluble and not acted upon by the mineral acids. Particles of sand were also present, and some dark-colored grains the nature of which was not evident. But the most interesting discovery was a black, cellular, shining substance of peculiar appearance, which burned something like bitumen and gave reactions like those of asphaltum. A lengthy discussion followed in reference to the nature of the substances described between Dr. Kellogg, Dr. Cooper, Dr. Henry Gibbons, Dr. Blake, and Mr. Hanks. The most plausible explanation of the phenomenon was presented by Dr. Cooper, who attributed it to the burning of Tertiary beds of cove (lignite) on Whidby's Island near the Straits of Fuca, the dense smoke of which carried upwards with it fine siliceous particles.

OCTOBER 16,^{11.5} Charles G. Yale was elected a resident member. Dr. Cooper called attention to the inaccurate and derisive reports of the proceedings of the Academy published in some of the newspapers, and suggested that something should be done to secure true and correct reports. Several members concurred in the recommendation. The president intimated that the Academy could protect itself, at any time deemed necessary, by excluding reporters who abused their privileges. Dr. James Blake gave the results of recent examinations of the hot water of the Geysers in Sonoma County. He had found algae growing with remarkable abundance in the water at different temperatures from 112° to 195°. The highest temperature at which he had found any living organism was 198°. In this spring, two forms of confervae were found – one, a delicate hairlike form resembling *Hydrocrocis Bischoffi*, but larger; and the other, a filament with globular enlargements at intervals. In a spring at 174° many *Oscillaria* were found. The only diatom found was in a spring of the same temperature. In the water of Geyser Cañon Creek, at a temperature of about 112°, large quantities of algae were found, but only two forms of diatoms. The waters of the Geysers, he said, were unfit for the production of diatoms, which were so plentiful in the Calistoga and Nevada hot springs, on account of the absence of alkaloid silicates in the water, which were charged with free sulphuric acid. The presence of oscillaria in the waters of a highly mineralized spring, at a temperature of 174°, would show how great is the range of the conditions under which these forms of plant life can be developed. Dr. Cooper alluded to the formation of microscopic plants on white globular masses in dilute sulphuric acid. Dr. Kellogg stated that such formations were common in electric batteries and also referred to the case of a cryptogam surviving the heat of an oven. Mr. Durand referred to a recent examination made by him of the salts precipitated from vaporous exhalations at the Geysers. He found large quantities of sulphate of ammonia, which is rare in the natural state.

NOVEMBER 6, Professor Davidson remarked that as a rule, in the entrances to the

^{11.5} Shown as October 17th in the handwritten minutes (*Minute Books*, p. 235) and October 7 in the published *Proceedings* (vol. 4, p. 193). The latter is probably a typographical error; but the former is also likely an error inasmuch as the biweekly meetings were always held on Mondays, and in 1871, that would have been October 16.

harbors and rivers on our coast, the channels all tended to the northwest, the northern headlands showing bold rocky bluffs and the southern points on the other hand forming long, low sandy beaches. He said his own observations had been confirmed on the same subject by information received from Lower California, thus showing that there was a strong inshore current setting to the northward along our entire coast. Dr. Cooper announced the discovery at Mare Island of a fossil tooth resembling that of a saurian, but considered by Professor Agassiz to belong perhaps to a fish allied to *Archegosaurus*.^{11.6} Having been found in alluvium, its exact position was uncertain; but if Carboniferous, it must have been transported as far as from the northern Sierra Nevada at least. Professor Davidson presented a detailed review of observations in reference to the longitude of San Francisco and gave it in terms of time, as 8h. 9m. 38.13s. West of Greenwich, an increase of four seconds of time over the provisional longitude of former years. This amount had been fully expected from the comparison of previous results on the Atlantic Coast between astronomical determinations and those by the telegraph. Dr. Henry Gibbons gave a series of statistics illustrating the rainfall on our coast for the previous twenty-one years, arranging the years in the order in which the rainy seasons commenced, giving the dates of the first rainfall, and the amount of rain of each subsequent season, as follows:

1852 Nov 9	33.5 inches	1858 Dec 4	20.0 "
1859 " 9	17.0 "	1860 " 6	14.6 "
1855 " 10	21.0 "	1869 " 7	20.0 "
1861 " 10	38.0 "	1868 " 17	21.5 "
1863 " 11	8.5 "	1862 " 18	16.0 "
1853 " 14	23.0 "	1851 " 19	18.0 "
1856 " 15	20.0 "	1854 " 31	24.0 "
1866 " 16	32.0 "		
1865 " 18	21.0 "		
1850 " 19	7.0 "		
1867 " 19	40.5 "		
1864 " 23	21.0 "		
1857 " 24	19.0 "		
1870 " 29	16.0 "		

Although the mean supply was somewhat greater in the seasons of early commencement, yet the difference was not sufficiently marked for any practical purpose. There had been two very dry winters, 1850 and 1853, and they both commenced early. There have been four very wet seasons 1852, 1861, 1862, and 1867, commencing respectively on the 9, 10, 16, and 19 of November. It was singular that the season of the least rain and that of the most commenced on the same date, November 19. The most remarkable season was that of 1854-55 when the rain did not commence till the last night of December, and yet the supply was copious; and, being distributed late,

^{11.6} Reference to this appears in the "October 7" (*sic*; Oct. 16 {see footnote 11.5, page 136}) minutes as published in the *Proceedings of the Academy*, vol. 4, pp. 193-194. It also appears in the transcribed, handwritten minutes for Nov. 6, 1871 (*Minute Books*, Jan. 6, 1868-Jan. 2, 1872, p. 242).

it made for one of the best years for agriculture that we ever had. The spring rains were the most valuable. No matter how much fell in November, December and January, a dry spring would ruin the crops. On the other hand, copious or even moderate rains distributed through February, March and April would insure a bountiful harvest. Judge Hastings read a paper that propounded a series of interrogations on the Darwinian theory of natural selection. NOVEMBER 20, J. Augustus Whiting was elected a resident member. Benjamin P. Avery presented a written resignation of the office of recording secretary on account of his ill health. His resignation was accepted, and Dr. George Hewston elected to fill the vacancy. Dr. Blake made some remarks on a supposed plant fibre that had been sent by Mr. Morrill from Mexico and known as mercatilla that is stronger than cotton. He also spoke about hot spring deposits at Puebla, Humboldt Co., Nevada. He reported that he had uncovered diatoms in soil at a depth of five feet and 115 feet northwest of the spring of the same species as those occurring in the spring. He reported that few diatoms were found to the south of the spring. He remarked he was amazed by the extent of the thousands of cubic yards of the infusorial earth deposit and the short time required for its accumulation because, he said, the process can only have been going on during the present geological epoch. Dr. Kellogg gave a brief account of a variety of plant previously known as *Tuchermania maritima*, but now transferred to the genus *Leptosyne*, which he proposes to call it *Leptosyne maritima gigantea*. It occurs on San Miguel and Santa Barbara Islands.

DECEMBER 4,^{11.7} there were twenty-eight gentlemen present, that being about the usual attendance; but on this occasion the meeting was specially honored with the presence of one lady. Professor Whitney read a paper relating to the Geological Survey of California, illustrating his remarks by the map and charts in progress.^{11.8} He gave a summary of the work and how far it had been carried, stating the difficulties encountered and what had been accomplished. Professor O. C. Marsh of Yale College was introduced and made some instructive and interesting remarks descriptive of some of his labors in the course of explorations in the interior of the continent. He stated that he had found fifty new species of fossil vertebrates and gathered the finest collection of fossil reptiles that had as yet ever been made in the Upper Cretaceous of Kansas. He said that among these was *Mosasaurus* [*sic*], or one of its allies, a species, Professor Cope had supposed, when he described it from a specimen before

^{11.7} December 5 in the published *Proceedings* (vol. 4, p. 199) but Dec. 4 in the handwritten minutes. December 4, 1871 was a Monday, the usual day on which meetings were held.

^{11.8} This appears to be the last paper that Whitney presented at an Academy meeting, and it may have been the last meeting he attended. In a letter to O. C. Marsh (Yale Univ.) dated June 9, 1872 (from San Francisco) in response to an inquiry by Marsh about a meeting of the American Association for the Advancement of Science (see Sept. 19, 1870 at which Academy meeting it was announced that AAAS had accepted the Academy's invitation to hold its 1872 meeting in San Francisco). Whitney said that Academy affairs were in the hands of "business men" and that he is excluded. Therefore, he knows "nothing of the Association [AAAS] meeting." (Yale Univ. Sterling Lib. Archives: Group 343, ser. 1, box 35, folder 1500.) Whitney's statement to Marsh is something of a surprise inasmuch as Asa Gray, Joseph Lovering and J. Lawrence Smith state in their report to the AAAS in August, 1872 that they had received a telegram from "the President of the California Academy of Science [*sic*] and the Directory of the Geological Survey. . ." recommending deferring the meeting to another year. At this time, Whitney was still director of the California Geological Survey. He was also a member of the AAAS committee to arrange for the meetings, as was Marsh. (For additional comments and a possible explanation for the breakdown in communications, see footnote 11.9, p. 139.)

him, had no hind limbs; but in the course of recent explorations more perfect specimens had been found, proving that the animal had well-developed hind legs. Numerous fossil birds of great interest had also been obtained. In the lower Tertiary measures, there had likewise been found numerous fossil specimens of minute vertebrates. He reported on the discovery of a distinct Miocene fauna in Wyoming, and on material his party obtained in eastern Oregon and Idaho that, he said, would help clear up many questions relative to the great interior lake basins and their geological puzzles. He said that the Pliocene basin in Oregon contained a large number fossil horses and two or three species of fossil rhinoceros.

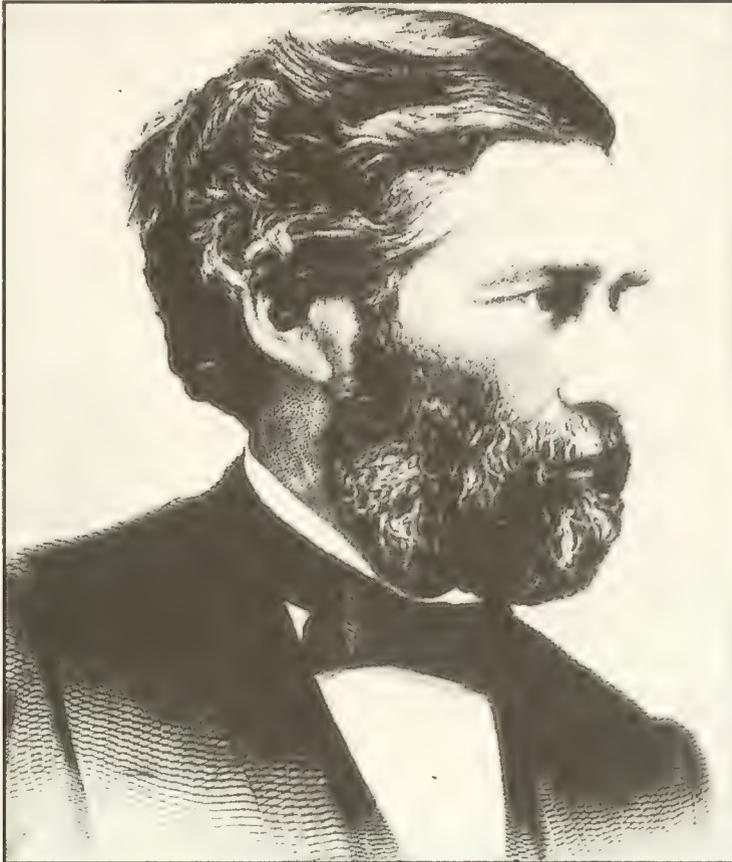
Earlier in the day (December 4), a meeting of the Board of Trustees was held at which communications from Prof. Asa Gray and Prof. Joseph Lovering were read relating to the Academy's invitation to the American Association for the Advancement of Science to meet in San Francisco in 1872. Both letters said that the Association had accepted the invitation and that a committee had been appointed consisting of J. Lawrence Smith, J. D. Whitney, and O. C. Marsh to arrange for the meeting.¹¹⁹ The Trustees also considered a proposal for the purchase of church property at the corner of Dupont and California but declined the proposed price of \$30,000. Also at this meeting, Dr. Blake proposed the names of Charles Darwin and Prof. Ehrenberg of Berlin as honorary members.

¹¹⁹ This is the last mention of the proposed meeting in the minutes of the Academy's meetings. A report filed by Asa Gray, Joseph Lovering, and J. Lawrence Smith (see *Proceedings of the American Association for the Advancement of Science*, 1873, pp. 278-279), with the Association during its annual meeting held in Dubuque, Iowa in August, 1872, states in part "About this time [date not given but certainly much earlier than August, 1872] a telegram was received from the President of the California Academy of Science [*sic*][George Davidson] and the Director of the Geological Survey [Josiah D. Whitney] to say that, in their opinion, the meeting in San Francisco should be deferred to another year." No explanation was given, but, based on the complicated negotiations that had been entered into with both railroad and steamship lines for reduced fares, and the need to confirm arrangements all along the way, the sometimes slow exchange of mail between East and West Coasts must have played havoc with the time schedule to complete arrangements. This seems confirmed by Gray, Lovering and Smith who also state in their report (*op. cit.*) that they were so encouraged by the reports from San Francisco that they "commenced making arrangements with the Ocean Steamers, and inviting foreign guests as requested [by Davidson and Whitney]. After proceeding thus far, we sent several communications to San Francisco, but, by reason of misdirected letters, or snow blockade, we did not receive answers to these communications." [For those familiar with winter weather in the Sierra Nevada, the latter should come as no surprise. Eds.] Forty-three years were to pass before AAAS came to San Francisco to hold the Association's first-ever meeting along the Pacific Coast and only second west of St. Louis [the Association met in Denver in 1901].

Chapter XII: Year 1872

The first Monday of January being New Year's day, the annual meeting was held on Tuesday, JANUARY 2, 1872. Charles Darwin of London, England, and Professor Ehrenberg of Berlin, Germany, were elected honorary members unanimously by the twenty-six members in attendance. Dr. James Blake delivered the annual address, giving a brief synopsis of the advance of science in California and a summary of the addresses that had been made in the course of the past year before the Academy. He also offered suggestions for improvement in the instruction of our children and the people in general in reference to science. Elisha Brooks, Treasurer, reported the receipts of the past year as \$8.35 cash on hand from the previous year, and \$1271.00 received as dues from members in 1871, making a total of \$1279.35. There had been expended during the year \$565.00 for rent of rooms; \$159.40 for printing; \$152.00 for furniture for the cabinets; \$127.10 commissions on collecting dues; \$60.00 for care of rooms, and \$103.00 for sundry expenses, making a total of \$1166.50, and leaving a balance on hand of \$112.85. There was however, he said due Payout, on "that old bill," about \$82.00; also \$40.00 on a bill of Bacon & Co., which he considered a reckless expenditure; and \$3.50 for gas, all of which, when paid, would leave the Academy in debt \$12.65; but he had already received for dues of 1872 more than enough to cover the deficiency and leave a balance in the treasury.

The proper officers reported the results of the annual election that day held. There had been two persons nominated for president, of whom Professor George Davidson had received twenty votes, and Dr. James Blake four votes. Two persons had also been nominated for vice-president, of whom Gen. John Hewston received sixteen votes and Professor Henry Bolander seven votes. The other officers received unanimous votes. The declared elected were: president, Professor George Davidson; vice-president, Gen. John Hewston; recording secretary, Dr. George Hewston; corresponding secretary, Henry G. Hanks; treasurer, Elisha Brooks; director of the museum, Hiram G. Bloomer; librarian, Dr. C. N. Ellinwood; Trustees, Dr. James Blake, Dr. C. M. Hitchcock, Gen. John Hewston, Gen. David D. Colton. On a motion by Dr. H. Gibbons, Sr., a unanimous vote of thanks was tendered by the Academy to the retiring president, Dr. James Blake, for the diligence and fidelity with which he had performed the duties of his office. A number of cases, containing a beautiful collection of Lepidoptera, mounted and selected by Henry Edwards, were presented, for which due thanks were tendered him. At the Board of Trustees meeting held a few days later (JANUARY 11), last year's curators were reappointed. And, on a motion by Gen. D. D. Colton, a curator of ethnology was added and Dr. George Hewston



George Davidson
California Academy of Sciences Special Collections

appointed curator. JANUARY 15, H. G. Bloomer and W. G. W. Harford were elected honorary life members. Mr. C. D. Gibbes reported on meteorological observations he had made in the Sierra Nevada, at Red Mountain, during the winter of 1862-63 including the occurrence of *Protococcus nivalis*, or "red snow," at about 8,000 or 9,000 feet. The president appointed Dr. George Hewston, Dr. Stout and Dr. Cooper as a Committee on Publication for the ensuing year. Dr. George Hewston offered the following resolution, by order of the Board of Trustees:

Resolved—That the officers of this Society are prohibited from incurring any indebtedness on behalf of this Society unless authorized by the Board of Trustees or by a vote of the Academy at a regular meeting;—the same to constitute an addition to the ByLaws of the Academy.

FEBRUARY 5, John O. Earl, Dr. C. M. Bates, Charles A. Wetmore, Henry Carlton, Oscar D. Munson, and Dr. Isaac Bluxome were elected resident members. The resolution, offered at the last meeting, was adopted by a vote of fourteen ayes to six noes. Dr. Henry Gibbons, Dr. Kellogg and Dr. Cooper were appointed a committee to furnish proper subjects for discussion. Judge Hastings again called the attention of the Academy to a former proposition, made by him, that the Academy should afford inventors an opportunity to exhibit their inventions. Dr. Kellogg informed the gentleman that the Academy had already made provision for entertaining any and all subjects relating to science or art, and that the word "natural" had been stricken out of the original title of the Society so as to do away with the idea that the sole object

of the association was confined to natural history subjects. Dr. Cooper stated that the Mechanics' Institute had offered to rent to the Academy some very convenient rooms.

FEBRUARY 19, Captain Oliver Eldridge, William Alvord, Samuel M. Wilson, Ralph C. Harrison, F. W. Von Reynegom, George E. Page, and A. J. Chambers were elected resident members. Eldridge was associated with the Pacific Mail Co.; William Alvord was Mayor of San Francisco; George Page was chief engineer with the Southern Pacific Rail Road; Harrison and Wilson were lawyers; Von Reynegom, a printer; and Chambers, an assayer. Professor Rudolph Göttinger of Munich, Bavaria, was elected a corresponding member. On behalf of Dr. Kellogg of the committee on preparing subjects for discussion, the secretary read the following report:

The following questions are offered in a spirit of inquiry and not for dogmatic dispute, which can only engender antagonism, dissension, contention, alienations, and every evil work. Gentlemen will please bear in mind that the Academy must by no means degenerate into a debating society.

Question 1. Do aerolites chiefly fall in the path of the ecliptic or magnetic path: i.e., $22^{\circ}30'$ on either side of the poles of the earth? and what is their origin?

Questions 2. Have the remains of tropical productions in the Arctic climes any bearing upon the geological phenomenon of the precession of the equinoxes?

Question 3. Is the restless desire from age to age for more facts characteristic of those who are unable to reason from principles to causes? and would any among of chaotic facts be sufficient for such persons?

Dr. Henry Gibbons offered the following additional

Questions 4. Can the climate of California be altered sensibly by changes in the earth's surface by cultivation and otherwise?

Dr. James Blake offered the following resolution:

Resolved. That the Trustees of the California Academy of Sciences be requested at their earliest convenience to forward a petition to the Legislature through the San Francisco delegation, praying for a continuance of the State Geological Survey as at present conducted.

The resolution was unanimously adopted, and it was so ordered. The secretary then read a communication from the City and County assessor's office, assessing the furniture of the Academy at a valuation of \$500. The Secretary moved that a committee of three be appointed to draft a memorial and bill to be presented to the Legislature, asking State aid on behalf of the Academy. After some discussion, the whole subject was on motion referred to the Board of Trustees with power to act.

At a special meeting held on FEBRUARY 26, the Board of Trustees acted on the resolution passed at the February 19th general meeting relative to the continuance of the State Geological Survey and agreed to forward the following petition to the State Legislature

The Trustees of the California Academy of Sciences, as requested by an unanimous vote of that body, respectfully pray that a liberal appropriation may be made at this session of the Legislature for the continuance of the State Geological Survey and the publications thereof as at present organized and conducted under the direction of Professor J. D. Whitney.

A second resolution, being a memorial and bill to the State Legislature to provide, in behalf of the Academy, aid in the amount of \$40,000 to purchase a suitable building for the collections, library and meetings of the Academy, was adopted. Gen. Hewston

offered to take it to Sacramento. Lastly, in response to a communication from Rear Admiral B. Sands of the U. S. Naval Observatory requesting that the Academy support a memorial to Congress to make suitable appropriations for the observation of the transit of Venus, an astronomical phenomenon of great rarity, the officers and trustees voted to endorse the proposal in the name of the Academy.

MARCH 4, the name of George E. Gray was substituted in place of that of George E. Page as the person elected a resident member at the last meeting. The secretary contended for the correctness of his minutes; but it was admitted by all that Gray was the person intended, as he had been described as the engineer of the Southern Pacific Railroad Company, although it seemed that in the application for membership his name had been incorrectly written Page. The death of corresponding members M. Sebastian René L'Normand of Lénaudière, France, was announced. A question about the Indians and the state of their culture having come up and been discussed for some time, Judge Hastings referred to a visit which he had made to the Indians of the Northwest Coast in company with William H. Seward and Gen. Davis, and said that from what he had seen and heard he thought some of them at least were entitled to credit for the high state of civilization which they had reached. As a proof of what he said, and in order to convince the Academy of the correctness of his deduction, he said that one of the chiefs, on being asked his opinion of a dinner party to which he was invited as a guest, remarked that it would have been much better if there had been more whiskey and less beef. The secretary read communications in which the Academy was encouraged by the president and by Rear Admiral Sands, U.S.N., to draft resolutions and a memorial to Congress to appropriate funds for observations on the transit of Venus across the sun in 1874. It was reported that the Trustees had already acted on the matter in the name of the Academy. On motion, the members present endorsed the action of the Trustees. MARCH 18, H. H. Bigelow and William M. Hughes were elected resident members and Charles F. Davis of Lima, Peru, a corresponding member. Dr. Blake gave a brief account of recent observations by Mr. Dall on the Japanese warm current off the Alaskan coast as reported to Prof. Davidson.

APRIL 1, John Williamson, William H. Knight, Eugene E. Dewey, Albert S. Evans, and Thomas P. Madden were elected resident members, and Col. E. Sparrow Purdy, Cairo, Egypt, a corresponding member. Mr. Durand presented a brief description of a new mineral from New Almaden Mines he named aragotite. Dr. Gibbons made some remarks on ozone, and Dr. Blake spoke of experiments he had done some time earlier to ascertain the proportion thereof in the atmosphere. April 15, James Hutchinson and William S. Watson were elected resident members. F. E. Durand presented a paper on crystallization of metacinnabarite. Dr. Stout reported for the committee on foreign exchanges on progress in the translation and review of foreign publications. MAY 6, Thomas P. Madden, previously elected a resident member, paid \$100 into the treasury and became a life member. After adjournment, the Academy was called to order again for the purpose of taking some action in reference to the sudden and mysterious death of F. L. A. Pioche, a life member of the Academy and one of

its Board of Trustees. On motion a committee, consisting of Dr. Fourgeaud, Dr. Henry Gibbons and Obadiah Livermore, was appointed to draw up suitable resolutions of respect to the memory of the deceased as a friend and benefactor of the Association. MAY 20, Dr. Blake spoke on the geology of the Great Basin in the vicinity of Pueblo Range and Pueblo Butte. He also made some remarks on the geology of Napa County, with particular reference to the discovery of another petrified forest at a higher elevation than previously known. Mr. Henry Carlton exhibited a double-fluid barometer, invented by him.

JUNE 5, resolutions of respect to the memory of F. L. A. Pioche were presented and adopted, in which it was said that "the California Academy of Sciences has lost one of its most valued members, as distinguished for his love of the Arts and Sciences, as for his wide-spread liberality. . . ." M. Octave Pavy, who was about starting on an exploring expedition to the Arctic, made a visit to the Academy and was introduced by Dr. Stout. He explained the object of his proposed expedition, which appeared to search for a "northwest passage." He said that when Sir John Ross first encountered the Esquimaux, those people would not believe that he came from the south, their idea being that the climate moderated towards the north and that the south was an uninhabitable waste. He said that he believed in an open polar sea and expected to sail to Wrangle Land [*sic*], which he conceived to be a sort of continent. His intention was to cross it on sleds; then launch his rubber raft; spread a sail upon it, and reach the pole, whence he would go down by way of Baffin's Bay into the Atlantic. Professor Davidson combatted Mr. Pavy's idea about an open polar sea and disputed his supposed open currents. He said he would as soon expect to encounter a mountain of ice-cream in the center of Africa as a warm polar basin. George E. Gray, chief engineer for the Southern Pacific Railroad, gave an account of his survey of the railroad route between Gorgonio Pass and the San Diego and Fort Yuma wagon road, a distance of about fifty miles. He spoke about the depression of the Colorado basin, and that in places the surface sank below sea-level as much as two hundred and fifteen feet, and that there were places on the desert three hundred feet below sea-level. Dr. Kellogg made extended remarks about moosewood as the strongest vegetable fiber known and spoke of its abundance and great value. It was the *Dorca palustris*, sometimes called leatherwood. Mr. Stearns gave a description of a new species of *Mangelia* from California.

JUNE 17, J. B. Pigné-Dupuytren was elected a resident member. Mr. Stearns announced the death of Dr. William Stimpson, late director of the Chicago Academy of Sciences and corresponding member of the Academy, and made some remarks on his contributions. Resolutions in memory of Dr. Stimpson were put forth and adopted. Professor Davidson exhibited a boomerang found near Anaheim, in San Diego County, indicating that the Indians of Lower California, or rather those of the southern part of this State, were acquainted with that instrument and its use. It was made of wood and curved almost to a right angle. Professor Davidson then stated that a communication relative to the diminution in magnitude and disappearance of stars in the constellation Leo had appeared in one of the San Francisco journals, (the *Alta*

California), but upon an examination he had found all the stars usual places and of their usual magnitude. Dr. Kellogg referred to a statement in the last number of the *American Naturalist* relative to the singing of the Maryland marmot and suggested that those members who might have an opportunity of making the acquaintance of California marmots would investigate the subject of whether they, too, were tuneful. Dr. Blake reported that he had called upon M. Pavy to renew the discussion of currents within the polar basin, but had not been able to meet with him.

JULY 1. Benjamin Smith, Alexander Austin, and James R. Finlayson were elected resident members. Robert E. C. Stearns read a paper on the economic value of certain Australian forest trees (*Acacia* and *Eucalyptus*) and their successful cultivation in California; also upon the value of eucalyptine. An interesting discussion took place upon the general subject in which Professor Bolander, Professor Davidson, and Dr. Stout participated. A communication from the Grand Marshal of the Fourth of July celebration invited the Academy to take part in the coming ceremonies. On motion the communication was received and placed on file; and the secretary was instructed to decline on behalf of the Academy the honor tendered. Amos Bowman read a paper "On Coast Surface and Scenic Geology" of the San Francisco Peninsula and Alameda and Contra Costa hills and farmlands, and F. E. Durand presented a paper on silver mines of Pioche, Nevada, describing the principal argentiferous veins.

JULY 15, R. E. C. Stearns called attention to an article published in 1789, in the *Massachusetts Magazine*, vol. 1, page 416, describing Oil Creek in Pennsylvania, comparing the oil, which floated on its waters, to Barbadoes tar, and saying that bathing the joints in it gave relief for rheumatic complaints. Dr. Stout exhibited



Amos B. Bowman

Anacortes Museum, Anacortes, Washington (D-I-7C) and
Kitchener-Waterloo Record, Kitchener, Ontario, Canada

samples of black iron sand and said that an enormous body of it existed within fifty miles of San Francisco. The sample, he said assayed fifty per cent of pure iron of the best quality. The sand was composed of ferruginous particles, a portion of which were magnetic, and portion not. It could be easily smelted, and he had already had a specimen manufactured. A discussion ensued as to the origin, deposition, and distribution of the iron sands, which was participated in by Dr. Henry Gibbons, Gen. John Hewston, Dr. Stout and others. A general discussion also took place on the propriety of obtaining better quarters for the Academy. Dr. Kellogg donated a large collection of botanical specimens and a collection of electrotype illustrations of California plants. AUGUST 5, James P. Dameron was elected a resident member. Mr. Stearns read a description of new species of shells, *Siphonaria Brannani*, from Santa Barbara Island, and *Truncatella Stimpsonii*, from False Bay, San Diego County. AUGUST 19, James Freeborn was elected a resident member. Mr. Stearns read a paper on *Purpura canaliculata*, a marine shell ranging from Unalaska to Monterey. Professor Davidson, as president, announced the anticipated arrival of Professor Louis Agassiz, whereupon Gen. John Hewston, Dr. Henry Gibbons and Dr. James Blake were appointed a committee of reception on behalf of the Academy. Professor Davidson then gave an account of his recent experiments to determine the relative values of great and small altitudes for astronomical observations, and spoke of the ridge of the Sierra Nevada as peculiarly adapted for the location of an observatory, describing the clearness and steadiness of the atmosphere on the summit and the sharp definition of celestial bodies seen from there. Dr. George Hewston presented his resignation as recording secretary, which the Academy was not inclined to accept.

SEPTEMBER 2, Professor Louis Agassiz, Mrs. Agassiz, Dr. F. Steindachner, Dr. Thomas Hill, Mr. Blake, Captain Johnson and others connected with the Steamer Hassler Expedition, together with Professor John Torrey of Columbia College, New York, and Dr. Daniel Coit Gilman, President-elect of the University of California, Berkeley, were introduced and welcomed by a crowded audience. Professor Agassiz, being called upon, made an address, in which he spoke¹²⁻¹ in terms of high praise of the efforts of the Academy in establishing a scientific body in a community so absorbed in the business of gathering gold; of the great success which had attended these efforts, and of the excellence and value of the scientific work done by it. He spoke of the great wealth of California, and what it owed to science, and what it ought to do for science, and enlarged upon the growth of scientific study in the Eastern States and the importance of fostering it in every community. He also spoke of the excellent and valuable work of the State Geological Survey, and of the bright promise of the University of California for the cultivation, promotion and diffusion of knowledge. Professor Gilman being called upon, made remarks, as did also Professor Torrey.¹²⁻¹ SEPTEMBER 16, W. E. Mayhew and Erastus Dennison were elected resident members. Professor Joseph LeConte read a paper, "On Some of the Ancient Glaciers of the Sierras," describing a recent visit to the Sierra Nevada and giving his observa-

¹²⁻¹ Agassiz's remarks were published in *Proc. Calif. Acad. Sci.*, 1873, vol. 4, pp. 253-256; also Gilman (*ibid.*, p. 256) and Torrey (*ibid.*, p. 257).

tions on the former glaciers of the Yosemite country and the Lake Tahoe region.^{12.2} Among the interesting points made by Prof. LeConte was that Yosemite and Hetch-Hetchy Valleys were both carved by glaciers. R. H. Stretch read a paper on a species of scale lice, *Coccus*, a pest to orchardists, that had recently made its appearance at Menlo Park in San Mateo County. He also read a paper on “flea seeds,” so-called because seemingly animated by the insects inside of them, which appeared to be “galls” produced by a species of *Cynips* infesting different kinds of oak trees. SEPTEMBER 25, a special meeting, called to enable members of the Academy and their friends to hear Professor Agassiz prior to his departure for the East, on account of the insufficient room in the Clay Street quarters, was held at Pacific Hall, where a large audience assembled. Professor Agassiz, after making reference to the voyage of the *Hassler* and the present aims of science, spoke at considerable length on the “Natural History of the Animal Kingdom.”^{12.3,12.4}

OCTOBER 7, F. Oppenheim, H. L. Breed, William Meyer, Peter Donahue, and J. C. Wilmerding were elected life members, and W. P. Prichard, T. J. Edmondson, W. H. Rulofson, L. H. Bonestell and Harry Andrews, resident members. A paper from Captain C. M. Scammon was read, on a new species of whale, *Balaenoptera Davidsoni*, taken in Admiralty Inlet, Washington Territory. W. H. Dall presented a paper on new species of mollusks from the Northwest Coast. R. E. C. Stearns read a paper, making a comparison of the conchology of portions of the Atlantic and Pacific Coasts of North America. Professor Davidson read a paper entitled “Suggestion of a Cosmical Cause for the Great Climate Changes upon the Earth.” OCTOBER 21, Edward F. Hall, Jr. and William Burling were elected life members. Rev. Horatio Stebbins, J. H. Weeden, William Doolan, W. J. Miller, John Perry, Jr., James M. McDonald, William H. Sears, W. H. Foster, Jr., William Leffingwell, Andrew McF. Davis, E. G. De Crano, B. F. Ellis, Henry P. Bowie, John Currey, Dr. Henry M. Fiske, William Lane Booker, Dr. William Calvert, Jasper M. McDonald, G. S. Johnson, William B. Thornberg, and Louis T. Haggin, were elected resident members and M. W. Saunders and H. J. Stewart corresponding members. Dr. Blake read a paper on the topography of the Great Basin.

NOVEMBER 4, Richard S. Floyd, B. Howard Coit and Peder Sather were elected life members, and Rev. A. J. Nelson, James G. Steels, Rev. Joseph Wythe, James F. Bowman, Rev. Otis Gibson, John S. Bugbee, and G. D. Wyman, resident members. Henry Glass, U.S.N., was elected a corresponding member. Professor Ezra S. Carr read an abstract from an unpublished paper by John Muir, describing living glaciers discovered by him at the head waters of Tuolumne River. W. H. Dall presented a paper on three new species of Crustacea, parasitic on cetaceae of the Northwest Coast

^{12.2} LeConte’s remarks appeared in the *Proc. Calif. Acad. Sci.*, vol. 4, pp. 259-262 in January, 1873. LeConte also sent a copy of his remarks to the *American Journal of Science*; they were published in May, 1873, under the same title, “On some of the ancient glaciers of the Sierras.” (*Amer. Jour. Sci.*, ser. 3, 5(36):325-342). The footnote states that it was “Read before the Cal. Acad. of Sciences, Sept. 16, 1872.”

^{12.3} See Appendix D for comments by Charles B. Turrill who was present at the meeting at which Agassiz addressed the Academy membership. (See also footnote 13.10.)

^{12.4} Agassiz’s remarks were carried in several local publications (e.g., *Overland Monthly*, *Scientific & Mining Press*). They were not published by the Academy as were his earlier remarks at the meeting of Sept. 2 (see footnote 12.1).



Daniel Coit Gilman, ca. 1872

Photograph by Carleton E. Watkins.

National Portrait Gallery, Smithsonian Institution (NPG.77.185)

of America. He also presented a paper on "Pre-Historic Remains in the Aleutian Islands," in which he described excavations made by him on the sites of pre-historic villages on Amaknak Island and human relics found there, also relics found in caves. Dr. Stout read a paper on the "Horse Disease and its Treatment." Professor Davidson, at this meeting as well as at the precious one, presented solutions of certain problems in mensuration. NOVEMBER 18, Henry F. Teschemacker, Ezra S. Carr, and J. A. Hoffman were elected resident members. Dr. Kellogg presented a description of a new species of plant, *Hibiscus Californicus*, from an island in the San Joaquin River. Professor F. H. Bradley and Dr. J. Curtis,^{12.5} of Professor Hayden's Yellowstone Expedition, were introduced and gave descriptions of the upper Snake River and upper Yellowstone River regions. They reported on many of the features they had seen including Old Faithful and Giant geysers and on hot springs that supported animal life at water temperatures of 186°F.

DECEMBER 2, Henry F. Williams, J. D. Pierson, Dr. John M. Willey, Barrington Gethen, Richard Gird and Richard L. Ogden were elected resident members. W. A. Goodyear presented a paper on the geology of the coast of Oregon, as observed in the course of a recent trip to it. He spoke especially of the coast at Koos [= Coos]

^{12.5} Frank Howe Bradley [geologist] and Dr. Josiah Curtis [profession uncertain] with the Hayden survey (see Mike Foster, *Ferdinand Vanderveer Hayden*. 1994. Roberts Reinhart Publ., Niwot, CO. xv + 443 pp., illus.).

Bay, and the auriferous sand and gravel hills that border the ocean north of the Coquille River. He also called attention to a striking contrast between the character of the volcanic matter of Oregon and that of the western slope of the Sierra Nevada. The Cascade mountains, where the Columbia River cuts through them, appear to be made up of a series of superimposed sheets of lava which spread far and wide over the originally smooth and gently-sloping lands. They therefore consist of terraces of compact, solid rock from base to summit. The western slope of the Sierra Nevada, on the other hand, shows its volcanic matter almost exclusively in fragmentary forms. Beds of ashes, breccias, and volcanic gravels and conglomerates abound; but lava flows are few and far between. This is especially true of the central part of the Sierra Nevada, where there is only one great flow, that of the Tuolumne Table Mountain. Great as is the total quantity of volcanic material in the mining counties of the Sierra Nevada, it is insignificant compared with the vast accumulations that built up the Cascade Range. DECEMBER 16, Edward F. Northam, Professor Daniel C. Gilman, and A. de Tavel were elected resident members. Dr. A. W. Saxe read a paper on the periodicity of the California flood seasons and their probable dependence upon the condition of the sun as exhibited by sun-spots. W. H. Dall presented a paper "On the Parasites of the Cetaceans of the Northwest Coast of America, with Descriptions of New Forms." He also presented a paper entitled "Descriptions of New Species of Mollusca from the Northwest Coast of America."

Chapter XIII: Year 1873

The annual meeting of 1873 was held JANUARY 6. Robert M. Brereton was elected a life member and Theodore A. P. Brown, C. B. Morgan, Dr. P. Hatchand S. B. Boswell, resident members. Professor Davidson, as president, delivered his annual address and spoke of the past and present status of the Academy, its progress, its claims to public consideration, and its prospects. The librarian, director of the museum, and curator on entomology submitted reports. Elisha Brooks, treasurer, reported the receipts for 1872 as \$2,701.35 and the disbursements as \$1,33.90, leaving a balance of \$1,568.45 in the treasury. The Board of Trustees recommended that Robert E. C. Stearns should be elected a life member. The annual election resulted in the choice of Professor George Davidson as president; Gen. John Hewston, vice-president; Henry C. Hanks, corresponding secretary; Charles G. Yale, recording secretary; Elisha Brooks, treasurer; Dr. C. N. Ellinwood, librarian; Hiram G. Bloomer, director of the museum; and R. E. C. Stearns, David D. Colton, Thomas P. Madden and Oliver Eldridge, trustees. Dr. Stout read a paper "On the Chemistry of Great Fires," and more particularly on certain phenomena connected with a recent disastrous fire in Boston. His views elicited a discussion. JANUARY 20, Robert E. C. Stearns, John P. Jones, A. A. Gansl, Tiburcio Parrott, and George T. Marye, Jr. were elected life members, Samuel P. Middleton and E. L. Beard, resident members, and Montgomery P. Fletcher and Casper Schenck, corresponding members. Dr. Henry Gibbons exhibited a tape-worm of peculiar form, which he pronounced a beef tape-worm *Trenia mediocanellata*, supposed to have been produced by eating diseased raw beef. Dr. Stout exhibited a package of the black sand, shown at a former meeting which he said consisted, one half of fine iron and was to be found large quantities within fifty miles of San Francisco. It was subjected to microscopical examination, and a discussion took place in regard to it. Professor Davidson presented a paper on "New Problems in Mensuration" in continuation of former papers.

FEBRUARY 3, William E. Brown, Frederick H. Waterman, and Rev. W. A. Scott were elected resident members and Charles E. De Long and Albert Bierstadt, corresponding members. P. B. Cornwall exhibited a frog which had been found in a Mount Diablo coal mine^{13.1} 223 feet below the surface. It was dead; but it was said to have been picked out of the ground in a living condition and to have lived twelve hours after its release. A discussion took place, and the general opinion seemed to be that no frog or toad had ever been picked out of solid rock alive, as often reported. W. H. Dall mentioned instances in which toads had been cemented in solid stones

^{13.1} Possibly the Black Diamond Coal Mine [eds.]

and buried; and they invariably died if the cement continued uncracked; though in some cases, where the cement was cracked, they remained alive for some time. R. E. C. Stearns read a paper "On a New Alcyonoid Polyp from Burrard's Inlet," supposed to be the same as the animal spoken of by Dr. Blake at the meeting of July 17, 1871, and pronounced by him a kind of sponge. W. H. Dall presented descriptions of three new species of Cetacea, *Delphinus Bairdii*, *Tursiops Gillii*, and *Grampus Stearnsii*. Dr. J. M. Willey presented a paper "On the Auriferous Gravel Deposits of Placer County," in which he spoke particularly about the substance, called "cement," found in large quantities and supposed to be a volcanic ash, solidified by time and pressure. Dr. Kellogg followed with a paper entitled "Descriptions of New Plants from the Pacific States."

FEBRUARY 17, James Lick and George C. Hickox were elected life members, and Gregory P. Hart^{13.2} a resident member. John Hewston, Jr. announced that Mr. James Lick had donated to the Academy, under certain conditions, a valuable lot of land on Market Street in San Francisco for building purposes. Mr. Lick said that he made the "gift to the Academy in consideration of the desire he has to promote the diffusion of Science and the prosperity and perpetuity of the Academy."^{13.3} He thereupon produced and read the deed of donation. It was dated, signed, acknowledged and delivered on February 15, 1873. In it Mr. Lick said that, in consideration of the desire he had to promote the diffusion of science and the prosperity and perpetuity of the California Academy of Sciences, he gave, granted and confirmed to it a lot on the southeasterly line of Market Street, commencing 195 feet southwesterly from the southwesterly corner of Market and Fourth Streets and having a frontage of 80 feet on Market Street by a depth at right angles northeasterly of 275 feet on the southwesterly side and 195 feet on the northeasterly side, and being a portion of the Hundred-vara Lot No. 126, reserving the rights of possession and rents and profits for two years. The conditions were in substance that the premises should be used and devoted solely and exclusively for scientific purposes, and none other; and should never be used for political or religious purposes. They should never be encumbered in any manner nor alienated during the life of any of the existing members of the association; nor should they or any part of them or of any edifice erected upon them be leased, used or occupied except for the proper purposes of the society. The Academy was required to erect and maintain on the premises, and covering the whole lot except a small space in the rear for light and ventilation, a substantial and elegant brick edifice, three stories in height, with a substantial granite front faced with appropriate scientific emblems; and its structure and design should be classic and such as would readily distinguish it from buildings used for business or commercial purposes. At least one apartment in the edifice should be suitable for and devoted to the purposes of a library; another to a museum, and another to a hall for lectures. The Academy was further required within two years to secure the necessary funds to commence and complete the edifice with all reasonable dispatch, but, if the funds

^{13.2} Harte in the handwritten *Minute Books* but Hart in the published minutes (*Proc. Calif. Acad. Sci.* 5:19).

^{13.3} *Minute Books*, California Academy of Sciences, Jan. 15, 1872-July 20, 1874, p. 64.

were raised at any time within two years, possession of the premises would be given upon 30 days notice to that effect. And in case the Academy should violate or fail to fulfill any of the terms or conditions, all its interest and estate in the premises should cease and determine, and the property and all interest and estate therein would revert to the donor.

The members of the Academy, when the deed had been read, testified their appreciation of Mr. Lick's generosity by hearty applause. The president said he felt incompetent at the time to express the sense of the Academy in fitting terms. The board of Trustees, he said, in considering the project of securing proper accommodations for the institution, had never thought of exceeding an expenditure of \$25,000; but this site on Market Street alone, as he had been assured by competent judges, was worth \$150,000. Professor Davidson then read a paper on "The Probable Periodicity of Rainfall," which he illustrated with diagrams showing the yearly, monthly, and average monthly rainfall at San Francisco for 23 years, from 1849 to 1872 inclusive. Dr. George Hewston read a paper on a new species of marine crustacean exceedingly destructive to wooden piles, which had recently been detected in San Francisco Bay, and to which he provisionally gave the name of *Limnoria Californica*. An amendment to Article III, Section 2, of the constitution having been presented to the Board of Trustees and submitted by it to the Academy, was adopted to the effect that, "The Vice-President shall attend all meetings of the Trustees and, in case of the absence of the President, shall preside at the same and be entitled to vote." W. H. Dall presented a paper "On the Avi-fauna of the Aleutian Islands from Unalashka Eastward."

MARCH 3, John H. Carmany and Robert Robinson were elected resident members, W. N. Lockington, a corresponding member. Dr. Kellogg presented another paper entitled "Descriptions of New Plants from the Pacific States." The president announced that the Board of Trustees had taken appropriate action¹³⁴ in reference to the donation of James Lick by an expression of their gratitude and thanks for his

¹³⁴ Among the actions taken, Academy president George Davidson wrote to Joseph Henry, Secretary of the Smithsonian Institution, on February 19th, 1873, "Dear Sir, I have been directed by the Board of Trustees of the California Academy of Sciences to acquaint you with the information, that our fellow member James Lick of Santa Clara County, California, has deeded to the Academy a lot of ground 80 x 275 on Market Street San Francisco, valued at nearly \$100,00.00 gold, on condition that we acquire the means to erect a building of a certain character thereon, commencing the erection at a period two years after February 15th, 1873.

"This we shall lend all our individual energies to accomplish, but to stimulate others in our community to emulate the example of James Lick, the Trustees have thought proper that I should ask you to write a letter to him thanking him in behalf of Science, for the munificence of his act." (Davidson to Henry, SI Archives, RU 26 {Office of the Secretary, Incoming Correspondence, 1863-1879}, vol. 162, p. 147.)

On April 3rd, 1873, Davidson informed Henry that he had transmitted the latter's letter to Lick. In Davidson's view this letter, and others he had requested, had the dual purpose of thanking James Lick for his generosity as a patron of Science and for raising money from others. Some months later, Davidson wrote to Henry again asking his support, and informing him that like letters were sent to Louis Agassiz and James Dwight Dana, the latter by Prof. Gilman, President of the University of California, asking their endorsement of the Academy's request of James Lick that he modify the conditions of his deed if the Academy were unable to meet the stated conditions on raising money within the time allowed for construction of a building. (Davidson to Henry, Smithsonian Institution Archives, RU 26 {Office of the Secretary}, Incoming Correspondence, 1863-1879, vol. 132, pp. 486-487). The pleas must have worked because Lick did modify the deed in October, 1873, extending the time for raising funds for the building, and then again in September 1875, at which time all restrictions were removed and the property was given to the Academy as an outright gift. (*continued next page*)

unexpected and unsolicited gift, as set forth in the minutes of their proceedings on February 18, which had been engraved and framed and presented to Mr. Lick personally. They accepted the deed and promised the efforts of every member of the Academy to faithfully endeavor to carry out the views of the donor in the spirit in which they were expressed. The president then said that to erect a suitable building, and maintain it when completed, would require a sum of \$200,000; and he hoped the necessary amount could be obtained by the time specified in Mr. Lick's deed. He entertained no doubt of the Academy's being able to raise the money. Judge Hastings stated that he was ready to join with any twenty or any ten other gentlemen to make up the sum of \$200,000 to build the edifice and maintain it. He added that it had been suggested to erect a statue to Mr. Lick, and he saw no reason why those who donated means to carry out the great objects proposed, as Mr. Lick had done, should not be honored in that way.

Professor Davidson called up the subject of the "cement" of the auriferous gravel deposits in the Sierra Nevada, spoken of by Dr. J. M. Willey on February 3, and said that, if the cement should prove to be decomposed quartz, it might be accounted for by glacial action; but, in that case, how was the great amount of rounded pebbles to be accounted for? He added that Professor Whitney had determined and plotted out the elevations of the different gravel deposits above the America and other rivers, and that they exhibited an almost identical slope for the ancient river beds with that of the present river beds, although the latter were from 1,200 to 1,400 feet below the

13.4 (continued) In elegant Victorian style, Joseph Henry, in response to George Davidson's request, addressed the following letter to "James Lick, Esq. San Francisco":

"March 10th 73. Dear Sir: I have just seen in the public papers an account of your gift to the Academy of Sciences of San Francisco and I beg leave, as the Director of an institution of a similar character, founded by a benevolent Englishman of enlarged views and extended sympathies, to express in behalf of science the high appreciation which will be attached, by all who are qualified to pronounce upon the subject, to your munificent donation.

"The study of abstract science without regard to its immediate application forms an essential element in the advance of the world in its moral and intellectual development. Without a constantly increasing knowledge of the laws of nature modern civilization must in time become stationary, like that of Japan and China. It is only by making new conquests in the realms of nature that man is enabled to control her forces and apply them to her manifold uses. You have therefore acted wisely in making the donation in question. Money is the representative of accumulated power and every dollar contains a certain amount of potential energy which can command labor; but while there are thousands of enterprising men in our country who have talents for accumulating wealth there are but very few like yourself who have the wisdom and enlightened sympathy to apply it as you have done. There is in most men an instinct of immortality which induces the desire to live favorably in the memory of their fellow men after they have departed this life, and surely no one could choose a more befitting means of erecting a monument to himself more enduring or more worthy of admiration than that which you have chosen. You have done good service to the cause of science by your gift which I trust will be increased in value by the example you have set for others. I must sincerely hope that other wealthy citizens of California will supplement your gift by furnishing the means of erecting a suitable building; but should there be none such perhaps an appeal to the city or state might be made for the purpose. It should be recollected, however, that, besides a suitable building, funds are required to sustain, properly, an establishment like that of the Academy, a curator will be necessary and the means for publishing the proceedings. Furthermore, an establishment of the kind ought to have the means of consecrating to science any one who may be found in the country possessed of the peculiar character of mind in a marked degree for original investigation.

"With my best wishes for your continued prosperity and long life, I am very truly yours, [signed] Joseph Henry, Sect. Smithsonian Institution." (SIArchives, RU 33, vol. 33, p. 40.)

The above is not the only letter Henry wrote to James Lick on behalf of a fledgling California institution. A year later, Joseph LeConte wrote to Henry informing him that he had passed on to both James Lick and Lick's Board of Trustees, Henry's earlier letter supporting the building of an observatory and that Lick had, indeed, executed a formal deed for its establishment. (Joseph LeConte to Joseph Henry, September 8, 1874, SIArchives, RU 26 {Office of the Secretary, Incoming Correspondence, 1863-1879}, vol. 145, p. 416.)



William Neale Lockington
George Sprague Myers Portrait Collection
Department of Herpetology, California Academy
of Sciences

former. A communication was received in reference to manna and honey-dew, based upon observations of John Applegarth, a farmer residing near Woodbridge in San Joaquin County. The appearance of manna was comparatively rare, having been noticed by him only in the autumn of 1851 and in 1872, both times after seasons of abundant verdure. It was discovered in the early morning of the first cool weather in the autumn and covered the foliage and fences, somewhat like frost, in the form of small, rounded, whitish grains or particles, quite sweet to the taste. The honey-dew never failed to occur in the early fall, covering the leaves of shrubs and trees with a thick, viscid, sticky substance, which soiled the clothes and adhered to the hands and face in passing through thickets and was of a sweetish but ranker taste and not so agreeable as that of manna. Both were readily gathered by bees; but they were never found in the same cells in the hives. It was a belief among the farmers that the honey-dew arose from the sweet aroma of the countless wild flowers carried up by the rarefied atmosphere and condensed in the fall by the evening dews, while the manna might be the pollen of flowers carried up on occasions favorable for it. They thought it impossible, in view of the abundance and wide area over which it was

spread, that the honey-dew could be deposited by insects as was reported by scientists. E. F. Lorquin gave a description of a species of California vulture recently captured by him. It measured nine feet ten inches from tip to tip and differed from the common species by having the neck covered with down instead of being bare.

MARCH 17, James T. Boyd, Dr. Richard H. McDonald, Louis Sloss, William B. Hooper, Frank Locan, F. E. Wilke, E. E. Eyre, Mark L. McDonald, Coll Dean,^{13.5} Horace L. Hill, and E. J. de Santa Marina were elected life members, and R. B. Irwin, J. H. Blumenberg, John J. Haley,^{13.5} A. B. Forbes, John F. Miller, Dr. J. A. W. Lundborg, I. C. Woods, S. D. Field, J. H. Smythe,^{13.6} Oliver P. Evans, W. A. Aldrich, Jacob Best, Michael Deering, A. W. von Schmidt, Jourdan W. Roper, J. D. Howell and Laurence Kilgour, resident members, and M. Lindermann, Otto Finsch, and Alexander Willard, corresponding members. Judge Hastings stated, in connection with remarks made by him at the last meeting, that he was ready to unite with other gentlemen and be one of twenty to raise the sum of \$200,000 for building purposes, and that in pursuance of his proposition he had placed \$10,000 in the hands of one of the Trustees on the terms proposed. Dr. Kellogg presented still another paper on "Descriptions of New Plants from the Pacific States." A paper was presented from Dr. Theodore Gill on the "*Scombrocottus salmoneus* of Peters, and Its Identity with *Anoploploma fimbria*." R. E. C. Stearns read a paper on xylophagous or wood-eating animals, referring especially to *Teredines* among mollusks, *Limnoria* and *Chelura* among crustaceans, and *Termites* among terrestrial insects. W. H. Dall presented a paper of "Descriptions of New Species of Mollusca from the Coast of Alaska, with note on some rare forms."

APRIL 7, Samuel F. Reynolds, Henry H. Haight, and Samuel C. Gray were elected resident members. Among the donations was a magnificent set of Kingsborough's Mexican Antiquities from George C. Hickox. The president announced that the deed of James Lick to the Academy had been filed for record on February 20. W. H. Dall read "Remarks on the Death of Professor John Torrey," an honorary member of the Academy, who died in New York on March 10; and a committee was appointed to prepare appropriate resolutions of respect to his memory. Professor Davidson read a paper on the determination of the geographic position of the station at San Jose del Cabo in Lower California, occupied by the French astronomer, Chappe d'Auteroche, during the Transit of Venus in 1769 – the year, it may be observed, in which Jose de Galvez dispatched from the same place the ships San Carlos and San Antonio for the settlement of Alta California. Frederick Gutzkow read a paper describing "A New Process for the Extraction of Boracic Acid."

APRIL 21, Jerome B. Cox, Frank F. Taylor, Charles B. Brigham, and D. S. Hutchinson were elected resident members. S. B. Boswell, previously elected a resident member, having paid the required fee was enrolled a life member. Henry Edwards presented a paper "On the Honey-making Ant of Texas and New Mexico,

^{13.5} Spelt Deane in the handwritten minutes; also John H. Haley (*Minute Books*, CAS, Jan. 15, 1872-July 20, 1874, p. 70) (compare with the published proceedings (*Proc. Calif. Acad. Sci.*, 5:43).

^{13.6} Variouslly spelt Smyth and Smythe in both handwritten and published minutes (see, for example, Smyth in Minutes, both handwritten and published, for March 17, 1873, Smythe in the *Minute Books* for Aug. 3, 1874 to Nov. 15, 1880, p. 206, and Smyth in the same *Minute Book*, p. 209).

Myrmecocystus Mexicanus of Westwood," based principally upon observations of Captain W. B. Fleeson of San Francisco, who had recently had opportunities of studying the ants in their native haunts. He described one of their nests or hills, which were found near Santa Fe in New Mexico, and the manner in which they were guarded by the ant soldiers; also how the confined honey-makers, whose abdomens were distended into large, globose, bladder-like forms about the size of a pea and who never left the nest, were fed by other ants. He further said that the honey of these ants was much sought after by the Mexicans, who not only used it as a delicacy, but applied it to bruised and swollen limbs, and ascribed to it great healing qualities. Dr. James Blake read a paper "On the Connection between the Atomic Weights of Substances and Their Physiological Action," chiefly devoted to the action of poisonous metals injected into the blood of animals.¹³⁷ R. E. C. Stearns presented "Descriptions of a New Genus and two New Species of Nudibranchiate Molluska from the Coast of California," his specimens being from Point Piños, Monterey County. He also presented a paper entitled, "Descriptions of New Marine Mollusks from the West Coast of North America," being a continuation of previous papers on West Coast Mollusks. Dr. Kellogg presented more "Descriptions of New Plants from the West Coast of America." Judge Hastings read a paper on pavements as used in ancient and in modern times, Dr. Stout exhibited specimens of the stone used in building the U.S. Branch Mint on Fifth Street in San Francisco. It came from Vancouver island and contained iron which oxidized after a brief exposure to the weather and changed from a bluish gray to a dingy yellow color. He said the fault could be cured by washing the stone with sulphuric acid; but to apply the remedy to the entire mint building would involve great expense. He suggested that a collection of samples of building stone should be made for the Academy museum. Mr. Stearns proposed resolutions of respect to the memory of Professor John Torrey, which were adopted. They spoke of his "high scientific attainments of the deceased, the purity of his private character and the many estimable qualities which endeared him to his fellow-men."

MAY 5, Alexander P. Moore and William W. Hollister were elected life members, and Judge O. C. Pratt and Charles V. B. Keading, resident members. Among the donations was the first shad, *Alausa praestabilis*, caught in California waters,

¹³⁷ This is a continuation of work that James Blake had begun on the relation between atomic weights and physiological action of chemical substances as early as 1836 or 37 while still living in London. As a result, he "laid the foundation of our present knowledge of the relations existing between the atomic weight of metals and their physiological action and later demonstrated the efficiency of metals belonging to the same group of isomers as proportionate to their atomic weight, with the exception of the salts of potassium and ammonium. He arranged the elements into isomorphous groups according to their atomic weight and poisonous qualities and evolved a law covering the definite relations between reacting salts of chemicals and their significance when injected into the circulation." (Miller, 1928, *Dict. American Medical Biogr.*, pp. 108-108). Leake (1951, *Gesnerus*, 8:117) observed "By 1846 Blake had come to three quite remarkable conclusions: (1) that the characteristic physiological effect of an inorganic compound in solution was produced by the electro-positive element; (2) that with increase in atomic weight of the electro-positive element in a series of inorganic compounds there is an increase in toxicity; and (3) that the characteristic physiological effects of the electro-positive elements tend to reappear as one goes up the series with increasing atomic weight. . . . When one examines the groups of the elements made by Blake on the basis of their physiological action one cannot help but be struck by the remarkable similarity to what is called the 'Periodic Table', the famous classification of the elements on the basis of their physical-chemical properties as made by the great Russian chemist, Mendelejeff (1834-1901)." For additional comments about James Blake, see also Leviton & Aldrich, 1987 (Sept.), *Fellows Newsletter* (of the California Academy of Sciences), pp. 4-8.

presented by the State Board of Fish commissioners. S. R. Throckmorton, one of the commissioners, said that on June 27, 1871, this shad was three-quarters of an inch in length and was put into the Sacramento river just above Tehama. It was one of 15,000 young shad, hatched in the Hudson River, New York, and brought out in cans by Seth Green, arriving in California by railroad in about ten days. The specimen exhibited had been caught in a trap near Vallejo. It was a male and not full grown. The fish would be at maturity the next year and might be expected in the harbor by the month of April of that year. They would then be full-sized breeding fish; and, if a quarter of the 15,000 came back breeding fish, they would be sufficient to stock the coast. Dr. Stout exhibited specimens of the *Orchilla* plant from Magdalena Bay, Lower California, of the liquid dye made from the same, and of goods dyed with it. Dr. Kellogg presented specimens and "Descriptions of New Plants from the West Coast of America." Professor Davidson read a paper on "The Abrasions of the Continental Shores of Northwest America, and the Supposed Ancient Sea Levels." MAY 19, Major-Gen. J. M. Schofield, Eusebius Molera, and Professor D. McClure were elected resident members and Franz Steindachner (Vienna), a corresponding member. Dr. Blake read a paper describing the structure of the honey-bag of the honey-making ant, *Myrmecocystus Mexicanus*. Professor Davidson presented "New Problems in Mensuration." Dr. Kellogg presented "Descriptions of a New Genus and two New Species of Plants from the Pacific Coast of North America."

JUNE 2, W. W. Montague and A. W. Chase were elected resident members. Mrs. E. S. Carr read a paper by John Muir, describing "Explorations in the Great Tuolumne



Eusebius J. Molera
California Academy of Sciences Special Collections

Cañon” and containing remarks on the geology and ancient glaciers of the Yosemite region. JUNE 16, William C. Ralston was elected a life member, and George W. Lewis, Cutler McAllister, John R. Jarboe, and Agapius Honcharenko, resident members. A. W. Chase read a paper “On the Artesian Wells of Los Angeles County.” He said they had been a success only in a narrow belt extending across the plain in a direction parallel with the coast line and the mountain range. The artesian water, when struck, was at a depth of from 90 to 180 feet, and its temperature about 64°. Judge Hastings read a paper on the action of frost upon grape vines in Napa County and its apparent eccentricities in injuring some vines, while others directly adjoining and seemingly similarly situated were comparatively uninjured. All the vines were of foreign varieties; but those unaffected were trained on willow stakes two and a half feet above the ground, while the others were not so trained. JULY 7, William S. Chapman was elected a life member, F. A. Bishop, John C. Robinson, George H. Mendell, F. A. Miller, and O. Button, resident members, and J. W. Glass of Denver City, corresponding member. A paper was presented on behalf of Henry Edwards, entitled “Pacific Coast Lepidoptera No. 1. Descriptions of some new or imperfectly known *Heterocera*.” R. E. C. Stearns read a paper on “Aboriginal Shell Money.” A communication was received from Dr. Cooper “On the Law of Variation in the banded California Land Shells.” JULY 21, H. H. Moore and D. O. Mills were elected life members, and Dr. J. C. Horner de Tavel and A. Gros, resident members. The president read a second deed from James Lick to the Academy, conveying an additional lot of 40 feet front on Market Street and running back 195 feet on one side and 155 on the other side, next east of the property previously conveyed, and under the same terms and conditions as in the previous conveyance. It was dated July 11, 1873, and signed, acknowledged and delivered on the same day in presence of Samuel Hermann, D. J. Staples and John O. Earl. The president, in speaking of the new deed, said that the edifice, required to be built on the property as enlarged, would cost \$300,000, and the taxes and assessments on the property would be at least \$5,000 per annum. He considered that the conditions could not be complied with, but was in hopes that some modifications of them could be obtained from Mr. Lick, who was really anxious to benefit the Academy. With this expectation he advised acceptance of the new deed; and on motion of Dr. George Hewston, after some discussion, the Trustees were authorized to accept it. R. E. C. Stearns presented papers on shells collected at San Juanico and Loreto, Lower California, by William M. Gabb. Henry G. Hanks presented a paper on *Cuproscheelite*. Judge Hastings read a paper on “Climate Changes.” Professor Davidson presented a paper “On an Improved Telemeter for Reconnaissance, Engineering, and Military Purposes.”

AUGUST 4, David J. Staples, Solomon Goldsmith, Alfred Wheeler, Albert Williams, Jr. and Dr. Richard D. Plummer were elected resident members. Dr. Blake presented a curious specimen of polyp, or rather series of polyps on a stem, taken near Cape Roberts in the Gulf of Georgia in about seven fathoms of water. The stem, when stretched out, was about thirty inches long and from three to four inches in diameter and covered with small polyps. W. A. Goodyear read a paper “On the

Situation and Altitude of Mount Whitney,” giving an account of a trip made by M. W. Belshaw and himself on July 27, to a peak in the High Sierra supposed to be Mount Whitney and so named by Clarence King, but which was not the true Mount Whitney. He said they rode their mules to the top of the peak they ascended, and that the true Mount Whitney, discovered by Professor Brewer and party in 1864, was some six miles distant in a northwesterly direction and was evidently some 600 or more feet higher in altitude. After their return Mr. Belshaw had measured the two peaks by rough triangulation from Cerro Gordo in Owens River Valley and found the peak they ascended to be 14,033 feet and the true Mount Whitney to be 14,930 feet above sea level. AUGUST 18, Leland Stanford and Irving M. Scott were elected life members, and Charles Stephens,^{13.8} E. D. Farrington, Frederick Gutzkow, Lewis Locke, J. H. Locke, Charles L. Weller, and Edward W. Corbett, resident members. The president announced that the Academy had acquired the skin and skeleton of a sea-elephant from the coast of Lower California. Professor Davidson read a paper “On the Auriferous Gravel Deposits of California.” He said he had visited the hydraulic mines at Smartsville in Yuba county, where the auriferous gravel was 400 feet deep, lying between hills of rock that did not contain any gold. This gravel was cemented together so compactly as to require gunpowder to break it up sufficiently to be worked by the hydraulic streams; and he was of opinion that it was a part of great glacial terminal moraine. He could not see how the action of water could produce it or leave it where it was; the gravel, boulders and cement did not bear the appearance of having been formed by moving water; and, besides, the gold particles, instead of being rounded, were flattened. Nor could he see how volcanic action could account for it. R. E. C. Stearns presented a “Description of a New Genus and Species of Alcyonoid Polyp,” referring to the polyp from the Gulf of Georgia, presented to the Academy by Dr. Blake on August 4, and for which he proposed the name for the genus, or rather sub-genus under the genus of *Pavonaria*, of *Verrillia*, and for the species of *Blakei*. Dr. Blake presented a paper “On the Structure of *Verrillia Blakei*.”^{13.9}

SEPTEMBER 1, Dr. Horatio S. Gates was elected a life member, and Andrew F. Craven and John T. Brady, resident members. Among the donations was a specimen of white sandstone from Lake Merced in San Francisco County, where Professor Davidson said there was a large deposit, which was being worked and shipped east for use as a polish. He said it was found to be superior to rotten-stone for that purpose. Professor Davidson made remarks “On an Improved Leveling Rod,” devised by himself. R. E. C. Stearns spoke of the fossil tooth of a species of elephant, found on Santa Rosa Island near the crumbling remains of tusk, which he thought showed that the island was once a part of the mainland. Professor Davidson said that he had examined the partially exhumed remains of a large animal near Lake Merced, which

^{13.8} Stephenson in the handwritten minutes (*Minute Books*, CAS, Jan. 15, 1872-July 20, 1874, p. 91).

^{13.9} Lest anyone think that Academy meetings never engendered argument and criticism and that all present acted with Victorian politeness, in a letter to William Dall written on 19 Aug. 1873, Robert Stearns says of fellow Academy member James Graham Cooper, “Cooper has returned to this city and will probably inflict his presence on the Acad. occasionally — he pitched in to me a few days ago on shell matters and I told him squarely what I thought of him and his work — since that he has been quite docile.” (SIArchives, RU 7073 {William H. Dall Papers, 1865-1927}, Box 16, Folder 30.) Of course, Stearns seems to have had a crusty side too, judging from comments in other correspondence to Dall.

were supposed by some parties to belong to a whale. Steps had been taken to secure it for the museum. He also, as president, stated that the Board of Trustees had taken under advisement the difficulties arising from the terms of Mr. Lick's donations, and had addressed Mr. Lick in reference thereto and requesting a modification of the conditions, to which there had as yet been no specific reply.

SEPTEMBER 15, Louis Gerstle and Simon Greenwald were elected life members. Mr. Stearns made remarks upon the Grand Cañon of the Tuolumne River and what had been said about it, particularly in respect to accessibility, by Professor Whitney and by John Muir. Dr. A. W. Saxe called attention to a mound, composed of materials supposed to have been collected by the Indians, just south of the mouth of Laguna Creek, six miles north of Santa Cruz. It was, he said, full of implements used by the aborigines, and particularly of large quantities of chalcedony which must have been brought from a considerable distance. Dr. George Hewston called attention to the English sparrow, which had been introduced into the country. He could see no good reason for the introduction of a foreign sparrow, which had objectional habits, while we had a most valuable native sparrow that should be protected—the western white-crowned finch or sparrow. It frequented gardens, built its nest in the city, and had a very sweet song. It destroyed caterpillars and insects and could be familiarized and made a domestic bird. R. Stearns said he believed the reason why the English sparrow was preferred in the East was because it destroyed certain caterpillars and especially the canker-worm, which some native birds would not touch. A note from the president was read, stating that the Trustees had had several conferences with Mr. Lick in reference to the difficulties accompanying his deeds to the Academy. They had found him willing to make such modifications as would bring about a favorable end to the negotiations. Dr. Henry Gibbons made remarks about a proposed balloon voyage across the Atlantic. He said there was reason to believe in the existence of a strong upper current in the air from west to east, which was demonstrated by the course of high cirrus clouds. He thought, however, if a balloon voyage were attempted, it would be better to make the first experiment from the Pacific to the Atlantic. Mr. Stearns remarked that the same suggestion had been made by Professor Henry to Professor Wise, the aeronaut; but the latter had replied that, in case of accident, he preferred to fall in water rather than on land.

OCTOBER 6, William Kohl was elected a life member and Dr. J. D. B. Stillman and George S. Ladd, resident members. Henry Edwards presented a paper on "Pacific Coast Lepidoptera: No. 2. On the Transformation of the Diurnal Lepidoptera of California and the Adjacent Districts." A paper was read from Dr. J. G. Cooper in reference to certain California mollusks, *Alexia setifer* and its allies. W. A. Goodyear presented a paper "On the Height of Mount Whitney." He said that M. W. Belshaw in company with Charles Rabe had ascended the true Mount Whitney on September 6 and taken observations, from which he had computed the altitude to be 14,898.5 feet above sea level. The president reported progress in the matter of the modifications of the terms of Mr. Lick's donation to the Academy, and said that Mr. Lick had so changed the conditions of the first deed that the Academy would have several years

to raise the money for the erection of a proper building. OCTOBER 20, Andrew B. McCreery was elected a life member, and Dr. H. H. Behr, W. W. Russell, Isaac E. Davis, Philip Caduc, and C. H. Whitesides, resident members, and Stephen Powers of Sheridan, Placer County, corresponding member. Professor Davidson delivered a lecture on the discovery and progress of spectrum analysis, and H. G. Hanks explained the construction of the spectroscope and illustrated its use with experiments.

NOVEMBER 3, Joseph A. Donohoe was elected a life member, and Robert W. Andrews, E. G. Waite, Thomas Adams, and Henry Michaels, resident members. Among donations were twenty-seven volumes of the voyages of "L' Astrolabe" and twenty of the voyage of "La Bonita," in French. They were presented through Dr. George Hewston by "A Friend of the Academy," who withheld his name. Specimens of a marine worm called "Palolo" from the Navigation Islands were also presented. They were seen floating in the early morning in certain channels of those islands, as was said, on only two days in the year, and their appearance was calculated with astronomical precision by the natives. On such days they appeared in great abundance and were caught only before sunrise, for as soon as the sun shone, they disappeared to return only at neap-tide in the months of October or November. W. R. Frink, the donor, said that they were esteemed by the natives as a choice delicacy, and the "Palolo days," were occasions of festivity and thousands repaired to the channels to gather them. The worms were of all colors, and the surface of the water, at the time of their appearance, presented the most gorgeous hues. In 1872, he said, the "Palolo days" were October 23 and November 23. Mr. Stearns said that the specimens presented were too imperfect to determine their true nature; but they appeared to be allied to the Nereidae. W. A. Goodyear presented a paper "On the High Sierra South of Mount Whitney," in which he spoke particularly of the extinct volcanoes and lava flow at an elevation of about 9,000 feet on the east side of Kern River nearly opposite what are known as Soda Springs near Little Kern Lake. A paper by Henry Edwards was presented, entitled "Pacific Coast Lepidoptera. No. 3. Notes on some Zygænidae and Bombycidae of Oregon and British Columbia; with Descriptions of New Species." The minutes of the Board of Trustees, accepting a new deed from James Lick in place of the first deed made by him were read, and then the new deed. This instrument was dated, signed, acknowledged and delivered on October 3, 1873. It recited the first deed for the lot 80 feet front on Market Street and proceeded to state that, for the purpose of relieving the Academy "from all the terms, provisions and conditions contained in said deed and all disabilities, if any exist," the same property was conveyed; but with substantially the same express reservations and conditions contained in the first deed, except that the time for raising the money and erecting the building contemplated as in the first deed was extended to ten years from date; and then, if the Academy violated or failed to fulfill any of the terms and conditions, the property should go to the State of California, with the request and hope that the law-making power would devote it to the uses and purposes for which the California Academy of Sciences had been organized. This deed had been accepted by the Board

of Trustees and placed on record on October 14, 1873. On motion of Dr. George Hewston the deed and the action of the Board of Trustees were accepted and approved.

NOVEMBER 17, L. L. Robinson was elected a life member and William Harney, Thomas H. Blythe, M. W. Belshaw, Dr. G. L. Murdock, Newton Booth, William Murray, Joseph Perkins, and William H. Moor, resident members. L. L. Robinson was elected a life member and W. M. P. Martin and S. W. Williams, both of Peking, China, were elected corresponding members. Among the donations was granulated beet sugar made by the Sacramento Beet Sugar Company, and also photographs of hieroglyphics cut on thin blocks of wood from Easter Island. W. H. Dall presented a paper "On Further Examinations of the Amaknak Cave, Captain's Bay, Unalaska." Dr. Blake presented a paper "On Nickeliferous Sand from Fraser River," and I. C. Wood on "On the Spontaneous Combustion of Hydro-Carbon Vapors." J. B. McChesney called attention to "Shell Mound" near the Bay shore a few miles north of Oakland in Alameda County, which he described as about 175 feet in diameter, with sides sloping at about 45 or 50 degrees, composed of shells and other debris covered with shrubbery and with its apex somewhat hollowed. A discussion ensued as to whether the bones found in shell-mounds were of prehistoric age. D. J. Staples said that in 1849-1850 he had witnessed, on the Mokelumne river 14 miles northeast of Stockton, the burial of several Indians who had died from the effects of bad whiskey. They were placed in the ground, near the tents or houses occupied by the tribe, and buried in a sitting posture, surrounded with their personal property, consisting principally of beads and trinkets. He had also seen other Indian burials of the same kind; and in his opinion the reason for their being so near the habitations of the living was to be found in the indolence and filthy habits of the Indians, and perhaps to some extent in their desire to have the graves near by so as to visit them often. He had examined a number of mounds on the upper Sacramento and American rivers, and thought they had been thrown up for the purpose of raising their brush huts above the encroachments of the spring floods. He felt confident that scientific men would not discover in the Indian mounds of California anything to connect them with a prehistoric age.

DECEMBER 1, Dr. C. M. Hitchcock, having paid the required fee, was enrolled a life member, and Henry Kimball, W. N. Lockington, S. P. Carusi, J. R. Scupham, and Dr. E. J. Fraser were elected resident members. Frank F. Taylor resigned his membership. Professor Bolander presented a paper of "Remarks on the Genus *Lilium*." DECEMBER 15, the death of Professor Louis Agassiz, who was an honorary member of the Academy, having been announced, it was resolved that an appropriate memorial meeting should be held; and a committee was appointed to make the proper arrangements. J. H. Stearns was elected a life member, and Dr. F. Hiller, P. C. Lander, Daniel Swett, John Muir, John Lewis, Jason Springer, and Gen. B. S. Alexander, resident members. Dr. Blake read a paper "On the Puebla Range of Mountains" in the northern part of Humboldt County, Nevada. Professor Joseph LeConte read a paper "On the Great Lava Flow of the Northwest, and on the Structure and Age of

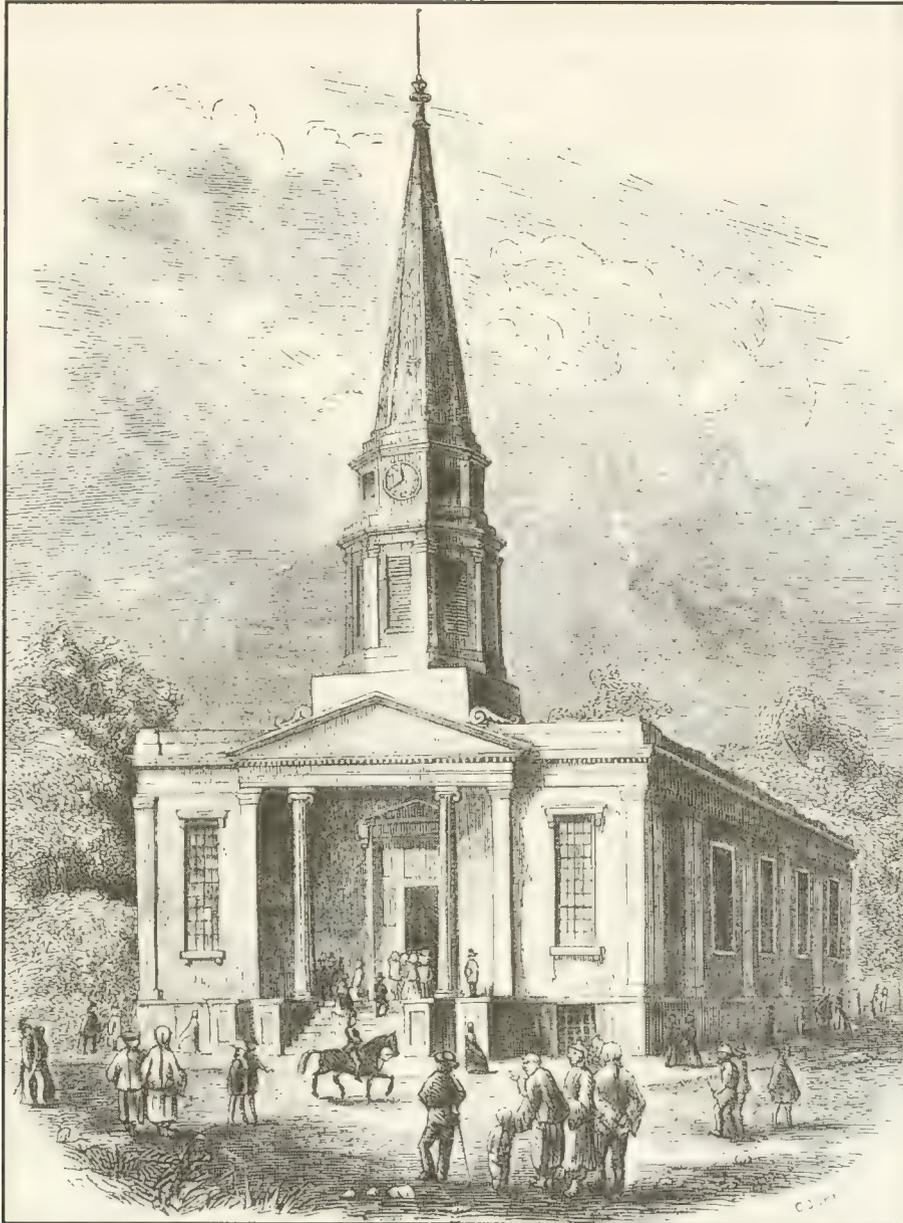
the Cascade Mountains.” DECEMBER 22, a special meeting was held in Mercantile Library Hall as a tribute to the memory of Professor Louis Agassiz, born May 28, 1807, died December 14, 1873. Addresses upon his life work, his character and influence, were made by Professor Davidson, Professor D. C. Gilman, Professor Joseph LeConte, Rev. Horatio Stebbins and Rev. W. A. Scott; and papers were read from R. E. C. Stearns and Henry Edwards. On motion of W. H. Dall, a series of resolutions of respect to the memory of deceased were adopted, one of which was “That to Professor Agassiz and the pupils whom he impressed by his teachings and example we largely owe the adoption of that wise liberality, exhibited by the government and by many private individuals, in matters relating to scientific exploration and research, which is so justly the pride of American citizens.”^{13.10}

^{13.10} As an interesting aside, Dall was not always so generous in his opinion of Agassiz. Agassiz was an avowed creationist, and in December of 1872, Dall wrote a letter to Joseph Henry in which, among other matters, he included the following comment on Agassiz’s science, “. . . I see that you were not at Cambridge, when Prof. Agassiz had been fulminating against the evolutionists in a style which is forcible if not convincing. As he has not kept pace with the progress of science for the last fifteen years, I do not know that his opinion is very valuable.” (Dall to Henry, Dec. 29, 1872. SIArchives, RU 26 {Office of the Secretary}, Incoming Correspondence, 1863-1879, vol. 132, pp. 477-478.)

Chapter XIV: Year 1874

The attendance of members during the year 1873 had been large, usually from 30 to 45. Following two special meetings of the Trustees, one on January 2nd and a second on the 3rd, to discuss the offer by Mr. Newhall to rent the First Congregationalist Church to the Academy, the regular annual meeting of 1874 was held on JANUARY 5. There were 64 present. Matthew Turner, Levi M. Kellogg, and A. P. Elfelt were elected resident members. The president delivered his annual address, showing the progress of the Academy during the past year; its large additions to library, museum and membership; its gratifying condition at that time, and its prospects for the future. The secretary reported a total membership of 472 persons, including all classes. The treasurer reported the receipts for 1873 as \$7,356.15, and the disbursements as \$2,823.43, leaving \$4,562.72 in the treasury. Reports of the librarian and director of the museum showed their departments in fair condition, but strained for want of room. The annual election resulted in the choice of Professor George Davidson as president; Gen. John Hewston, Jr., vice-president; R. E. C. Stearns, corresponding secretary; Charles G. Yale, recording secretary; Elisha Brooks, treasurer; Dr. H. H. Behr, librarian; H. G. Bloomer, director of the museum; and Gen. D. D. Colton, George E. Gray, Oliver Eldridge, R. E. C. Stearns, Henry Edwards, Thomas P. Madden, and Dr. A. B. Stout, trustees. There were opposition candidates for the offices of president, vice-president, corresponding secretary, librarian, and two places on the Board of Trustees, for which, as will be noticed, seven persons were elected in addition to those who held *ex officio*. A vote of thanks was tendered to Henry M. Newhall, proprietor of the old First Congregational Church building on the southwest corner of California and Dupont Streets, for his liberal offer to lease the same to the Academy for a term of years at \$250 per month, complete with a reverse donation of \$100 a month to the Academy during the time the Academy might continue to occupy it; and, on motion, the rules were suspended and Mr. Newhall elected a life member.

JANUARY 19, George W. Smiley and L. Livingston were elected life members, and Judge S. S. Wright, W. H. L. Barnes, Dr. A. S. Hudson, Dr. Gustav Eisen, August Drucker, Charles Schultze, Everard Stiele, E. E. Haft and Almarin B. Paul, resident members. Among the donations was a large collection of scientific books, about two thousand in number, from Professor Henry of the Smithsonian Institution at Washington, for which a vote of thanks was tendered.¹⁴¹ A. W. Chase read a paper on "The Auriferous Sands of Gold Bluff in Humboldt County," illustrated with drawings and sections of the locality. His conclusions were that all the gold among the sand and



First Congregational Church, home to the California Academy of Sciences 1874-1891 (engraving from Soulé, 1855)

gravel of the beach there came from the bluff, and that it was only after a continuous succession of ocean swells, cutting the beach at an angle that gold could be found in the sand in paying quantities. W. H. Dall presented papers entitled “Catalogue of Shells from Bering Strait and the Adjacent Portions of the Arctic Ocean, with Descriptions of Three New Species,” and “On New Parasitic Crustacea, from the

^{14.1} On November 29, 1873, George Davidson wrote Joseph Henry, “The Trustees of the Cal. Acad. Sciences having learned that the Smithsonian Institution has a large number of duplicate volumes of scientific books, reports, and proceedings of learned societies, make an earnest appeal to you to donate the same to the California Academy of Sciences as the nucleus of a scientific library for this coast . . .” Three weeks later, on December 24, 1873, Davidson again wrote to Henry, “I have your letter of the 12th and 15th advising me that you had shipped, as a present to the California Academy of Sciences, fifteen boxes of books consisting of all the duplicates of publications . . . in the possession of the Smithsonian Institution . . .” (Davidson to Henry, SI Archives, RU 26 {Office of the Secretary}, Incoming Correspondence, 1863-1879, vol. 136, p. 232, vol. 142, p. 1.)

N.W. Coast of America." The president announced that the Board of Trustees had taken a lease from Mr. Newhall of the old First Congregational Church building on the southwest corner of California and Dupont streets and made suitable arrangements for moving into it; and that the next meeting of the Academy would be held there. He also announced the appointment by the Board of Trustees of the following curators: Dr. George Hewston of general zoology; W. H. Dall, ichthyology; W. G. W. Harford, conchology; William G. Blunt, ornithology; Henry Edwards, entomology; W. A. Goodyear, paleontology; and Theodore A. Blake, mineralogy; also of Professor Davidson, R. E. C. Stearns, Charles G. Yale, Henry Edwards, and Dr. Kellogg as committee on publication.

FEBRUARY 2, Albert H. Harris was elected a life member, and A. S. Hallidie, A. D. Smith, and W. M. Wherry, resident members. Dr. Blake exhibited the case of a human skull that had been brought up with dirt from the 400-foot level of the Ophir Mine on the Comstock Lode, Nevada. He thought it had been carried down into the mine with dirt from a neighboring ravine, which at an earlier period had been used to fill up former workings. But, independently of its history, the skull presented some very interesting features. The presence of a large interparietal bone, the heavy superciliary ridges, the very low forehead, the great development of the posterior portion of the skull, the peculiar position of the socket for the articulation of the lower jaw, and the great development of the processes for the attachment of muscles showed a form which, in his opinion, was more removed from that of any existing race of human beings than that of any skull that had heretofore been found. Dr. Blake also called attention to a paper "On Nickeliferous Sand from Fraser River," read by him on November 17, 1873, and said that the mineral then described by him as magnetic oxide of nickel, had been pronounced by Professor Walcott Gibbs a mineral never before discovered; and he would therefore propose for it the name of "Fraserite."

FEBRUARY 16, George W. Beaver, George Oulton, and G. Niebaum were elected life members, and Dr. J. C. Moore, John C. Merrill, Carlton Newman, Thomas B. Bishop, Frederick Mason, John R. Sharpstein, J. E. Squire, H. F. Cooper, Emanuel Newman, F. C. Du Brutz, and James S. Gillam, resident members. Professor Davidson read a paper "On Improvements in the Sextant." A paper by Henry Edwards was presented, entitled "Pacific Coast Lepidoptera, No. 4. Descriptions of some new Genera and Species of Heterocera." Professor Davidson exhibited maps and charts showing soundings in the Pacific Ocean made by Captain George E. Belknap of the U. S. Steamer Tuscarora in 1873 for a telegraph cable between California and Japan. It appeared from them that the bottom of the ocean, going west from the Straits of Fuca [Juan de Fuca {Eds.}], sloped gradually to a depth of 100 fathoms and then made a sudden descent, which reached a depth of 1,400 fathoms at a distance of 150 miles from the coast. The temperature of the water at the greatest depth on this line of survey was 34 degrees, Fahrenheit. Continuing the surveys down the coast to San Francisco, it appeared that the sudden descent of the bottom of the Pacific to a great depth was continuous along the entire line, varying from twenty to seventy miles out. Opposite San Francisco the great bench was reached a short distance off the Faral-

lones, where the bottom suddenly descended to a depth of two miles. Off Cape Foulweather in Oregon, the bottom descended precipitately from 300 to 1,500 fathoms, and then the plateau continued westward for hundreds of miles, and comparatively as level as a billiard table. Off Cape Mendocino a depth of 2,200 fathoms was reached eighty miles from the shore. Thirty miles off the Golden Gate the bottom was reached at 100 fathoms; at fifty-five miles it had descended to 1,700 fathoms; and at one hundred miles out the enormous depth of 2,548 fathoms had been measured without reaching bottom.

MARCH 2, Anson G. Stiles, Frederick Castle, and Charles Troyer were elected life members, and James Behrens, C. E. Gibbs, John McHenry, Jr., Walter Van Dyke, Carlton W. Miller, Edward Steele, James McKinley, William H. Sharp, and Josiah Belden, resident members. Among the donations was a set of the "Flora Braziliensis," in thirty-four volumes of Professor Louis Agassiz presented by Alexander Agassiz in accordance with the expressed wish of his deceased father. W. H. Dall presented a paper, entitled "Notes on the Avifauna of the Aleutian Islands, Especially Those West of Unalashka." R. E. C. Stearns read a paper, a translation, describing the excavation of an ancient vessel of the Viking period in the parish of Tane, Norway. Judge Hastings read a paper on the "Creeping of Railroad Tracks." Professor Davidson recurred to the subject of the depth of the Pacific Ocean, and said that Professor Bache had determined it in 1855 from observations on the great earthquake waves of December, 1854. The rate of motion of the crest of the wave from Simoda to San Diego was 370 miles per hour, or 6 miles per minute. The duration of the oscillation on the San Diego path was 31 minutes; on the San Francisco path 35 minutes. From this data it appeared that the length of the wave on the San Diego path was from 186 to 192 miles, and on the San Francisco path from 210 to 217 miles. A wave 210 miles in length would move with a velocity of 6 miles per minute in a depth of 2,230 fathoms and a wave of 217 miles in length would move with a velocity of 6.2 miles per minute in a depth of 2,500 fathoms. By a similar calculation the average depth on the San Francisco path was found to be 2,100 fathoms.

MARCH 16, James Whartenby was elected a life member and Edwin Merrifield, John H. Bostwick, G. W. Dunn, Benjamin Roop, and Lovell Squire, resident members. R. E. C. Stearns read a paper, entitled "Remarks Suggested by Dr. J. E. Gray's Paper on the 'Stick Fish' in 'Nature,' Nov. 6, 1873." The object of the remarks seems to have been to take Dr. Gray to task for calling what Mr. Stearns, in a paper read before the Academy on August 18, 1873, had named *Verrillia Blakei*, an *Osteocella septentrionalis*. Dr. Cooper presented a paper on "The Influence of Climate and Topography on Our Trees." He attributed the scarcity of trees and small number of species in the immediate vicinity of San Francisco, as compared with those of the Russian River region on the north and the Monterey region on the south, to the prevalence during the dry season of the strong winds blowing in through the Golden Gate. The wind affected the growth of trees in the San Francisco region, and in other regions where there were "wind gaps" more than soil or altitude and accounted for the phenomenon of trees growing on the sheltered sides of hills, which were bare on



The members of the "Arthrozoic Club," a group of early California entomologists and Academy members [*].
 (Left to right) James John Rivers*, Albert Koebele, George Washington Dunn*, James H. Behrens*, Carl (Charles) Fuchs*, Thomas L. Casey*, and William G. W. Harford.*
 E. O. Essig Collection,
 California Academy of Sciences Archives

the exposed sides. There were, he said, only about forty species of trees within sixty miles of San Francisco. It was to a considerable extent different with shrubs, which were not so much affected by the winds. But as to the distribution of trees, the course and force of the prevalent winds were the chief causes of the local peculiarities observed. He divided the trees growing near San Francisco into five groups, in the first of which he placed 25 species as growing within ten miles; in the second, ten more growing within twenty miles; in the third, eight more growing within thirty miles; in the fourth, six more growing within forty miles; and in the fifth, one more growing within sixty miles. Dr. Blake submitted a number of amendments to the constitution, relative to the membership of the Academy and apparently designed to prevent its interests from falling in unscientific hands. They were referred to the Board of Trustees.

APRIL 7, Manuel Aspiroz, Rev. Frederick E. Shearer, William C. Gibbs, Ferdinand Lantern, and George W. Dietzler were elected resident members. Dr. Behr exhibited and described a species of mangrove, *Avicenia officialis*, found in New Zealand, which he thought adapted to this state. It would grow in the sea as far out as low water mark, and was used in New Zealand to protect plantations against tides. He said the seeds were never dormant, but began to germinate as soon as mature, whether in earth,

air or water; and he added “they always grow where not wanted, and do not always grow where they are wanted.” Judge Hastings read a paper on the “Correlation of Forces and the Indestructibility of Matter.” Charles D. Gibbes presented a paper on “Reclamation of Swamp Lands.” W. H. Dall presented a paper, entitled “Notes on Some Tertiary Fossils from the California Coast, with a List of the Species Obtained from a Well at San Diego, California, with Descriptions of two New Species.” President Davidson, being about to be temporarily absent, wished to place himself on record as opposed to the amendments of the constitution as proposed by Dr. Blake calculated to create a class of “Fellows of the Academy” composed of scientific men only. A discussion followed; and the result was the adoption of a resolution authorizing the Board of Trustees to select such assistance from the members of the Academy as it thought proper and prepare a new constitution, to be presented within six months from date. APRIL 20, Dr. V. J. Fourceaud read a paper, entitled “General Scientific Hypothesis, as an Introduction to a work on Evolution of the Organic and Inorganic World.” Dr. A. S. Hudson read a paper “On Shell Mounds in Oakland, California.” He said there were two tumuli on the Bay shore about two miles north of the City Hall in Oakland, one some 300 feet in diameter at base; and the other about 240 feet in diameter at base, about 35 or 40 feet high, and with a truncated summit 150 feet in diameter. From the north side of the latter ran a kind of pan-handle 270 feet long and originally 5 or 6 feet high. He quoted Abbe Domenech to the effect that “Indians do no special work for mere whim or pastime – they have a definite object in their labor,” and he thought that this mound bespoke a similar sentiment. It conveyed to his mind the idea that human hands had given it existence and figure for a purpose. Dr. Henry Gibbons called attention to some potatoes, which had grown from last year’s crop and come to maturity this year, without throwing up any shoots above ground. He said there were in his garden a number of different-sized potatoes of recent growth without stems or with very little stems. How they were produced was an interesting question in vegetable economy, if not in practical agriculture. Dr. Blake read a communication in reference to his proposed amendments to the constitution in answer to Professor Davidson’s remarks about them, and in substance asserting that the Academy was growing unscientific. A discussion ensued with the result that a committee consisting of Judge Currey, Judge Hastings, Dr. Henry Gibbons, G. W. Smiley, and Dr. Fourceaud, was appointed to investigate and report upon the subject.

MAY 4, Robert C. Rogers, Solomon Heydenfeldt, Jr., William C. Randolph, William T. Reilly, Dr. W. J. Younger, G. W. Anthony, Stephen H. Phillips, Benjamin B. Redding,^{14,2} T. J. Lowry, J. Stephen Jones, William Brooks, and Wellington C. Burnett were elected resident members. Messers. Currey, Hastings and Gibbons, of the committee on Dr. Blake’s statements in reference to the membership of the

^{14,2} For a biographical sketch of Academy member and Trustee Benjamin Redding, sometime journalist, state legislator, California Fish and Game Commissioner, mayor of Sacramento, and land agent for the Central Pacific Railroad, see Lois Ward, Benjamin Bernard Redding, *The Covered Wagon*, 1951, pp. 33-36; see also, Renée Renouf, The Greatest Bohemian of All: Joseph D. Redding, *The Californians*, 12(3):11-22 [Benjamin Redding, pages 11-12]; Virginia Lawrence, *How the Grinch Stole Redding*, 1986, 10 pp. (unpublished ms; copy in Archives, California Academy of Sciences). (continued next page)

Academy, presented a majority report, and Messrs. Smiley and Fourgeaud, a minority report. They seemed to be nearly the same and to the effect that the interests of the Academy were not suffering from the character of its membership; but the majority report expressed high appreciation of Dr. Blake's scientific attainments, while the minority report closed with a recommendation that no further action should be taken in the matter. A lively discussion as to the two reports followed, with the result that both were accepted and approved. Judge Hastings read a paper "On the Alleged Mysterious Occurrences at the Clarke Mansion in Oakland," which apparently were of the so-called "spiritualistic" kind. Dr. V. J. Fourgeaud read a continuation of his paper, presented at the last meeting, on a "General Scientific Hypothesis as an Introduction to a Work on Evolution of the Organic and Inorganic World." Rev. Albert Williams and H. G. Bloomer took exceptions to some assertions in Dr. Fourgeaud's paper. A discussion ensued, which was becoming lively, when a motion to adjourn was made and carried. MAY 18, Rev. E. L. Greene and Robert T. Van Norden were elected resident members. Among the donations was a valuable botanical collection including plants from the Cape of Good Hope and from Europe, all identified and catalogued, presented by Professor Bolander. Dr. Fourgeaud read a paper on "Some of the Relations of Matter and Space." He also read a paper in reply to the exceptions taken by Rev. A. Williams and H. G. Bloomer to certain statements in his paper on evolution, read at the previous meeting. Judge Hastings read a paper "On Electrical Phenomena on this Coast." Shells of transplanted Eastern oysters, covered with the spat of young oysters, having been presented for inspection, G. R. Throckmorton, State Fish Commissioner, stated that he had examined them and found the spat to be of the small California native oyster. He asserted that the spat was only found on Eastern oyster shells planted near beds of native oysters. The Eastern oyster, he said, had not developed a tendency to increase in California waters. It was

14.2 (*continued*) In his dual capacity as land agent for the railroad, and a fish commissioner, Redding carried on an interesting correspondence with Spencer Fullerton Baird at the Smithsonian Institution. For example, Baird wanted to obtain free rail transit of packages bound from San Francisco to Washington, and Redding wanted to import live fish for stocking California's rivers and coast. The *quid quo pro* merge in a letter dated June 16, 1874, in which Redding writes to Baird that the Central Pacific management would continue its policy of shipping boxes bound for the Smithsonian without charge. However, Redding observed that unless Baird could get other roads to do the same, the most that could be waived would be the charges from San Francisco to Ogden, Utah, where the railroad changes from the Central to Union Pacific. He cautioned that if the Union Pacific and the Eastern roads were not willing to waive the charges, then the arrangement with the Central Pacific would be of little value. He noted that shipping costs from Ogden to Washington DC were greater than from San Francisco to the East Coast because local rates are charged from Ogden to the East Coast, which are greater than through rates, which are charged on freight originating in San Francisco. (Redding to Baird, SIArchives, RU 52, Assistant Secretary, 1850-1877, Incoming Correspondence, item 422-423.) This early arrangement for waiving shipping charges was short-lived, however, because in 1876, faced with charges in the State Legislature of favoritism toward certain institutions, the Central Pacific was forced to change its policy (Redding to Baird, SIArchives, RU 52, vol. 203, pp. 96-97). Also, another problem emerged which related to the demand for immediate payment from some of the lines beyond those of the Central and Union Pacific and it was only because of the intervention of Governor Leland Stanford, that it was possible for Central Pacific cars with Smithsonian-bound items to go as far as Chicago. From there, Redding warned, Baird would have to complete arrangements on his own.

With respect to fishes, evidently Redding had good luck, for he wrote to Baird in regard to a current shipment that "Mr. Stones has arrived safely with his car of new varieties of fish . . . The shad were lost at Laramie in consequence of an excess of alkali in the water — all the lobsters were lost, except four which arrived in not a very healthy condition. All the others, some eighteen varieties, came in perfect order and have been turned into (as we hope) appropriate places." (Redding to Baird, SIArchives, RU 52, Assistant Secretary, 1850-1877, Incoming Correspondence, item 422-423.) Additional correspondence relating to the import of fishes and the export of fish products, mostly salmon eggs, is included among the Redding-Baird correspondence (SIArchives, RU 52).



Benjamin Barnard Redding
 California Historical Society
 Photograph by Carleton E. Watkins. FN-30570.

short-lived here becoming very fat and dying within a year after being placed in the Bay – in which latter assertion he made a very great mistake. He pronounced the experiment of transplanting Eastern oysters in the Bay – an industry which has since become large and important – up to that time a failure. Dr. Blake offered a paper explaining his position in reference to his proposed amendments to the constitution and designed, as he said, to set himself right before the Academy as he thought his motives and representations had been misunderstood. Objections were made that the matter had been disposed of, and the paper was ruled out of order. Dr. Blake again called up the subject, and the objections were withdrawn; but the communication was found to be lengthy and, after a portion had been read, it was, on motion of Judge Hastings, laid on the table; and on motion of Dr. Gibbons the Academy adjourned.

JUNE 1, John H. Saunders, G. Parker Cummings, and William Dutch were elected resident members. T. J. Lowry presented a paper on an “Improved Method of Observing Altitudes of the Sun at Sea.” He proposed, by the attachment of an extra index glass to the ordinary reflecting instruments used for observations of the sun, to duplicate the image, and claimed that thereby the instrument would not only eliminate

its own errors, but also those of observations, as well as those due to sudden atmospheric changes; and in fine become an instrument theoretically almost perfect. He added that the theory of nautical astronomy had reached a point of perfection that only awaited the determination of the true dimensions of the solar system – which, it was hoped, the next Transit of Venus would give – to make it all that could be wished.

JUNE 15, Addison E. Head was elected a life member and Charles T. Dake, and James W. Winter, resident members; J. G. Lemmon and H. W. Howgate were elected corresponding members. James Lick presented fragments of the flag which waved over Fort McHenry during its bombardment on September 14, 1814 and gave rise to the “Star Spangled Banner.” The fragments had been given to Mr. Lick by Commodore George Henry Preble, U.S.N., then Commandant of the Naval Station at Philadelphia. Charles L. Weller presented one hundred volumes of books, chiefly government publications. Judge Hastings read a paper “On the late alleged manifestations in Oakland,” and Dr. Fourgeaud [Forgeaud as published in the newspaper account of the meeting {Eds.}] a paper on evolution, both being in continuation of papers previously read by them. Professor Davidson called attention to the munificence of James Lick’s gifts to science, and particularly those designed to establish in California the largest and most complete astronomical observatory in the world, and to the unbounded admiration of his generosity expressed by scientific men in the East. He also stated that Mr. Mumford of the Telegraph Company had shown him an instrument for the transmission of unusual sounds along a telegraph wire, and that he himself had heard distinct musical sounds thus transmitted a distance of 800 miles. Professor Edward S. Morse was introduced and made an address. He congratulated the members on the prosperity of the Academy, comparing it, in respect to its means, with similar bodies in the Eastern States. He said, “In the East we are familiar with your publications. I wish to tell you that when the first ‘*Proceedings*’ came along, we were somewhat amazed and thought that some young men were starting it, and the Society would only last a year or so. From year to year you kept on; and we saw that the papers you published showed reasonable research. We saw that you did not decay and were getting on; but we never dreamed that you would get an amount of money more than that of all the Eastern Societies put together.” He gave a sketch of the struggles of several of the scientific societies in the East and said that the sum given to the Academy by Mr. Lick exceeded all the funds of all the natural history societies in the Atlantic states. Mr. Lick had gone ahead of Mr. Peabody as far as science was concerned; for Mr. Peabody had endowed educational institutions liberally but gave only about \$300,000 to purely scientific societies. The position occupied on the globe of the California Academy, he said, was a fine one, as it was the only endowed society on the Pacific Ocean and it had plenty of means and a large area for investigation. In his closing remarks, Professor Morse said, “Science has changed a great deal in the last ten years. Our old proceedings of societies were merely technical; now they are broader. As your President [George Davidson] said in his last report, ‘There is no money in this country for individual pursuits.’ In Europe this is done, but not here. There large sums are appropriated to assist Professor Blank in his investigations. In

this country our naturalists are poor. So in a society they must label and paste and do miscellaneous work, and get no time for investigation. The primary object of your Society is to furnish original investigators. Now you have ample funds to employ specialists, and you must impress upon them that they must give the results of their investigations to you. Do not let the bread-and-butter idea predominate. There are other things for men to do besides eat and drink and make money.”

The deaths of Col. Leander Ransom, former president of the Academy, and Adolphe J. L. Quetelet, an honorary member, were announced. President Davidson made remarks at some length in reference to the prominent position Leander Ransom had occupied in the Academy, having attended the second preliminary meeting on April 11, 1853, and been an active and efficient member ever since. He had been president from January 1855, to January 1867, a period of eleven years.

JULY 6, William B. May and C. H. Wakelee were elected resident members. A number of photographs of hieroglyphic inscriptions found on Easter Island and several letters from Thomas Croft in relation to them and the natives of the island were received. Henry Edwards presented a paper entitled “Pacific Coast Lepidoptera, On the Earlier States of Some Species of Diurnal Lepidoptera.” A. W. Chase of the U.S. Coast Survey presented a paper “On the Use of Giant Powder [dynamite] for Obtaining Specimens of Fish at Sea.” He related various instances in which he had practiced this method of killing or maiming large numbers of fish off Santa Catalina Island. Henry Edwards published a memorial in memory of George Robert Crotch of Philadelphia. JULY 20, E. Stevens was elected a resident member. Among the donations was a bottle of sonorous sand from the Hawaiian island of Kauai, together with a letter in relation to the sands from W. R. Frink. He said that the sand drift was at the southwesterly end of the island and was about sixty feet high. At the extreme south end, if two handfuls were slapped together, a sound was produced like the hooting of an owl, more or less sharp as the motion was quick or slow. Sitting down and giving the sand a quick circular motion with the hand produced a sound like the heavy bass of a melodeon. Sliding down the sand produced a sound, which accumulated as the descent was made until it was like distant thunder. But the greatest sound was produced by one man rapidly dragging another by the legs down the incline and carrying with them as much sand as possible when the sound was “terrific and could have been heard many hundred yards distant.” Professor Davidson communicated the general results of the recent survey by Commander Belknap of the U. S. Steamer Tuscarora on the proposed southern route for a telegraph cable from this coast to Japan. Henry Edwards presented a paper entitled “Pacific Coast Lepidoptera, No. 6. Notes on the Earlier Stages of *Ctenucha Multifaria*, Boisduval.” Mr. Stearns said that the Board of Regents of the University of California has extended an invitation to Academy members to attend the University’s commencement exercises. The president announced that the Board of Trustees had been aided in drawing a new constitution by Samuel M. Wilson, Judge Currey and R. C. Harrison, and that it would be presented at the next meeting.

AUGUST 3, Cornelius Cole, Professor Thomas Guerin, James Faulkner, and Carl

I. Schneider were elected resident members. The new Constitution and By-Laws were reported from the Board of Trustees and, after considerable discussion, were adopted with only one dissenting voice. The new constitution, in so far as it differed from the old one, provided that the members of the Academy should consist of resident, life and honorary members, leaving out corresponding members. When a person was proposed for membership, his name should be posted in a conspicuous place in the Hall of the Academy for at least one month. It was then to go before the Council; and if that body reported favorably, the person was to be balloted for by the Academy but no one was to be elected during the month preceding the annual election. Every person elected, except honorary members, was to pay his initiation fee and first quarterly dues within one month after receiving notice of his election, and then sign the constitution. If a person were not reported upon favorably by the Council, or if he were rejected by the Academy, his name might be again proposed at any time after the expiration of one year from the date of his rejection. Honorary members could only be elected at the annual meetings and must have been proposed by the Council not less than two months before such meeting and posted for that length of time. To elect required four-fifths of the members voting; and there was to be no election unless twenty votes were cast. The Council was to have the privilege of nominating for election to life membership such persons as had rendered valuable services to the Academy, such elections not to exceed two annually. Correspondents of the Academy might be appointed by the Council for one year and should have the privilege of attending the meetings, visiting the library and museum, and reading and communicating papers. The business of the Academy was to be managed exclusively by the resident and life members, from whom the officers of the Academy should be elected. The number of honorary members should not exceed fifty, of whom thirty should be resident and citizens of the United States, and twenty of foreign countries.

The Board of Trustees was to consist of seven members, to be elected annually, who were to have charge and management of the estate and property of the Academy and transact all affairs relative to the temporalities thereof. The old provision for *ex officio* Trustees was done away with. The new Board should require bonds of the treasurer, librarian and director of the museum and select some bank as a depository of the funds of the Academy. They were to have authority to loan surplus funds, but no loan should be made except the same should be secured by mortgage of unencumbered real estate in the City and County of San Francisco, the value of which, exclusive of all improvements should in the judgment of the Trustees be twice the amount of the loan, or by a pledge of bonds of the State of California or of the City and County of San Francisco, whose par value should be double the amount of the loan.

The officers of the Academy were to remain the same as before, except that there was to be a first and second vice-president. The officers had to be resident or life members for three years before their election. The officers, except the Trustees, were to constitute the Council. Provision was made for a nominating on the first Monday of December from members not holding office. The ticket for the succeeding year

had to be presented on the third Monday of December and thereafter posted. Other tickets might be presented, apparently at any time before the election was held. The initiation fee was fixed at \$5 and the dues at \$3 per quarter. Payment of dues consecutively for twenty-five years entitled a resident member to life membership. If a paper were accepted for publication the author was to be entitled to fifty printed copies. Medals and prizes might be established and the means of bestowing them accepted by the Academy on the recommendation of the Council. The By-Laws were substantially the same as before.

AUGUST 17, R. E. C. Stearns exhibited specimens of "Chinese water-nuts," sometimes called water chestnuts, *Trapa bicornis*, an important article of food in China and Japan, and held in high estimation in India, and suggested an attempt to cultivate it in California. Dr. Blake presented a paper "On the Structure of the Sonorous Sand from Kauai." He had examined the sand under the microscope and found it composed of small particles of coral and apparently calcareous sponges. The grains were all more or less perforated, with small holes, mostly terminating in blind cavities. When the grains were set in motion, the friction against one another caused vibrations in their substance, and these vibrations being communicated to the air in the cavities produced the sounds. The accumulated sound of millions of these resonant cavities might well swell up so as to resemble the thunder to which it had been compared. Professor Thomas Guerin presented a paper on "Canals depending on Tide Water for a Supply, or the Supply of Tide Water to Canals," based upon a survey he had made of a canal proposed to connect the waters of the Bay of Fundy with those of the Gulf of St. Laurence. Professor Davidson read a paper "On the coming Transit of Venus." Mr. Stearns made some remarks on the death of Dr. Ferdinand Stoliczka of the Geological Survey of India.

SEPTEMBER 7, B. F. Sherwood was elected a life member and Charles Wolcott Brooks, James A. Waymire, Frank P. McLean, Abel T. Winn, Frederick T. Newberry, Charles Sonntage, Charles M. Blake, and Dr. B. R. Swan, resident members. Henry Edwards presented papers on "Pacific Coast Lepidoptera, No. 7. Descriptions of Some New Species of Heterocera," and "Pacific Coast Lepidoptera, No. 8. On the Transformations of Some Species of Heterocera, Not Previously Described." Stephen Powers presented a paper on "Aboriginal Botany." In it, he said, he included "all the forms of the vegetable world which the aborigines used for medicine, food, textile fabrics, ornaments, etc." He mentioned seventy-three vegetable substances, and said he was indebted to Professor Bolander for the identification and scientific names of many of them. In each case he gave the Indian name and the manner in which the plant was used. SEPTEMBER 21, W. N. Lockington presented a paper "On the Crustacea of California." Judge Hastings read short papers entitled, "Our Thunder Storms"; "On Transmission of Musical Sounds by Telegraphy"; "On Katie King and the Spiritualistic Theories"; "Questions to the Eminent Scientist, A. R. Wallace"; and "On the Creeping of Rails on North and South Railroad Tracks." Dr. J. G. Cooper made remarks "On California Coal." He said that the true coal of the Carboniferous rocks in other countries was formed from the tree-ferns, algae, and other plants of

low organization; but none such had been found on this coast. From the fact that our coal contained remains of conifers and dicotyledonous trees, geologists had long considered it only lignite; but practically that of Vancouver Island, Bellingham Bay, Coos Bay, and Monte Diablo was as good as much of the older coal. He said there were numerous strata of pretty good quality in the Coast Range, but too thin to pay; none would pay if less than two feet thick and in most places a thickness of four feet was necessary, if the coal was no better, nor more accessible, than that of Monte Diablo. Nearly all the strata in the Coast Range were either too thin or too full of sulphur or other impurities to be valuable. Resolutions of respect to the memory of Hiram G. Bloomer were presented by the Board of Trustees, read, and adopted. They spoke of the deceased as one honored for his gentle and kindly nature; respected for his principles, of truth, worthy of admiration for his enthusiastic love of science, and his great desire ever to impart information. On motion of Professor Bolander, a committee was appointed to examine his library and herbarium with a view to purchase.

OCTOBER 5, Henry F. Teschemacher, having paid the required fee, was enrolled as a life member. Dr. Cooper presented a specimen of orange-red fungoid growth in red sap, exuded from partially burned willow trees, and remarked that though it would be supposed, according to scientific belief that the spores of this lichen or fungus merely found a suitable place to grow in the scorched sap, it looked very much like a case of "spontaneous generation" of fungus from the sap itself. Dr. Cooper also made remarks on "California during the Pliocene Epoch," in which he described the country when the Sacramento and San Joaquin valleys were with salt or brackish water with outlets, besides the Golden Gate, if that existed at all, in the neighborhood of the mouths of Russian and Salinas Rivers, and the ocean coast in many places was occupied by marshes in which roamed the animals of that period, including mastodons, elephants, buffaloes, llamas, horses, tigers, and others. After the Pliocene came the volcanic era; and, after that, the post-Pliocene, when extensive glaciers covered the Sierra Nevada and ploughed out its great cañons. Since the end of the age of ice, there has been comparatively little change in the topography of the country. Professor E. W. Hilgard of the University of Michigan, being introduced, congratulated the Academy upon the attendance of its members, which greatly surpassed that of ordinary meetings of scientific bodies in the Eastern States, and then made remarks upon the geology of the country north of the Gulf of Mexico, as compared with the geology of the Pacific Coast. Stephen Powers presented a paper on "The California Aborigines." He thought the prehistoric Indians a superior race as indicated by the superior workmanship of their stone implements. He was disposed to think that they had originally come from Asia.

The committee appointed to examine the library and botanical collection of H. G. Bloomer, deceased, with a view to purchasing, reported that they were worth at least \$700; but, in consideration of the inestimable services rendered by Mr. Bloomer to the Academy, they recommended the \$1,000 be paid to the widow and family in quarterly installments of \$250 each. The report was adopted and referred to the Board

of Trustees. At its meeting on NOVEMBER 3, that body reported that, as they could find no warrant for paying out \$1,000 for property, which was worth only \$700, they could allow only \$700; and that sum was accordingly ordered paid.

OCTOBER 19, F. Gruber and G. T. Bromley were elected resident members. J. P. Dameron read a paper on "coal." Charles D. Gibbes called attention to the "Bois d'Arc" or Osage orange, *Maclura aurantiaca*, both for hedges and timber. He said the wood was one of the most durable in the world, and remarkably strong, elastic and tough. It was of a beautiful yellow color, close grained, received a fine polish, and was valuable for furniture. It also yielded a bright yellow dye. In Texas it was used for wagon wheels. For ship building it was better than live oak, and by the Indians preferred to any other wood for bows. As an ornamental tree it was one of the most graceful and beautiful. W. H. Dall presented "Notes on Some Aleut Mummies," which, however, had been ascertained to be not more than about 100 years old. He also gave a brief synopsis of his recent expedition to Alaska. A paper was presented from Professor Davidson on the "Mesh-knot of the Tchín-cha-au Indians, Port Simpson, British Columbia." Dr. Cooper presented a paper on "California in the Miocene Epoch." He said that, as there was much less land above water in this part of the continent during the Miocene than in the Pliocene, the field for terrestrial animals to exist was much more limited. The fossil evidence relating to the Miocene was, however abundant and consisted of marine shells found at short intervals throughout the Coast Range and the foothills of the Sierra Nevada. Many of the marine remains were only of microscopic size and from them was produced the petroleum of this coast – a substance so far found exclusively in the Miocene strata of California. The flora of the Miocene was not very different from that of the present age. It appeared that the whole northern hemisphere in the Miocene epoch had a remarkably uniform climate, in which the vegetation of Europe resembled that of the Eastern States. A wonderful fact connected with it was that Greenland in latitude 70° and Spitzbergen in latitude 78°58' had a luxuriant forest of trees, mostly American in character, and among them a redwood, indistinguishable from the present California redwoods. He felt forced, he said, to the conclusion, in spite of astronomic opinion that the poles of the earth had changed since then; and, if they had, this fact might help to explain many geological puzzles both in California and elsewhere. W. N. Lockington presented a paper entitled "Observations on the Genus *Caprella*, and Description of a New Species." Dr. Blake described an electrical phenomenon witnessed by him at Placerville in El Dorado County during a thunder storm on September 30. A brilliant luminous display, resembling the aurora, arose from the ridge of the mountains six miles distant and continued for from fifteen to twenty minutes. The storm was raging in the valley at the time, but on the mountains the weather was clear. The appearance, he thought, was produced by a violent discharge of electricity from the ridge.

NOVEMBER 2, W. H. Dall, having paid the required fee, was enrolled a life member. Dr. Behr spoke of the *Eucalyptus globulus*, and said he had been informed by an Australian correspondent that its wood made excellent shingles by reason of

its non-inflammable character. Dr. H. W. Harkness described an extinct volcano, supposed to have become recently inactive, which he had visited on a late trip to Plumas and Lassen counties. It was in the northern part of Plumas County to the eastward of Lassen's Butte. He was of opinion that it had been in active operation within twenty-five years. He also spoke of a lake, over a mile and a half in diameter, discovered by him in the mountains between Warner Valley and Big Meadows in the northern part of Plumas County, which he said was by barometrical measurement 7,330 feet above sea-level. He believed it to be the most elevated of any body of water of such magnitude in the United States. As it was comparatively unknown and without a name, he called it "Lake Livingstone." Judge Hastings presented a communication in the form of a memorial to the trustees of the Lick property, relating to the terms of the "Lick Donation" and asking for a modification of them. The matter was referred to the Board of Trustees of the Academy, and a committee, consisting of Judge Hastings, R. C. Harrison and J. H. Smythe, was appointed to act with the Trustees. Henry Edwards presented a paper, entitled "Pacific Coast Lepidoptera, No. 9. — Description of a New Species of *Thyris* from the Collection of Dr. Hermann Behr." Dr. Harkness submitted written papers, descriptive of the volcano, supposed by him to have become recently extinct, and of the lake 7,330 feet in elevation, in Plumas County. On motion of C. Wolcott Brooks, it was resolved that the lake described should be called "Lake Harkness" instead of "Lake Livingstone." NOVEMBER 16, Dr. W. Newcomb presented a paper entitled "Description of a New Species of Shell from San Francisco Bay"; Dr. Blake read a paper "On the Composition of some Grapes grown in California, in relation to their Fitness for making Wine"; and William J. Fisher a paper "On a New Species of Alcyonoid Polyp." Dr. Cooper read a paper on "The Eocene Epoch in California — Are there really no Eocene Strata?" He said that no positively Eocene fossils have been found here, either marine or terrestrial, which fact indicated a wide gap, so far as deposits were concerned, in the early Tertiary age. One explanation had been suggested, that our limits may have been entirely above the ocean during that epoch; and another, that our dry land may have then been sunk so deep in the ocean that the marine animals common to that period could not flourish at such depths. Still another explanation had been suggested, that the great prevalence of volcanic action heated or poisoned the ocean waters. The only deposits at all resembling the Eocene were specimens found near the Tejon in California and others near the mouth of the Columbia River in Oregon. He then discussed the question, introduced by him at a previous meeting; "Have the Poles Changed?" He was of opinion that the existence of tropical and temperate groups of beings within the Arctic Circle from the Miocene back to the Carboniferous age proves either such a change, or the existence of some light-giving medium there in those ages, of which we have no knowledge.

DECEMBER 7, Dr. Cooper presented a paper entitled "Note on Tertiary Formation of California," in which he said that Professor Dana in the last edition (1874) of his "Manual of Geology" considered the Monte Diablo coal strata, as well as those of the Rocky Mountains, as belonging to the lignite era of the Eocene. Although in both

cases there were some Cretaceous fossils found in or above it, the presence of lignite was more important, especially as showing the existence of a decidedly Tertiary vegetation. Henry Edwards presented a paper on "Pacific Coast Lepidoptera, No. 10. — On a new Species of *Papilio* from California." Judge Hastings read papers on "The Coming Earthquake," and "Shell Mounds of Pacific Plains and Valleys." DECEMBER 21, T. J. Lowry read a paper on "A Device for the Solution of the Problem of Lengthening the Pendulum of the Astronomical Clock without Stopping or Disturbing its Vibrations." He said a method had been devised of virtually shortening a pendulum while in motion, by dropping shot into a small closed funnel fixed upon its face. The difficulty was to extract the shot and thereby virtually lengthen the pendulum while in motion. Tweezers and various other mechanical appliances had been tried to pick the shot out; but the manipulation disturbed the vibrations. It had occurred to him to make the shot of iron, instead of lead, and use a magnet to extract them. Thus while gravity might aid in shortening a vibrating pendulum, magnetism might assist in lengthening it. The nominating committee, appointed by the Council and Trustees as provided in the constitution, reported a ticket for officers of the next year.

Chapter XV: Year 1875

At the annual meeting held JANUARY 4, in the absence of the president, the vice-president, Gen. John Hewston, read the annual address, giving a statement of the condition and progress of the Academy during 1874. The corresponding secretary reported that the correspondence was becoming more extensive and important. The recording secretary reported the average attendance at meetings for the past year as 31; the number of resident members as 301, and of life members, 75. The treasurer reported the balance on hand as \$2,958.43. From the librarian's report it appeared that there were 5000 volumes in the library of which 2500 were bound. At the annual election the following were chosen officers for 1875; George Davidson, president; Henry Edwards, first vice-president; Dr. Henry Gibbons, second vice-president; Henry G. Hanks, corresponding secretary; Charles G. Yale, recording secretary; Elisha Brooks, treasurer; William J. Fisher, librarian; Dr. Albert Kellogg, director of the Museum; David D. Colton, John Hewston, Jr., Robert E. C. Stearns, George E. Gray, Ralph C. Harrison, Thomas P. Madden and William Ashburner, trustees. JANUARY 18, Dr. Kellogg exhibited plants and read a paper on "California and Colorado 'Loco' Poisons." He spoke first of the so-called rattle-weed, *Astragalus Menziesii*, found in the vicinity of San Francisco and also wide-spread over the State. It appeared that horses, cattle, and sheep, in this vicinity at least, would shun it as long as the pasture was good; but when the grass disappeared and they were impelled by hunger, they would eat the rattle-weed and become so affected by it as to stagger, lose control of their muscles, act strangely and stupidly, and in fact become "loco," the Spanish word for crack-brained or crazy. After once eating the weed, they seemed to like it and would hunt for it, being apparently infatuated with its intoxicating or stupefying effects. Unfortunately, the injury produced was permanent, often lasting many months, but ending in death. The Colorado "loco" plant, *Oxytropis Lamberti*, had similar effects. An allied plant, called the devil's shoe-string, *Tephrosia*, stupefied and intoxicated; but the effects soon wore off.

FEBRUARY 1, Cornelius Hertz, Horatio Stone, J. R. Scowden, and Jeremiah Clark were elected resident members. T. J. Lowry read a paper on "The Protracting Sextant – A New Instrument for Hydrographic Surveying." He claimed that his new instrument would enable one observer to accomplish in hydrography the desideratum of measuring at the same instant two angles, and plotting them with the same instrument. The secretary read a communication from Professor Davidson on the "Transit of Venus," observed by him in Japan. Dr. Henry Gibbons read a paper on "Climatic Changes in California," and W. N. Lockington, one on "Sponges." A paper was

presented from Dr. Cooper on "The Origin of California Land-Shells," in which he spoke of "the humble and despised snails as among the most important evidences of geological changes and conditions of the land, climate, etc. in the past history of the globe." Dr. Cooper, also, presented a paper "On Shells of the West Coast of North America, No. III," being a continuation of former papers on the same subject. FEBRUARY 15, the secretary read a paper from Professor Davidson on "Abrasions of the Coast of Japan," also a paper from Professor Davidson entitled "Note on the Probable Cause of the Low Temperature of the Depths of the Ocean." He considered the theory of the interchange of heated surface waters of the equatorial regions with the cold waters of the Arctic basin through Behring's Straits as weak and insufficient, and attributed the nearly ice-cold waters of the ocean depths to the former existence of the great ocean-coast ice belt and probably to ice masses occupying the high northern and southern areas of the ocean. Dr. Kellogg read a paper, being a letter addressed to Ellwood Cooper of Santa Barbara on the "Different Varieties of *Eucalyptus* and their Characteristics." He spoke of about sixty different species. R. E. C. Stearns made verbal remarks about the subjects of Dr. Kellogg's paper and mentioned the proper and improper methods of transplanting young trees. Mr. Stearns also called attention to the fact that some of the young trout, hatched at Berkeley from eggs brought from the Eastern States by rail, were double – some with two heads and one tail and others distinctly formed by joined together by a filmy substance. President Gilman of the University of California invited the members of the Academy to hold a session at Berkeley on the following Monday. FEBRUARY 22, a special meeting was held at Berkeley. Mr. Stearns made a few remarks reminding the members that the Academy would have to depend mainly upon the University to fill its ranks as time thinned it of its pioneers. Professor Joseph LeConte read a paper "On Some of the Ancient Glaciers of the Sierra," in continuation of a previous paper read by him. He spoke of the great glacier that scooped out Lake Tahoe and of its outlet down the Truckee Cañon, and of the side glacier that scooped out Donner Lake. But he spoke more particularly of the glaciers that formed Fallen Leaf Lake, Cascade Lake, and Emerald Bay, and the evidences they had left of their action. Professor John LeConte described two new pieces of apparatus recently acquired by the University – one for projecting microscopic objects, and the other for measuring the force of electric currents. Dr. Kellogg read a paper on "Hops." Resolutions were adopted expressive of interest in the affairs University and satisfaction at its advance.

MARCH 1, a paper by S. B. Christy was read describing a "Meteor seen at Berkeley" on the evening of December 9, 1874. Charles Wolcott Brooks read a long paper entitled "Report of Japanese Vessels Wrecked in the North Pacific Ocean; from the Earliest Records to the Present time." Dr. Stout announced the death of Sir Charles Lyell; H. G. Hanks, John Muir and Albert Kellogg were appointed a committee to draft appropriate resolutions. MARCH 9, the Board of Trustees took occasion to remind the Council that it had no right to grant the use of the Academy's Hall to J. W. Taylor for a course of lectures; they suggested that under the constitution they were the custodians of the property of the Academy and accountable for its manage-

ment, and that any application for its use should be made to them. MARCH 15, Henry R. Taylor and J. W. Anderson were elected resident members. Amos Bowman read a paper on "Terraces in the Coast Range as related to the Detritus of Glaciers and of the Ancient Rivers." C. W. Brooks read a long paper, entitled "Early Migrations — Ancient Maritime Intercourse of Western Nations Before the Christian Era; Ethnologically Considered and Chronologically Arranged, illustrating Facilities for Migration among early Types of the Human Race." Judge Hastings called attention to the fact that the work of the State Geological Survey on the "Botany of California" would soon be published, and that the means to secure the publication had been contributed, at the instance of President Gilman of the University of California, by Leland Stanford, Henry Pierce, Robert B. Woodward, Lloyd Tevis, D. O. Mills, James C. Flood, John O. Earl, William Norris, and Charles McLaughlin. On motion, it was ordered that the names of the contributors should be enrolled upon the records of the Academy as Benefactors of Science. And it was further ordered that honorable mention should be made and recorded of Professor Asa Gray, Professor J. D. Whitney, Professor Watson and Professor William H. Brewer for their personal devotion, without pecuniary consideration, to the work.

On APRIL 1, the Board of Trustees adopted By-Laws to govern its meetings. At the regular meeting of the Academy held on APRIL 5, Horatio Stone read a paper on the "Unity of Arts," and Amos Bowman a paper on "Coal Deposits of the Pacific Coast." Professor Brewer exhibited a map showing the distribution of woodlands in the United States. He alluded to the theory of the connection of the existence of forests with rainfall, and said that no instrumental evidence had been found in any part of the United States that the destruction of forests had reduced rainfall. It appeared to be a fact, he added; but it had not so far been properly proven. Dr. Henry Gibbons thought there was evidence to prove the fact, and said that in California, in regions very limited in extent, the rainfall varied greatly in a few miles, the greater amount falling in the vicinity of timber. Dr. Gibbons exhibited a branch of poplar tree, from the broken end of which a branch of mistletoe had grown, as if it had been grafted. APRIL 19, Alfred E. Regensberger, James B. Clifford, E. T. Tarbox, Arthur C. Taylor, Charles Frances, J. R. Stanton, and F. P. Hartney were elected resident members. Professor Brewer read a paper "On the Formation of Ice Pellets or Hail in the Spray of Yosemite Falls," in which he described a visit to the ice-cone formed at the foot of the Upper Yosemite Fall in the winter time, and said that the spray came down in part in the form of hail, each grain of which he judged to be about a tenth of an inch in diameter. T. J. Lowry read a paper on "Hydrographic Surveying." Henry Edwards presented a paper on "Pacific Coast Lepidoptera, No. 11 - List of the Sphingidae of California and Adjacent Districts, with Descriptions of New Species." George E. Gray offered resolutions, which were adopted, expressive of appreciation and approval of the work of Professor D. C. Gilman, President of the University of California, and regret that he had resigned his position, but at the same time expressing a conviction that his contemplated removal to the Johns Hopkins University at Baltimore, Maryland, would prove fruitful of benefits to the entire country. At

a meeting of the Board of Trustees, held the same day, it appeared that a suit had been commenced by the City and County of San Francisco against the Academy for taxes on the Outside-Land lot, marked "Academy of Sciences," on First Avenue; and the matter was referred to Trustee Harrison.

MAY 3,^{15.1} C. W. Brooks read a very long paper, entitled "Origin and Exclusive Development of the Chinese Race – Inquiry into the Evidence of their American Origin, suggesting a great Antiquity of the Human Races on the America Continent." MAY 17, Gustave Mahé and Ernest L. Hueber were elected resident members. William Guerin read a paper on "The Sewage System of San Francisco." A paper by J. E. Clayton was read on "The Glacial Period – Its Origin and Development." He supposed the theories of a universal upheaval of the land of the northern hemisphere, of a change of position of the poles of the earth, and of the passage of the earth through a frigid zone; and maintained that the geological disturbances and volcanic eruptions which occurred at the close of the Tertiary Age, together with the return trade winds, were the only causes, ample and sufficient, to produce the facts and phenomena of glacial times. The secretary read an extract from a letter by A. W. Kiddie, County Surveyor of Plumas County, confirming the claim of Dr. Harkness as the rightful discoverer of Lake Harkness. In the Board of Trustees, an informal discussion took place in reference to the Lick deed and the suit brought against the Academy by the City and County of San Francisco for taxes on the Outside-Land lot on First Avenue.

JUNE 7, S. B. Christy and Frank Soulé were elected resident members. Henry Edwards presented a paper on "Pacific Coast Lepidoptera, No. 12. – On some New



Samuel B. Christy
Bancroft Library, University of California, Berkeley

^{15.1} Reported as "May 2" in the published *Proceedings*. May 2nd was a Sunday; the correct date is May 3, as recorded in the *Minute Books*.

Species of Noctuidae." Dr. Kellogg described a new lily, *Lilium maritimum*, from the vicinity of San Francisco. Dr. Henry Gibbons made verbal remarks on "Clouds." Dr. C. F. Winslow called attention to the fact that in 1853 he had procured a fragment of a large bone, apparently a portion of the tibia of some gigantic quadruped or reptile, which had been taken from a depth of about 23 feet in digging a well in 1852 on the lot occupied by Dr. Zeile's Baths on Pacific near Kearny Street in San Francisco. He had sent it to Professor Leidy some years afterwards, and he pronounced it to belong to a gigantic sloth of an extinct and undetermined form. He suggested that the remainder of the skeleton was doubtless still embedded in the ground where the fragment had been dug up and might be reached by careful excavation, without injury to buildings. In the Board of Trustees, a resolution was adopted that in order that the expenses of printing the *Proceedings* of the Academy might not exceed the ability of the Trustees to pay for them, the Council should be requested to submit all papers it wished printed to the Board of Trustees and number them in their order of merit. In the opinion of the Board, no paper should be published in full except original matter, and all printing should be competed for. The Board ordered paid to H. M. Newhall \$150 rent for one month for the Academy building; and that continued for years to be the rate of rent paid. The Board also allowed a small salary to the recording secretary and to the treasurer, and a small sum for contingencies to the director of the museum. JUNE 22, Dr. William P. Gibbons read a "Description of a New Species of Trout from Mendocino County." The adult fish, which he called *Salmo mendocinensis*, was about 27 inches long. Dr. Gibbons said he was indebted to Joseph H. Clarke for much of his information about it and would have called it *Salmo Clarkii*, had it not been that there was another fish so named. Dr. Kellogg described a new species of lily, *Lilium lucidum*, found in Oregon and Washington Territory. Judge Hastings read papers "On the Genuineness of Archaeological Specimens, including Ancient Coins," "A Plan for the Construction of Levees for Reclaiming Land," and "San Francisco as a Point for an Astronomical Observatory." Amos Bowman read a paper on "The Geological Formation of California."

JULY 6, being a holiday, there was no meeting. JULY 19, Henry Edwards presented No. 13 of his papers on "Pacific Coast Lepidoptera - On the Earlier Stages of *Vanessa Californica*," also No. 14 of the same series, "On the Genus *Catocala*, with Descriptions of New Species."^{15.2} Judge Hastings read a paper on "Phenomenal Changes of Climate in Past Epochs." Dr. A. W. Saxe called attention to the discovery of a new group of big redwood trees in the basin^{15.3} at the headwaters of San Lorenzo River and Boulder Creek in Santa Cruz County and said that one of the trees was 150 feet in circumference eight feet above the ground. He, however, did not seem to be very positive about the size and said he would obtain further details. Dr. Gibbons announced the death of Marshall C. Hastings. AUGUST 2, Dr. G. King, Dr. F. W. Godon, A. W. Crawford, Pembroke Murray, William Eimbeck, and James L. King

^{15.2} Printed on pp. 207-215 of vol. 6 of the *Proc. CAS* with a note, "The following paper, read at the Regular Meeting held July 19, 1875, should have been printed in the *Proceedings* of that Meeting" (see pp. 145-149).

^{15.3} Now Big Basin Redwood State Park.

were elected resident members. Dr. James Blake read a paper "On Roscoelite, or Vanadium Mica," found at Granite Creek, El Dorado County. Dr. Blake also spoke of physiological experiments he had performed to determine the molecular relations of beryllium (see also footnote 13.7). He had introduced the metal into the blood of living rabbits and compared the effects with those of alumina, and found a marked increase in the physiological action of those substances with the increase of their atomic weights; and these experiments, he believed, were the first in which physiological reactions had been used to throw light on the chemical properties of a substance. A paper by W. N. Lockington was read, giving a list of Echinidae in the collection of the Academy. A discussion took place as to the advisability of inviting the Microscopical Society to join with the Academy. AUGUST 16, Dr. Kellogg described a recent trip to Mendocino County and said, among other things, that he had discovered there a true thorn. Dr. Henry Gibbons spoke of the remarkable climatic phenomena occurring in the winter of 1874-5 both here and in Europe. In the Board of Trustees' meeting of the same date, in response to a letter from the Academy's Council questioning the Board's wish to have papers approved by the Council for publication submitted to it, the Board said that its object was only "to limit the publications to the extent of the finances in their hands to pay for the printing. It was not their intention to interfere with the duty of the publication committee . . . nor do the Trustees assume to criticize or reject any paper that the Council wish printed." The Trustees suggested a meeting with the Council to resolve misunderstandings.

SEPTEMBER 6, Joseph O'Connor, J. P. Moore, and G. H. Sanders were elected resident members. Henry Edwards spoke of a recent trip to Mount Shasta, and particularly of the "pitcher-plant," *Darlingtonia Californica*, which is found in that locality in great abundance. He described its insectivorous qualities and the manner in which insects were attracted and ensnared by it. He was inclined to think that no process similar to digestion went on within the plant, but that the fluid mass derived from the decay of the imprisoned insects descended through the tube of the plant into the earth and was there taken up by absorption through the roots, thus acting as a kind of liquid manure. He said the plant lured almost all orders of insects, and he found in examining about forty tubes, no less than forty-three species. In the Board of Trustees, on account of the suspension of the Bank of California, which had been made the depository of the cash funds of the Academy, it was ordered that the treasurer should thenceforth keep the Academy monies in the London and San Francisco Bank. A meeting with members of the Council to discuss the printing of the proceedings was held and "an amicable understanding arrived at, the printing being left as it was" (in the hands of the Publications Committee [Eds.]). SEPTEMBER 20, William Barber and E. Pander were elected resident members. Among the donations were argentiferous galena from the Sacramento mine and gold ore from San Gregorio Creek in San Mateo County. Mr. Williamson read a paper on "Fish Culture," and T. J. Lowry a paper on "A New Method of Determining Position of the Sounding-Boat: Application of the Two-Point Problem to Hydrographic Surveying." Dr. Blake read a paper "On the Results of Glacial Action at the Head of Johnson's Pass in the Sierra Nevada."

Johnson's Pass is a gap in the western summit of the Sierra at the head of the Valley of the South Fork of American River and about 7,500 feet above tide water. The break in the mountains extends for about a mile and a quarter from north to south and is nearly level. The head of the Pass constitutes a pretty steep escarpment, which forms a part of the western boundary of Lake Tahoe Valley, some miles south of the Lake, and 1000 feet in altitude above it. The Pass is separated on the north from Echo Lake Valley by a large moraine, which at one time was a lateral moraine of Echo Lake Glacier. This glacier for a period flowed into Tahoe Lake Valley, but when that basin filled, Echo Lake glacier deflected down the American River Valley. To the south of the Pass there is another large moraine, which was deposited by a glacier coming in from the south end of Tahoe Lake Valley at a time when that valley was entirely filled. W. N. Lockington presented a communication calling attention to the unhealthy condition of the Academy building, and suggesting remedies. A lengthy discussion took place, at the end of which the subject was postponed for future consideration.

SEPTEMBER 27, the Board of Trustees held a special session for the purpose of meeting Messrs. John B. Felton and Theodore H. Hittell, attorneys of James Lick, to hear the reading of Mr. Lick's new Trust Deed of his property in general and to receive a new special and unconditioned deed in fee of the Market Street property. As has already been stated, Mr. Lick, on February 15, 1873, made a deed of donation to the Academy of the lot, 80 feet front on Market Street near Fourth, constituting the southwesterly side of 100-vara Lot No. 126; but it was so hampered with conditions, so practically impossible of fulfillment, as to be substantially useless to the Academy. At the same time he made a similar deed to the Society of California Pioneers for a similar lot, fronting 80 feet of Fourth Street near Market and constituting the southeasterly side of the same 100-vara Lot 126, the dividing line between the rears of the two lots being a diagonal running in a nearly northerly direction from the southerly corner of Lot 126; so that each lot was 275 feet deep on the outer side and 95 feet on the inner side. He afterwards on October 3, 1873, as has also been already stated, on account of representations made to him that it would be impossible for the Academy to comply with the conditions of that first deed, made a second deed to the Academy of the same property, modifying to some extent the terms and conditions, but still leaving them practically as impossible of fulfillment as before, and the donation therefore substantially useless. On July 16, 1874, Mr. Lick made his first Trust Deed, whereby he conveyed all his property, except such as he had conveyed as above stated to the Academy and Society of Pioneers, conservatively estimated to be worth \$3,000,000, to Thomas H. Selby, D. O. Mills, Henry M. Newhall, William Alvord, George H. Howard, James Otis and John O. Earl, in trust to sell the same and devote the proceeds, with the exception of a few gifts to relatives, to certain public purposes, including \$700,000 for the establishment of the Lick Astronomical Observatory; \$300,000 for a School of Mechanical Arts; \$250,000 for statuary emblematic of California and its history to be erected in Sacramento; \$150,000 for a monument in San Francisco to the memory of Francis Scott Key, the author of the "Star Spangled

Banner," and various other sums for like purposes, amounting in all to nearly \$2,000,000; and to divide the residue in equal proportions between the California Academy of Sciences and the Society of California Pioneers.

In accordance with this deed, Mr. Selby and his associates commenced selling off portions of the property, thus conveyed to them in trust, and disposed of several parcels, when Mr. Lick became dissatisfied with their management and particularly with Mr. Selby, who was their president and spokesman. Under the circumstances, Mr. Lick consulted Mr. Hittell at whose suggestion Mr. Selby was informed of the situation and respectfully asked to resign. He at first expressed a willingness to do so; but, upon consulting with his associates, they objected; and he then declined. As this apparently meant war, Mr. Hittell advised the employment of his partner, John B. Felton, as chief counsel; and, at Mr. Felton's suggestion, the locally famous *Deed of Revocation* was executed by Mr. Lick on March 17, 1875, and recorded the same day, by the terms of which, and for the reasons therein set forth, he revoked his first Deed of Trust, but ratified and confirmed all the sales and acts of the Trustees made and done up to that time under its provisions. The effect of this *Deed of Revocation* was to substantially paralyze the trust; and on April 17, the Trustees commenced a suit in the district Court to be allowed to resign, which suit resulted on September 14, 1875, in a constant decree, accepting their resignation; reducing the number of trustees to five; appointing at Mr. Lick's suggestion, Richard S. Floyd, Faxon D. Atherton, Bernard D. Murphy, John H. Lick, and John Nightingale as new Trustees, and directing the old trustees to convey to them all the property remaining in their hands, which conveyance was accordingly made on September 16, 1875. A few days afterwards, on September 21, 1875, Mr. Lick executed a new Trust Deed of his property in general to the new Trustees and, at the same time, new deeds, absolute and without any conditions whatever, of the lots on Market and Fourth Streets to the California Academy of Sciences and Society of California Pioneers.

As the new Trust Deed, though in most respects similar to the old one, made some changes in the disposition of Mr. Lick's property, it was deemed advisable to make the beneficiaries affected parties to it and obtain their consent to the changes; and it was chiefly for the purpose of obtaining the consent of the Academy that the attorneys of Mr. Lick appeared, as above stated, before the Board of Trustees. Mr. Felton thereupon stated the changes made in the Deed of Trust, which were principally the reducing of the amount given for statuary emblematic of the history of California from \$250,000 to \$100,000 and providing that it should be erected at the City Hall in San Francisco instead of at Sacramento; the reducing of the amount given for a monument of Francis Scott Key from \$150,000 to \$50,000; the adding of the \$240,000 so saved, to the \$300,000 given for a School of Mechanical Arts, thus making its sum \$540,000; and the giving to John H. Lick, son of James Lick, \$150,000 in addition to a sum of \$3,000 given him by the first deed. At the same time Mr. Felton read the new deed to the Academy of the Market Street lot of 80 feet front and called attention to the fact that it was a gift absolute in terms and was intended to relieve the Academy from all the conditions of the previous deeds. In response to the explana-

tions of changes and request for concurrence thus made, the Board of Trustees of the Academy adopted a resolution — which, however, was to be considered as provisional and dependent upon the consent of the Academy — to accept and join in the execution of the new Trust Deed, to accept the new deed to the Market Street property, and to call the Academy together the next day to consider and, if satisfactory, approve and ratify their action.

SEPTEMBER 28, the Academy met in special session at the request of the Board of Trustees for the purpose of taking action in reference to the new deeds of James Lick. Gen. D. D. Colton, president of the Board of Trustees, was present as representative of that body, and Mr. Hittell as attorney of Mr. Lick. Gen. Colton stated the action of the Board of Trustees and its desire, in a matter of so much importance, to have its action expressly authorized and endorsed by the Academy. By request, Mr. Hittell read to the Academy the new deed to the Market Street property. Thereupon, the resolutions of the Board of Trustees were approved, adopted and ratified as the act of the Academy. Immediately after the adjournment of the Academy, the Board of Trustees again met [at 8:30 p.m.]; on a motion by Mr. Ashburner, the new Trust Deed was duly executed in the name of the corporation by Gen. Colton as president and Mr. Yale as secretary, and the new deed to the Market Street property formally delivered and accepted.^{15.4} The Board then adjourned to meet the next afternoon at the Lick House, where Mr. Lick resided, to tender to him the Academy's thanks.

OCTOBER 4, among the donations were specimens of manna found on eucalyptus trees in the University grounds at Berkeley, supposed to be the first found on eucalyptus trees in California. Dr. Blake read a paper on "*Phylloxera*." He described the breeding insects as having wings and depositing their eggs on the leaves of the vine, and said that the larvae, when hatched, descended to the stem and thence by cracks and crevices down the roots. He recommended giving up vines once attacked and devoting attention to healthy plants by finding out some method of preventing the larvae from getting down the lower part of the stem and to the roots. He also read a paper "On the Reimer Grape," which he described as containing the most malic acid and being one of the best wine-producing grapes in California. OCTOBER 18, among the donations were specimens of the "candle-nut" from the Hawaiian Islands. It was the fruit of a tree that grew from 20 to 30 feet high, said by C. D. Gibbes to be *Aleurites triloba*, and by the natives called "Ku Kui." The fruit was about two inches in diameter; shell of inner nut very hard, and kernel good to eat but rather rich. The oil was easily expressed; and it had been customary to send it to England for making candles. As a drying oil it was ranked among the best. The Hawaiians used the kernels for producing light by stringing them on slender slips of bamboo and using them as candles. They burned with a peculiar but pleasant odor. Dr. G. F. Becker read a paper on the "Comstock Lode," and Dr. Behr one on "*Phylloxera*." Henry Edwards presented "Pacific Coast Lepidoptera, No. 15 — Description of a New Species of *Catocala* from San Diego." R. E. C. Stearns read a paper "On the Vitality of Certain Land Mollusks," giving an instance of a *Bulimulus pallidior* from San Jose del Cabo

^{15.4} Recorded in Book 801 of Deeds, page 253, City and County of San Francisco.

in Lower California, which was kept in a box without food and was found alive after two years, two and a half months. He was of opinion that mollusks in arid regions are calculated by adaptation and evolution to maintain their hold upon life longer than those of more favored regions.

NOVEMBER 1, Charles W. Banks and Dr. G. F. Becker were elected resident members. Dr. Henry Gibbons spoke of the difference between rainstorms here and in the Eastern States. In the Board of Trustees, Gen. Colton spoke of the rents of the Market Street property, which had become the absolute property of the Academy. The amount to \$192.50 per month; and he thought they might be doubled. He also spoke of the taxes on the property, which would have to be paid by the Academy. O. Livermore was appointed agent to take charge of the property under direction of the president until further order. NOVEMBER 15, J. R. Scupham made remarks upon the *Teredo* and presented a specimen of wood, showing an instance in which one of the worms had bored into the hole of its neighbor – the first case of the kind that had been noticed. A discussion took place on the subject of the *Phylloxera* between Dr. Behr, Dr. Blake, Dr. Kellogg, and Judge Hastings. In the Board of Trustees, Mr. Ashburner reported that he had arranged for cleaning of the Market Street property. He also requested funds for specimen cases in addition to those previously approved.

DECEMBER 6, among the donations were twenty-six specimens of native woods, presented by Joseph H. Clarke of Caleta, Mendocino County. Dr. Kellogg remarked of them that they were valuable, all the specimens being in fine order and carefully prepared. W. N. Lockington read a paper on "Landscape Gardening," giving a list of the varieties of plants adapted to California gardens, and suggestions as to the proper laying out of grounds. Dr. J. G. Cooper presented a paper entitled "New Facts relating to California Ornithology – No. 1." Mr. Stearns announced the death of Benjamin P. Avery, U.S. Minister to China and a member of the Academy, who had died at Peking in the early part of November, and said that "his life had been conspicuous for its purity; his character for its many virtues; his intellect for its refined and delicate culture; his heart for its tender and generous sympathy." In the Board of Trustees, the treasurer reported that he refused to deposit a check from the Lick Trustees for rents due the Academy because it had been made out to D. D. Colton as president of the trustees, and not the Academy. How this matter was resolved is not indicated. Mr. Ashburner was authorized to employ a policeman to keep people off the steps of the Academy's building. DECEMBER 20, a memorial to the State Legislature, praying for a revival of the State Geological Survey and a liberal appropriation for its continuance and completion, presented by J. R. Scupham, was approved and ordered forwarded. Henry Edwards read a paper, embracing the substance of verbal remarks, made by him at a previous meeting, on the California pitcher-plant, *Darlingtonia Californica*. In reference to Mr. Edwards' opinion that the juices of the insects entrapped and destroyed by the plant were carried down to the roots and absorbed there as manure, Dr. Henry Gibbons stated that the inquiries of scientists had led many of them to believe that the plant was truly carnivorous and endowed with a digestive power similar to that of animals. Their general view seemed

to be that the insects were decomposed and their juices absorbed by the leaves, as manure was absorbed by the roots. Dr. Gibbons also referred to the alleged efficiency of the *Sarracenia* as a remedy for small-pox, but said its claims in this respect had not been recognized. A report from the nominating committee, appointed by a joint meeting of Council and Board of Trustees, presented a ticket for officers of the ensuing year. In this ticket the name of Professor Davidson was proposed as a candidate for president and also for a trustee. After some discussion on the subject, the name of Professor Davidson as a candidate for trustee was taken off and that of Gen. John F. Miller inserted in its place. In the Board of Trustees, a resolution was adopted directing the funds of the Academy, then in the London and San Francisco Bank, to be transferred to the Bank of California, which had recovered from its temporary difficulties and suspension and was re-established on a firm basis; and that thence-forth the Bank of California should be the depository of the funds of the Academy. As for the special policeman to keep people off the steps of the building, Mr. Ashburner reported that because there was to be a "change in policemen on that beat," he decided to wait.

Chapter XVI: Year 1876

The annual meeting for 1876 was held on JANUARY 3. On recommendation of the Council, Dr. Henry Gibbons, Sr. was elected a honorary life member. Louis Nusbaumer and W. E. Burleigh were elected resident members. In the absence of the president, Henry Edwards, first vice-president, read the annual address on the condition and progress of the Academy. He spoke of the past year as an eventful one for the institution. It was poor no longer. The cloud of adversity, which seemed so long to overshadow it and which, but for the untiring energy and hopeful perseverance of a few of its members, would have brought its career of usefulness to a close, had, by the grand beneficence of one man, been removed. He spoke of the example of Mr. Lick in the disposition of his wealth as noble, and said that he had earned for all time the unbounded gratitude of lovers of Science, not only in California, but throughout the whole civilized world. He reviewed the work of the Academy during the past year and thought it in point of value and interest in no respect behind the work of precious years. Gen. Colton, as president of the Board of Trustees, presented an annual report on the condition of the "temporal ties" of the Academy. The amount of money on hand at the beginning of 1875 was \$2,958.43 and at the end of that year \$1,598.73. The greatest economy, consistent with the needs of the institution, had been exercised; but necessary purchases, expenditures connected with alterations of the Academy building and current expenses had unavoidably reduced the amount of cash on hand. The prospects for the future, however, were bright. The rents of the Market Street property, given by Mr. Lick, which were about \$2,300 annually, had been increased about 100 per cent, and it was to be expected that the gross amount for the coming year would be in the neighborhood of \$5,000. In addition to this, the provisions of the Deed of Trust, executed by Mr. Lick, warranted the belief that the princely gift thereby made would enable the Academy to erect on the ground within a few years one of the most magnificent temples of science on the face of the globe. The recording secretary reported the average attendance of members at meetings as 31. Twenty-seven new members had joined in the course of the past year; four had died, and three resigned. The total resident membership was 301, and life membership, 78. The treasurer and the Board of Trustees also presented reports, showing in detail the receipts and disbursements of the year 1875. The librarian reported very considerable additions to the library and especially mentioned the donation of a large collection of books on history and geography by Professor D. C. Gilman, and rare and costly works on entomology, including those of Hubner, Cramer, Drury, and Stoll, by Gen. Colton. The director of the museum also made a report on the condition

of the cabinets. The annual election resulted in the choice of Professor George Davidson as president; Henry Edwards, first vice-president; Henry C. Hyde, second vice-president; Theodore A. Blake, corresponding secretary; Charles G. Yale, recording secretary; Edward F. Hall, treasurer; William J. Fisher, librarian; W. G. W. Harford, director of the museum; D. D. Colton, John F. Miller, Thomas P. Madden, R. E. C. Stearns, William Ashburner, George E. Gray, and R. C. Harrison, trustees. On motion of Mr. Ashburner, a committee was appointed to take into consideration the matter of sectionizing the Academy.^{16.1}

JANUARY 17, Z. W. Greene and Dr. James Murphy were elected resident members. C. B. Turrill read a paper by C. W. Brooks and one by himself, recommending a course of popular scientific lectures before the Academy. Henry Edwards presented a paper on "Pacific Coast Lepidoptera, No. 16 -- Notes on the Transformations of some Species of Lepidoptera not hitherto recorded." Dr. Henry Gibbons called attention to the frequency of earthquakes in different parts of the world during the past summer. A report, in the form of preamble and resolutions, providing for the creation of sections of the Academy for particular subjects of study and research, was presented by the committee appointed for that purpose and adopted. The new Board of Trustees organized by the election of Gen. D. D. Colton as president, William Ashburner, vice-president, and Charles G. Yale, secretary. On motion of George E. Gray, the treasurer was required to give a bond in the sum of \$5,000; and on motion of R. C. Harrison the librarian and director of the museum were each required to give a bond in the sum of \$500. The Lick Trustees sent in a communication, stating that they had paid the taxes on the Market Street property, assessed at \$90,000, to-wit: \$1,444.50, and requesting the amount so paid to be refunded to them. Gen. Colton

^{16.1} Following the annual meeting, Robert Stearns, in a letter to William Dall, waxed enthusiastically about the present and future condition of the Academy. On Jan. 27, 1876, he wrote, "The annual meeting of the Academy was an exciting affair — 187 [of a membership of 301, eds.] votes polled, which indicates at least a robust vitality. We have to pay taxes this year on \$90000.00, the assessed value of the Market St. lot [deeded to the Academy by James Lick], and it will about drain the coffers — but we have the coin to pay it; what a change when compared with the past, when \$20.00 would have "busted" the treasury. We may be behind in the publication of our Proceedings for 1875, which I regret but nevertheless it is a satisfaction and a great one, to us who put our hands to the plow, in the dark days and who held our grip and kept the lamp burning, though at times with an uncertain light. Davidson was re-elected and under the circumstances it is well — we have also cleaned out the Hewston element, through delicate tact without an uproar. Again at the last meeting I prepared at the request of many members a resolution and general plan for sectionizing the Academy (adopted) — and we shall have at once a large and active section in the direction of Mining Engineering — other sections will soon organize. All of this stimulates activity and excites interest and will undoubtedly prove beneficial to the institution. I hope to live to see a proper building and an efficient crew, and to help mould [*sic*] things in such form as to make the Academy the leading organization in America, (save for the SI [Smithsonian Institution, eds.]) in energetic, broad and useful work — to scientifically evangelize the State and all of these Western commonwealths so that the center of scientific culture and progress shall be nearer the setting sun than at present." (SIArchives, RU 7073 {William H. Dall Papers, 1865-1927}, Box 16, Folder 30.)

Stearns' euphoria was reasonably short-lived. Before a decade had passed, without a new building, without funds for publication, with the death of Benjamin Redding (see footnote 21.4), and with George Davidson no longer President of the Academy, Stearns wrote to Dall (Nov. 3, 1883) "The Acad'y is a starter in the suds and it does seem at times as if the barnacles over there [Stearns is writing this from his home in Berkeley, eds.] w'd sink the ship. With the exception of the "Carson foot print" paper nothing has been printed since Pt. 1 of Vol. VII ending December 1876. At one time recently the treasury had the means to pay for printing all the back mss; the Pub Com were not ready — now that the mss is ready, the funds are needed to pay the rent and of hall for the exhibition of the Crocker-Stanford Collection. Then again there is a muddle, whether to build and where and when and so it goes — thank the lord I am on the outside — I haven't much respect for damn fools, and some of those fellers come very near fitting that term." (R. E. C. Stearns to W. H. Dall, Nov. 3, 1883; SIArchives, RU 7073 {William H. Dall Papers, 1865-1927}, Box 16, Folder 32.)



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was authorized to pay the bill. The director of the museum was authorized to deliver certain archaeological specimens to be loaned to Professor Baird of the Smithsonian Institution for exhibition at the Centennial Exposition at Philadelphia. The salary of the secretary was fixed at \$25 per month, the same as that of the previous year. Attention was called to certain expenses incurred at the recent election of the Academy, including dinner for judges and inspectors, when Mr. Madden proposed that they should be paid by the Trustees personally, which was accordingly done.

FEBRUARY 7, C. L. Scudder, W. J. Graves, Samuel Purnell, Joseph Tilden, Gerrit L. Lansing, Dr. Robert K. Nuttall, and Dr. J. T. Crook were elected resident members. W. N. Lockington read "Remarks on the Crustacea of the Pacific Coast, with Descriptions of some [twenty] New Species." The corresponding secretary read a bill, introduced in the California Assembly, for the protection of the blue heron, *Ardea herodias*, with a request from an assemblyman for suggestions in regard to it. After a lengthy discussion the matter was laid on the table. He also read a memorial to Congress by the Boston Society of Civil Engineers for the adoption of the metric system of weights and measures; and on motion the chair was requested to appoint a committee to report upon the subject. It was announced that Dr. Gerhard Rohlfs had accepted an invitation to lecture at the Academy on his African travels in the 1860s. The judges of election reported that they had filed a certificate of the recent election with the county clerk. FEBRUARY 21, J. R. Scupham asked for information in respect to a plant which had the property of coagulating milk, like rennet. Dr. Behr said that the plant from which quassia came had that property. Dr. Gibbons said that *Gratiola*

Virginica also had the property, and that medical writers stated that quassia was one of the best bitters known. He also spoke of the peculiarities of certain plants, which were harmless to men but injurious to animals, and *vice versa*; also of plants injurious to fleas, stating that the impression the Yerba Buena leaves would drive away fleas was incorrect, but that the powder of *Artemisia filifolia* was fatal to them. The subject of poison-oak was introduced and a discussion took place as to the liability of some persons to be affected by it while others could handle it with immunity.

MARCH 6, Louis Janin, James D. Hague, H. S. Craven, C. A. Stetefeldt, C. W. Lightner, E. B. Dorsey, W. A. Skidmore, Howard Schuyler, Hamilton Smith, Jr., Alfred Poett, W. H. Hall, J. S. Curtis, and Charles Barton Hill were elected resident members. Professor Davidson exhibited specimens of boomerangs, which had been used by some of the California Indians. He also gave a general description of his recent trip to Japan, India, Egypt, and part of Europe, the principal object of which had been to gather information with regard to late improvements in civil engineering and irrigation. William J. Fisher tendered his resignation as librarian, which was accepted; and soon afterwards Charles Troyer was appointed by the Council to fill the office. On motion of Gen. Colton the Board of Trustees was authorized to loan certain ethnological specimens to the Central Pacific Railroad company for exhibition, with its own collections, at the Centennial Exposition. MARCH 20, Charles F. Dio Hastings was elected a life member. W. N. Lockington read a paper entitled "Description of Seventeen New Species of Crustacea." F. Gruber read the first of a series of popular papers on ornithology, illustrating his remarks with specimens of birds prepared by himself. APRIL 3, Henry Hemphill presented a "Description of a New California Mollusk" from Humboldt Bay, and Dr. Kellogg a paper on *Brickelia multiflora* from the Sierra Nevada. Professor Davidson read a paper descriptive of irrigation works in course of construction in British India, illustrated with maps and diagrams. Dr. Hale of Albany, New York, mentioned a curious case of mimicry observed by him in the Santa Cruz Mountains, where he had found a small spider exactly resembling the flower of the Madroña tree in color, size, and form. In the Board of Trustees, on recommendation of the Council, the Pharmaceutical Society of San Francisco was allowed the use of the hall of the Academy twice a week at the rate of \$20 per month until further notice. The council also recommended that the rooms and cabinets of the Academy should be kept open to the public daily from 9 o'clock A. M. to 4 P. M.; and that the salary of the director of the museum should be increased to \$100 per month, and the recording secretary be paid \$25 per month as secretary of the Academy in addition to his salary as secretary of the Board, which recommendation was taken under advisement. APRIL 17, Samuel Lubeck was elected a life member, and Joel F. Lightner, T. Bechtinger, J. K. Wilson, and J. F. Meyers,^{16,2} resident members. Among the donations was a spider, resembling a Madroña flower, from William Barber. Captain C. Bryant, U. S. Treasury agent to the Pribiloff Islands, Behring's Sea, on invitation, described the seal fisheries there and the habits of the

^{16,2} Although shown in the *Minute Books* and published account as J. F. Meyers (see *Proceedings* 1876[1877], 7:50), later references to a W. F. Myers, also supposedly elected on this date but not shown in the records, suggest that the name was initially improperly recorded.

fur seal. In the Board of Trustees, the matter of the recommendation of the Council to increase the salaries of the director of the museum and recording secretary came up; and, on motion of Mr. Ashburner, it was resolved that the condition of the finances did not for the present admit of any increase of salaries. A communication was received from the Society of California Pioneers, requesting the privilege of right of way from Market Street over the Academy's lot to the rear of their Fourth Street lot. On motion a committee, consisting of Messrs. Madden and Miller, was appointed to consider all matters relating to the real estate of the Academy; and to this committee the request of the Pioneers was referred to investigate and report.

MAY 1, Dr. Blake presented a specimen of infusorial earth from the hills about a quarter of a mile south of the northeast end of Lake Merced in San Francisco County. The deposit was known as the "chalk mine," and a considerable quantity of it had been sent to the Eastern States, as he understood, to be used for polishing glass. The so-called mine had been opened on the side of a ravine and the deposit seemed to form a continuous stratum four feet thick where exposed but probably much thicker as the whole hill for some distance seemed to be formed of it. The highest part of the outcroppings were about 200 feet above sea level, and the bed probably belonged to the Pliocene formations found cropping out along the beach to the south of Lake Merced. On microscopical examination the rock seemed to be made up of siliceous particles, evidently of organic origin, which were probably the remains of diatoms, though no perfect diatoms had been discovered in it. W. N. Lockington read a "Description of a New Genus and Species [*Bellophis zonatus*] of Colubrine Snake" from northern California. W. G. W. Harford read a "Description of a New Genus and three New Species of Sessile-Eyed Crustacea," two from Angel Island and one from Tomales Bay; and Mr. Lockington a "Description of a New Genus and Species of Decapod Crustacean," from Tomales Bay. Professor Davidson read a continuation of his papers on irrigation in India, Egypt, and Italy. MAY 15, H. W. Reese, Albert Arents, C. A. Luckhardt, Emlen Painter, and Louis Falkenau were elected resident members. Among the donations were many Japanese articles, presented by Lieutenant Murray S. Day, U. S. Navy, the most curious of which was perhaps a "Passu" or moustache lifter, used by the Ainos of the Islands of Yesso, Japan, for lifting the moustache in the drinking ceremony. Professor Davidson read a continuation of his papers on irrigation in India, Egypt and Italy.

JUNE 5, Rudolph Thormann, L. L. Hawkins, Walter W. Dannenberg, Edward N. Moor, and Robert Chalmers Lord were elected resident members. Henry Edwards presented a paper entitled "Pacific Coast Lepidoptera, No. 17. On the Transformations of *Colias* (*Meganostoma Reak*) Eurydice, Bdv." Professor Davidson read a continuation of his papers on irrigation in India, Egypt, and Italy. F. Gruber read the second of his series of papers on ornithology. His special subject was "Birds of Migration and Song." In the Board of Trustees, the committee on real estate, to whom had been referred the request of the Pioneer Society for a right of way over the Market Street lot to the rear of the Fourth Street lot, reported that the committee deemed it inexpedient at that time to grant such right of way, for the reasons: first, that such

concession would inevitably lead to unpleasant complications with the tenants of the Society of Pioneers and probably with the Society itself; and, second, that as the Lick Trust had already sold the lots of the Academy and Pioneers, new arrangements would likely be made with reference to the open ground then under lease to the Spring Valley Water Company, and the committee were of opinion that the Academy could get a better income from the property without any such encumbrance as the right of way requested. An offer had in fact already been made of \$75 per month for the unoccupied ground, and the best course for the Academy to pursue was undoubtedly to lease it for the best price that could be obtained. JUNE 19, J. P. Dameron described a recent trip to Mount Tamalpais in Marin County, which led to a discussion in reference to the large and peculiar slide, plainly visible from San Francisco, on the southeasterly side of the mountain.

JULY 3, being one of the centennial holidays, no meeting was held. JULY 17, among the donations was a volume of the "Botany of California," being a part of the work of the State Geological Survey, which had been published by contributions of private citizens, whose generosity had already been noticed and acknowledged by the Academy. On this occasion a note of thanks was tendered to Judge Hastings for his instrumentality in obtaining the contributions. W. N. Lockington submitted "Remarks on the Crustacea of the Pacific Coast of North America, including a Catalogue of the Species in the Museum of the California Academy of Sciences, San Francisco"; also "Remarks upon the Various Fishes known as Rock Cod." Dr. Kellogg read a paper on "*Ludwigia Scabriuscula*." In the Board of Trustees a letter was read from W. E. Brown, stating that he was about to grade a lot belonging to himself on First Avenue and asking the Academy to grade the adjoining "Academy of Sciences" lot. The matter referred to the real estate committee. AUGUST 7, W. N. Lockington read "Notes on Some California Marine Fishes, with Descriptions of New Species."^{16.3} W. G. Krueger exhibited a small model of a flying-machine, of his own invention, and explained its construction. His idea was that such a machine should be constructed like a large bird. AUGUST 21, Dr. Kellogg read "Notes and Descriptions of some California Plants." SEPTEMBER 4, W. N. Lockington presented several papers on Crustacea and fishes, and Dr. Kellogg one on plants. The resignation of Theodore A. Blake as corresponding secretary was read and accepted; and the appointment of a successor referred to the Council. SEPTEMBER 18, Dr. Kellogg presented "Botanical Papers" and W. G. W. Harford a "Description of Three New Species of Sessile-Eyed Crustacea, with Remarks on *Ligia occidentalis*." The Council reported that it had

^{16.3} For several years both before and after Lockington read this paper, at Academy meetings he read and then published papers on fishes, crustacea, sponges, and general natural history. And, he, like Ayres before him, ran afoul of Theodore Gill, in Washington, D.C., who earlier had severely criticized Ayres (see comments by W.G.W. Harford, at the Dec. 19, 1881 meeting of the Academy) and now Lockington for what he considered unscientific work. Of course, Gill had an agenda for this criticism for he objected to the intrusion of these Californian upstarts, amateurs in his opinion, in what he had carved out as a personal fiefdom, the fishes of the North Pacific. On a somewhat defensive note, on Dec. 21, 1878, Lockington wrote to William Healey Dall, "I understand that my work among the fishes has been severely criticized by Prof. Gill. All I can say is that I wish Prof. Gill were compelled, for just one year, to work under the same conditions that I do; with our imperfect museum and confused and defective library (you know all about that) and with no time at his command save evenings and Sundays." SIArchives, William Healey Dall papers, RU 7073, Box 13, Folder 25.

appointed Dr. A. B. Stout corresponding secretary in place of Theodore A. Blake, resigned.

OCTOBER 2, the death of James Lick having been announced, R. E. C. Stearns addressed the Academy and said that Mr. Lick had passed away peacefully the previous morning, Sunday, October 1, 1876, at the age of 80 years. He spoke of Mr. Lick as the friend and benefactor of the Academy and as one who, though not educated in those higher schools where the mind is trained to scientific study and thought, still possessed a native breadth of mind quick to perceive and appreciate the lofty aims of Science and the benefits it had conferred upon mankind. He spoke of his many munificent gifts and said that it was safe to assert that the name of James Lick deserved and would receive an honorable and prominent place on the roll of great public benefactors; and that future members of the Academy, who would be especially benefited with the means and facilities of scientific research, secured to them by his bounty, and who would thereby be enabled to contribute to the sum of human knowledge, would ever hold the name of James Lick in grateful remembrance. It was thereupon resolved by the Academy that Mr. Lick's name should ever be held in grateful remembrance and that the Academy would accept an invitation of the Society of California Pioneers to take part in his funeral and attend it in a body.

OCTOBER 16, among the donations was a cabinet containing about 600 specimens of minerals, presented by R. H. Stretch. Henry Edwards presented No. 18 of his papers of "Pacific Coast Lepidoptera," specially devoted to a new species of *Heterocampa*. Dr. Blake read a paper on a "Remedy for the *Phylloxera*." He described the insect after a study of its natural history, as one of those which goes through a series of generations without changing its form; but in which, after a certain number of these parthenogenic generations, the power of non-sexual reproduction ceases, and the development of a new form, the winged insect, becomes necessary for the continuance of the species. It was the non-sexual forms that did the damage to vines, and they were so abundant that a single impregnated ovum, laid by the winged insects, had been calculated to produce as many as 75,000,000 of the little pests that devastated vineyards. The remedy he suggested – and said he had tested with good effects – was bisulphide of carbon. His method was to use an iron tube with a sharp steel point, pierced with holes and having a water-tight piston. The tube was forced, with the point down, into the ground several feet near the roots of the vine; about an ounce of the sulphide of carbon was poured in and the tube then filled up with water; the piston applied, and the contents of the tube forced out by driving down the piston. The bisulphide was extremely volatile and would permeate the ground for a considerable distance; and wherever it permeated it effectually killed the insects. The remedy was comparatively cheap and could be easily applied. He also said that the refuse lime from gas-works, applied around the roots of the vines, would kill the insects. Professor T. Guerin read a paper on "The Factor of Safety in Water Pipes."

NOVEMBER 3, two papers by Professor Davidson were read by the secretary; one on a "Search for the Supposed Intra-Mercurial Planet Vulcan," and the other on "The Problematical Intra-Mercurial Planet." Professor Davidson had been for some time



James Lick
1796-1876

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engaged in making observations on the summit of Mount St. Helena in Napa County. The French astronomer Le Verrier had by telegraphic dispatch asked observers on the Pacific Coast to make search for the supposed planet as it crossed the disk of the sun on October 9 and 10. Professor Davidson had made observations on those days, but did not see any planet. Henry Edwards presented No. 19 of his papers on "Pacific Coast Lepidoptera," specially devoted to a singular variety of the larva of *Halesidota Agassizii*. NOVEMBER 20, Dr. Kellogg described a couple of new plants received from Joseph H. Clarke, corresponding member. C. D. Gibbes read a paper on the geological formation of "The Oil Region of Tulare Valley West of Tulare Lake," and exhibited specimens of the oil and rocks found there. A paper, written by Anton Stuxberg, was presented by Dr. Gustav Eisen, entitled "Preliminary Report on the Lithobii of North America." Henry Edwards presented No. 20 of his papers on "Pacific Coast Lepidoptera." In the Board of Trustees, at a meeting in which the Council was invited to participate and at which it was present, a new complication in the affairs of the Lick Estate was brought up for consideration. To render it intelligible will require some words of explanation. When Mr. Lick's new Trust Deed was being prepared, John H. Lick, the natural but recognized son of James Lick, expressed a desire to be given \$250,000 in the new disposition of the property and proposed if this sum were given him to concur in any disposition that might be made of the remainder and to execute any papers that might be asked of him to that effect. Mr. James Lick was informed of this proposition on the part of his son; but would not listen to it and insisted upon giving him only \$150,000, which he said was more than he knew how to properly make use of. This was, as the event proved, a business error on the part of Mr. Lick. Notwithstanding the clearness and cautious prudence of his intellect, he was irascible, and when his temper was roused it was ungovernable. In about a year after the execution of his new Deed of Trust, for example, he became dissatisfied without any good reason with his new Trustees or at least those who were present, for Mr. Floyd had gone to Europe to look into the subject of astronomical observatories, and asked for their resignations, which they immediately sent in; and thereupon Mr. Lick appointed a new Board of Trustees, consisting of Richard S. Floyd (then absent), Edwin B. Mastick, William Sherman, George Schoenwald, and Charles M. Plum. These gentlemen remained the Trustees at the time of Mr. Lick's death in 1875 and continued to be such afterwards.

As soon as Mr. Lick died, John H. Lick, who had kept quiet in the meanwhile, manifested his dissatisfaction with the disposition of the property and employed Hall McAllister as his attorney to contest the same. He was now no longer willing to accept \$250,000, but demanded a great deal more and was in a position to jeopardize the disposition of the whole estate. A long, bitter and expensive litigation was threatened, when at last a provisional compromise was effected by the terms of which John H. Lick was to become the administrator of his father's estate and, after such appointment, to release all his claims to the estate both as an individual and as administrator for the sum of \$535,000, which sum was also to be in full payment of his legacies under the Trust Deed. As soon as this provisional compromise was effected, it became

necessary, for the purpose of carrying it completely into effect, to obtain the consent and concurrence of the beneficiaries under the Trust Deed, and particularly of the California Academy of Sciences and the Society of California Pioneers, who were the residuary beneficiaries under that instrument. It was the matter of this compromise that was on this occasion presented to the joint meeting of the Board of Trustees and Council, with the request that the Academy should consent to and concur in it. Gen. Colton, as president of the joint meeting, stated in brief the situation of affairs, adding that any sum allowed John H. Lick in excess of the sum given him by the Deed of Trust would have to be taken from the shares of the Academy and Pioneers, and said that he had invited Mr. Felton, as representative of the Lick Trustees to be present and offer such suggestions and explanations as he might deem proper. Mr. Felton thereupon read the agreement of compromise, signed by John H. Lick and all the Lick Trustees of both Boards appointed under the new Trust Deed, with exception of Mr. Floyd who was still absent, and also a special and earnest request, signed by the Trustees of both Boards, that the compromise, though involving the relinquishment of any claim on the part of each of the residuary beneficiaries to a sum of \$192,000, should be accepted and concurred in. He also read a schedule showing the valuation and monthly income of the Lick property, and stated that the valuation was based for the most part on prices actually offered. From this schedule it appeared that the property was worth in coin the sum of \$3,062,693.50 and the monthly income was \$14,634. The bequests made by the Trust Deed amounted to \$1,917,000. The proposed compromise would add to this sum \$385,000, making \$2,302,000 and leaving a balance for the residuary beneficiaries of \$60,693.50. If the compromise were effected this balance, to be divided between the Academy and the Pioneer Society, might be relied on with much certainty, but if the compromise were not effected, there would certainly be a long and costly litigation and no certainty as to the result. After Mr. Felton withdrew, the matter was discussed by Trustees and Council, Gen. Colton stated that the Pioneers and all the other beneficiaries had given their consent to the proposed compromise, but he thought it would be time enough for the Academy to act when there was no question as to the rights and powers of those desiring the compromise. On motion of Mr. Ashburner, the matter was referred to Gen. Colton as president of the Board of Trustees to confer with Messrs. Felton and McAllister, with instructions, however, that the Board did not desire at that time to sign the compromise agreement or act in the matter. Gen. Colton then said that he understood the sentiment of the meeting to be that the Academy would be willing to divide the surplus of the Lick estate into three equal parts, of which John H. Lick should receive one part, the Pioneers one, and the Academy one, provided the Academy were guaranteed to have at least \$250,000 and John H. Lick to have nothing until that sum was paid the Academy.

DECEMBER 1, Professor Davidson read a continuation of his papers on irrigation, describing the North Sea Canal of Holland. Henry Edwards presented No. 21 of his papers on "Pacific Coast Lepidoptera, describing two new species of *Thecla*," and W. N. Lockington another paper on the "Crustacea of the West Coast of North

America." T. J. Lowry read a paper on "A New and Expeditious Method of Placing the Transit." Dr. Oliver M. Wozencraft made remarks on the "Feasibility of Reclaiming the Colorado Desert of California." DECEMBER 18 Dr. Kellogg read a paper on "*Tribulus* from the Eastern Shore of the Gulf of California," and Henry Edwards presented No. 22 of his papers on "Pacific Coast Lepidoptera." Professor Davidson read a continuation of his paper on irrigation, describing the Canal Cavour. The nominating committee presented a ticket for officers of 1877, with George Davidson, president, and W. G. W. Harford, director of the museum. DECEMBER 27, at a meeting of the Board of Trustees, the president and treasurer were authorized to borrow from and give the note of the Academy to the Bank of California for a sum not exceeding \$3,000; and among the bills ordered paid was one for \$3,406.16 for taxes on the Market Street property.

Chapter XVII: Year 1877

At the annual meeting of 1877, held JANUARY 2, the president presented his annual address, showing the condition of the Academy and its progress during the past year. The recording secretary reported the aggregate membership as 366. The treasurer reported that disbursements for 1876 at \$10,283.31, and stated that the balance overdrawn, and owing to the Bank of California, was \$1,538.58. The librarian and director of the museum made reports on the condition of their respective departments; showing a satisfactory increase of books and specimens. On recommendation of the Council, Henry Edwards and Dr. Arthur B. Stout were elected honorary life members. On the report of the officers of the annual election, the following were declared elected officers of the Academy for the year 1877: Professor George Davidson, president; Henry Edwards, first vice-president; Henry C. Hyde, second vice-president; Dr. A. B. Stout, corresponding secretary; Charles G. Yale, recording secretary; Edward F. Hall, Jr., treasurer; Charles Troyer, librarian; W. G. W. Harford, director of the museum; David D. Colton, R. E. C. Stearns, Thomas P. Madden, Ralph C. Harrison, William Ashburner, George E. Gray, and John F. Miller, trustees. In the Board of Trustees, a communication was received from the Lick Trustees, asking that someone be appointed on the part of the Academy to examine the personal property of the Lick estate, consisting chiefly of furniture, books, tools and farming implements, at the Lick Homestead in Santa Clara County, which by the terms of the Trust Deed was to be divided between the Academy of Sciences and the Society of California Pioneers, and a schedule of which was also transmitted. JANUARY 15, W. N. Lockington read a paper on "Crustacea of the Pacific Coast"; Henry Edwards, No. 23 of "Pacific Coast Lepidoptera"; Dr. Kellogg, a paper on three new plants; and Professor Davidson, a continuation of his papers on "Irrigation in India, Egypt, and Italy." In the Board of Trustees, the officers of last year were re-elected.

FEBRUARY 5 Henry Edwards presented No. 24 of "Pacific Coast Lepidoptera"; Dr. Kellogg made remarks on the abnormal growth of deer horns; and Professor Davidson read a continuation of his papers on "Irrigation in India, Egypt, and Italy." A letter from S. W. Jewett was read in reference to rocks, with curious inscriptions upon them, found in Kern County. Dr. Henry Gibbons suggested the formation of a Meteorological Section of the Academy; and J. R. Scupham stated that the Central Pacific Railroad Company had for a considerable time kept meteorological records at some fifty different stations and would no doubt be glad to communicate all information in its possession of interest to the Academy. Dr. Stout asked Professor Davidson why great famines occurred in India where such stupendous irrigation

systems were in vogue as he had described. Professor Davidson answered at considerable length, giving the reasons and locations of the famines, and stated that in the districts, where the great engineering works had been completed, no distress was felt. FEBRUARY 19, among the donations were eight fragments of the egg of the extinct dinorensis and a number of pebbles used by that bird to assist its digestive functions. Professor Davidson read a continuation of his papers on irrigation in India, Egypt, and Italy. In the Board of Trustees, Professor Davidson called the attention of the Board to the fact that a member of the Academy had urged him to intervene in the Lick estate business and particularly in reference to the personal property in Santa Clara County, and, knowing, as he did, that the matter was in the hands of the Trustees, he deemed it proper to inform them that outside parties were disposed to interfere. Gen. Colton stated that the business had been placed in the hands of attorneys and that proper steps had been taken for a disposition and division of the property.

MARCH 5, William B. Hyde was elected a life member and John A. Mallory a resident member. Henry Edwards presented No. 25 of "Pacific Coast Lepidoptera," and W. N. Lockington another of his papers on "Crustacea." Professor Davidson read a continuation of his papers on irrigation. He also read "Notes on the Spider Line of the Tarantula," and "Spiders Throwing Their Webs." He then presented a letter from a correspondent on the subject of the production of rain by human agency and read a "Note on the Question of Rain Storms following Great Battles." Dr. Henry Gibbons spoke of the rainfall in California and explained that the rainfall that followed the cannon-firing of the previous July 4 was due to natural causes and not to the explosion of gunpowder. There was generally a tendency to rain about that date; and on that occasion the meteorological conditions were favorable for rain before the firing began. S. R. Throckmorton described a curious fish from Marin County, specimens of which he presented. They appeared to live in the banks of the salt-marsh creeks in holes, the entrances of which were out of water at half-tide; but as the holes ran down into the ground they remained filled with water at all times. MARCH 19, Dr. S. W. Dennis was elected a resident member. R. E. C. Stearns read a paper "On Aboriginal Shell Money"; and W. H. Dall, a paper "On Californian Species of *Fucus*." Professor Davidson read a paper "On the Suez Canal." He also read a letter from the French astronomer Le Verrier in reference to the supposed intra-mercurial planet Vulcan and the time of its passage over the sun's disk. The supposed period of the revolution was 36.02 days. A paper on "Pacific Coast Hymenoptera" by E. T. Cresson was submitted.

APRIL 2, Professor Joseph LeConte read a paper "On the Critical Periods in the Earth's History and their Relation to Evolution; and on the Quaternary as such a Period." J. R. Scupham read a paper on "Nut Grass and Bermuda Grass." APRIL 16, among the donations were bleached and unbleached paper made from the *Yucca* plant, presented by Henry Payot. Professor Davidson read a paper "On Defects of Micrometers." MAY 7, Professor Davidson read a paper "On Breakwaters." Dr. George Bennett was introduced and made remarks on the zoology of Papua. Dr. Kellogg, being called to the chair, a resolution was adopted requesting Governor Irwin to appoint Professor Davidson to fill the vacancy in the Board of Regents of

the University of California, caused by the death of John B. Felton, who had died on May 2, 1877. In the Board of Trustees, on account of the embarrassment occasioned by the low state of the finances and the non-payment by a number of the members of the Academy of their monthly dues, a resolution was adopted urging upon the treasurer extra exertions to make collections and appointing a committee, consisting of Messrs. Gray and Ashburner, to confer with that officer upon the subject. On motion of Mr. Ashburner, the Trustees also adopted a series of resolutions urging Governor Irwin to appoint Professor Davidson a regent of the University in place of John B. Felton, deceased. Henderson Brothers presented a bill of \$16 for planting eight trees on First Avenue in front of the "Academy of Sciences" lot, stating that other property-owners along the street had agreed to pay at the same rate for trees planted in front of their property. As, however, the Academy had never signed any agreement or given any order to have the work done, the bill was rejected. Payment of a bill for \$730.65 for printing the Academy's *Proceedings* for 1875 was deferred for want of funds, although other bills, amounting to \$350, were ordered paid. In the matter of the controversy with John H. Lick as to the Lick estate and the proposed compromise of it, Gen. Colton reported that he had as the representative of the Academy, at the request of a committee of the Society of California Pioneers, met with them for the purpose of taking the subject into consideration. The Pioneers were in favor of accepting the compromise recommended by John B. Felton on November 10, 1876. William T. Coleman, as representative of the Pioneers, had said that everybody had consented to the compromise except the Academy. He had answered Mr. Coleman by saying that, as all the sacrifice was to come from the Pioneers and Academy, the other parties, not being affected financially, would naturally consent; but the Academy was not disposed to submit to an arrangement so detrimental to its interests. He had said, however, that he would agree on the part on the Academy to take \$350,000 cash, and let the balance go. He also said that Messrs. S. M. Wilson and R. C. Harrison, whom he had consulted as attorneys, considered the proposition, that the Academy and Pioneers should bear the whole burden of the compromise, was unreasonable and unjust, and proposed that the amount of the sacrifice should be divided *pro-rata* among all the beneficiaries named in the Trust Deed or, in other words, that each beneficiary should contribute proportionally; and that he had finally agreed that, if the other beneficiaries would accept this proposition, the Academy would give its proportion of 13½ per cent of what was necessary. The final result of the conference was an agreement that the other beneficiaries were to be asked to consent to this arrangement; and papers were being prepared for the necessary signatures.

MAY 21, L. C. McAfee, J. C. Cebrian, and J. T. Murphy were elected resident members. Professor Davidson gave an account of the earthquake tidal waves, which entered the Bay of San Francisco on May 10, illustrating his remarks with diagrams showing the oscillations enlarged from the lines traced by the pencil of the tide-gauge at Fort Point. JUNE 4, Dr. Kellogg described fourteen new species of plants. J. P. Moore read a paper on "Foods," urging upon the Academy the utility of making

collections and directing attention to that subject. Professor Davidson read a paper on "Breakwaters in Europe." JUNE 18, J. R. Scupham presented two specimens in bottles of the Gordins or hair-snake, not uncommonly found in railway-station water tanks. He said that the specimens well illustrated the readiness with which a mistaken opinion might be formed in respect to the growth of these creatures. After having kept the bottle a few days, a long white substance had been developed, which was a production of young *Gordii*. He then gave a sketch of the life-history of the animal and showed how far removed it was from a hair. S. B. Christy read "Notes on the Monte Diablo Coal Mines," giving an analysis of various coals from California and Washington Territory. In the Board of Trustees, a letter was received from Edward F. Hall, Jr. tendering his resignation of the office of treasurer. As this action on the part of Mr. Hall was clearly occasioned by the action on the part of the Board of Trustees on May 7, in reference to the collection of delinquent monthly dues, the Board, instead of accepting the resignation, adopted a series of preambles and resolution to the effect that Mr. Hall had misapprehended the purpose of the action of the Trustees; that no reflection upon or censure of the treasurer had been intended and was expressly disclaimed; and that, as it appeared from the report of the committee appointed to confer with him that he had exercised due diligence and faithfulness and done all he could in the collection of dues, the resolution adopted May 7, should be and was recalled and expunged from the record; and the secretary was instructed to inform Mr. Hall of the action thus taken. A letter was received from Spaulding & Barto, offering to complete the printing of the *Proceedings* of the Academy for 1876, which was partly in type, and wait a reasonable time for payment of the bill, provided their bill for \$739.65, already for several months overdue, were shortly paid and the Trustees authorized the printing to go on. The Board, however, declined to authorize any further printing for the time, on the ground that it had no power to create a debt.

It may be here added that, on account of this doubtless very proper unwillingness of the Board to incur indebtedness, although the printed volume of the *Proceedings* of the Academy for 1876 was finally completed and published, it was the last one of the old series of printed *Proceedings*; and no other printed volume of the Academy was issued until about 1883, when the finances of the institution were in better condition. For this reason the records of the Academy for 1877 and several succeeding years, consisting merely of written minutes without the texts of papers read, are more or less imperfect. The princely donation of Mr. Lick, although it enriched the Academy and eventually turned out to be much larger than the sum which the Board of Trustees would at that time have been willing to accept, was not yet, nor was it for some years to come, available. On the other hand, it was not exactly correct that the Board had no power to create or incur a debt. It had already, on account principally of the necessity of paying the taxes on the Market Street property, been compelled to borrow money and give its note for the amount, as before stated; and the same necessity continued for some years to come, as will be seen in the further history of its progress.

JULY 2, among the donations was cotton from Fort Yuma, raised there by Col. Barney; also a bottle of fish from an artesian well near Santa Barbara, presented by Thomas R. Bard. Professor Davidson read a paper "On the Breakwater at the Island of Alderney; with Practical Conclusions on Breakwaters in general, especially as regards the Pacific Coast." Dr. Kellogg read descriptions of three new plants. Edward F. Hall, Jr. tendered his resignation as treasurer of the Academy, which was accepted, and the matter of appointing a successor referred to the Council. JULY 16, Professor Davidson read a paper "On Spectrum Phenomena Observed in Heliotropic Signals," Dr. Blake, a paper of "Observations of the Evidence of Glacial Action in the Sierras"; W. N. Lockington, a paper on a species of shark; and Dr. Kellogg, a paper on five new species of plants. An announcement was made that the Council had chosen A. McF. Davis as treasurer in place of E. F. Hall, Jr., resigned. AUGUST 6, Dr. Kellogg read descriptions of four new plants. R. E. C. Stearns read "A Criticism on Mr. Barber's Treatise on Shell Ornaments found in Colorado, Utah, and Arizona." AUGUST 20, George W. Dent, E. W. Bowen, and Dr. A. M. Edwards were elected resident members. Professor Davidson read a paper "On the Determination of the Earth's Distance from the Sun by Means of the Parallax of Mars at Opposition"; also a paper on "The Spectrum Appearance of Venus when near the Horizon." Dr. Kellogg described five new species of plants. SEPTEMBER 3, Professor Davidson read a paper "On the Systems of Triangulation in Use by the Engineers in India." Sir Joseph Hooker was introduced and spoke of "Observations of Earthquake Waves in Australia."

OCTOBER 1, Dr. Kellogg read descriptions of new species of plants. OCTOBER 15, W. N. Lockington read a paper "On the Evolution of Nerves and Nerve Tissue." NOVEMBER 5, Professor Davidson read a paper on "Apparatus for Geodetic measurement adopted by the Coast Survey"; made remarks on the rotation of Saturn; read a paper by Professor Newcomb on the satellites of Mars, and offered a tribute to the memory of Le Verrier, the French astronomer. NOVEMBER 19, Mrs. J. H. Sargent and Miss S. A. Plummer, the first lady applicants, were proposed for membership. F. T. Newberry read a paper "On the *Eucalyptus*," referring particularly to remarks made at a previous meeting by Dr. Kellogg and Dr. Behr with reference to its fire-resisting qualities. He quoted newspaper reports of what these gentlemen had said and controverted the statements attributed to them that eucalyptus wood was fire-proof. Dr. Kellogg answered that the remarks attributed to him by the newspaper were incorrect. What he had said was that some forms of eucalyptus had the property of not blazing, and that in the case of a shingle made of some varieties of the tree, if a live coal were dropped on it, a hole might be burned through, but it would not blaze up. Such was the only statement he had made in that regard, and he had never said that the shingle or the wood was fireproof. Dr. Behr, in answer to Mr. Newberry, said that the eucalyptus did have a certain immunity from fire. The leaves would burn very generally; but the wood was difficult to set on fire and was not apt to hold fire. He knew of but one case of an extensive fire in a forest of eucalyptus trees. Those trees were spread over the entire country on what was known as the "open" or "scrub"

in South Australia. Fires occurred nearly every year in the scrub; and the scattered eucalypti frequently showed traces of the fire; but he had never seen them destroyed by it. They were the only trees that survived and sprouted again. In the one instance referred to, the eucalyptus trees took fire and burned long before he visited the spot; but some of the old settlers recollected the circumstance.

Mr. Newberry thought Dr. Behr mistaken about the eucalyptus not readily taking fire and burning up completely. Dr. Behr replied that he had resided in Australia several years and knew whereof he spoke. He had been there for the purpose of studying botany and traveled in different parts of the country, not confining himself to the cities alone. He said the eucalyptus would give out considerable heat when once lighted; but as to forest fires, when every other vegetable growth was entirely destroyed, the eucalypti alone would sprout again. Mr. Newberry said that in the Australian diggings he had once lighted two green logs of eucalyptus wood, each two feet thick; and they had held fire for two weeks, even in rainy weather. He had used green logs because the dry wood was too hard to chop. He also said that in the "Great Black Friday Fire" in Victoria, all the eucalypti were burned – that is to say, all the branches; but it was true that the trees budded out again ultimately. He added that the trees would stand any ordinary amount of cold. Dr. Behr said that the most northern point in Europe, where the eucalyptus was cultivated, was Geneva in Switzerland. It had been planted and grew in Florence and Pisa in Italy and some other places in Northern Europe, where there were some frosts. J. R. Scupham said that the tree had been planted in Florida and Georgia, but had been destroyed by frost. Dr. Kellogg said that Mr. Newberry's paper was especially valuable inasmuch as it called attention to the fact that we were not cultivating the best varieties; and this he himself had always thought to be the case. People who planted eucalyptus trees should be careful to make a good selection of species. He thought, however, that Mr. Newberry was mistaken in his statement that the teredo attacked eucalyptus as readily as it did pine. There was a specimen of eucalyptus pile in the Academy that had been in the water a long time and no teredo had attacked it, while another specimen of pine pile, which had stood alongside it, was completely honey-combed. The specimen of *Eucalyptus* was, he thought, *Eucalyptus marginata*. Mr. Scupham said that *E. marginata* did resist the ravages of the teredo, and that *E. rostrata* would resist those of the white ant. He further said that *E. rostrata* would last as a railroad tie from 9 to 14 years, and in some instances it had lasted 18 years. But all the varieties would not grow here. Some flourished in California as well as in Australia, and some, like the *E. globulus*, even better. *E. cornuta*, *E. sisalis*, and *E. hemiflora* grew fast and large, as did *E. gigantea* (?Desf. {=*globulus*}; ?Hook. {=*obliqua*}). On the other hand, it was difficult even to sprout the seeds of *E. marginata* and *E. rostrata*. They would, under favorable circumstances, grow perhaps six feet in as many years, while the *E. globulus* would in the same length of time reach a height of 60 feet. The peculiar combination of heat and moisture in some places was favorable for some varieties, but not for others. He had himself tried some experiments the previous year for the Southern Pacific Railroad Company with these trees on the Colorado Desert. He had

planted *E. globulus* and *E. cornuta*; and they had grown all right during the summer and were from three to six feet high; but the winter frosts of Southern California killed them all.

Dr. Behr thought the growth of some varieties depended greatly on the character of the soil. He had in some districts found the same varieties small and stunted in one spot and large and flourishing in another spot near by and apparently the same, except different in soil. Mr. Scupham said he had searched all over the State to find a large specimen of *E. marginata* and, although he had heard there were many, he had not been able to find any more than six feet high. Mr. Newberry spoke in reference to Dr. Kellogg's statement about the so-called "iron bark" eucalyptus and the teredo. He said that in New Zealand, where they suffered greatly from the teredo, they had tried every variety, and found the "iron bark" as worthless as the other kinds for protection against the borers. As to Mr. Scupham's remarks about the loss of trees on the Colorado Desert from frost, he thought it more probably that the wind had done the mischief. Mr. Scupham replied that where the trees were planted, the winds prevailed only in the summer; and the trees were all right then. But in the winter there was little or no wind, only it was cold and frosty; and it was at that time that the trees died. Dr. Stout closed the discussion by remarking that it was very interesting as well as important for the reason that the eucalyptus was being planted very extensively in California, and all the information that could be obtained in reference to it was valuable.

In response to the wide-spread interest in having California properly represented at the Paris Exposition next year, Dr. Stout offered a resolution that "The California Academy of Sciences accept the invitation of the French Government to participate in the proposed International Exhibition . . . [and] that the Academy . . . cooperate with the Commission appointed . . . by the Governor of California to represent the scientific, agricultural and commercial interests of California in the . . . exposition."

NOVEMBER 26, at a meeting of the Board of Trustees, Gen. Colton read a letter from the Lick Trustees, stating that they were ready to pay over in equal proportions to the Academy of Sciences and the Society of California Pioneers, the net proceeds of sales of the property left by Mr. Lick at his homestead farm in Santa Clara County, "upon the execution and delivery to the Trustees of proper bonds by each against adverse claimants." It appeared that the reason these indemnity bonds were required was that, on account of the refusal of the Academy to accept the compromise proposed by John H. Lick, he was pressing his claims, and the Lick Trustees deemed it unsafe to make any distribution without indemnity as long as those claims remained unsettled. In the meanwhile, they had been obliged, on account of the opposition and standing out of the Academy to commence a suit, nominally against all the parties in interest but in reality against the Academy alone as the only adversary, for the purpose of obtaining an adjudication approving and authorizing the compromise. In reference to that subject, Gen. Colton said that the Board considered the demands of John H. Lick unfair and unjust; but it had offered to accept a decree of the Court distributing the amount necessary to carry out the compromise *pro rata* among the different

beneficiaries. Counsel had been employed to defend against the suit; and an answer had been filed, in substance making this proposition, to which he had sworn on behalf of the Academy; and that was the condition of affairs at that time.

DECEMBER 3, ladies were for the first time proposed for resident membership: Miss Jessie Smith,^{17.1} Miss Carolina L. Hunt, Miss Helen M. Thompson, and Mrs. M. E. Edwards^{17.1}. Dr. Kellogg described a number of plants. A paper on "Mars and His Moons" by Professor John LeConte was read. W. W. Hollister exhibited specimens raised in this State of trees brought from Japan eight years before. He said the varieties were numerous and would grow nearly every where in California. The fruit was delicious and would preserve in its own saccharine matter. The trees themselves were ornamental as well as useful. DECEMBER 17, Henry Edwards presented No. 25 of his papers on "Pacific Coast Lepidoptera." J. R. Scupham gave the results of a series of meteorological observations in this State and referred to the apparent failure of the theory of eleven-year periods of sun-spots in relation to rainfall. Dr. Behr read a paper "On the Resistance of Eucalyptus to Ignition." Professor Davidson read a paper "On the Necessity of a Physical Survey of the State of California," and Professor E. W. Hilgard made remarks on the same subject. The nominating committee, appointed at a joint meeting of the Council and Board of Trustees, reported a ticket for officers of 1878.

^{17.1} See footnote 18.2.

Chapter XVIII: Year 1878

The annual meeting was held JANUARY 7. The president and officers presented their reports showing the condition and progress of the Academy during the past year. The annual election resulted in the choice of Professor George Davidson as president; Henry Edwards, first vice-president; Henry C. Hyde, second vice-president; Dr. A. B. Stout, corresponding secretary; Charles G. Yale, recording secretary; Elisha Brooks, treasurer; Charles Troyer, librarian; W. G. W. Harford, director of the museum; David D. Colton, R. E. C. Stearns, George E. Gray, Ralph C. Harrison, Thomas P. Madden, William Ashburner, and John F. Miller, trustees. On nomination of the Council, Professor George Davidson was elected an honorary life-member. In the Board of Trustees, it appeared that there were not sufficient funds on hand to pay the tax bill of \$2,684.61, assessed against the property of the Academy; and Gen. Colton, as president of the Board, was authorized to make an arrangement with the Bank of California to pay the taxes on the Market Street property. A bill of Henry M. Newhall for \$216.85, being \$150 rent of the Academy building for the month of December, 1877, and \$66.85 for repairs of building, was ordered paid. Gen. Colton then presented to the Board his annual report, which, it appears, was never read to the Academy. He commenced by saying that it was his duty to report the condition of the temporalities of the Academy at the close of the year just past; but it was neither pleasant nor satisfactory to him to do so. The treasurer's report showed that the indebtedness of the institution was over \$4,000, and this was the more unsatisfactory for the reason that the most rigid economy had been practiced; so much so, that complaints had been made of the Trustees for declining to allow expenses for which there was no money to pay. But it had been the unanimous determination of the Board to incur no liability against the Academy, which could not be met from what could be reasonably expected to be the revenue of the Society; for to rush into debt, without certainty of the source from which the necessary funds would be forthcoming, would simply be to jeopardize all the valuable property of the Academy; and this the Board would never consent to do. Under the circumstances any accusations against the Trustees of too much economy were not only unkind, but unjust.^{18.1}

He regretted, he went on to say, that the very moderate and reasonable hopes of the Trustees, at the close of the last year, of the receipt of certain funds, being the

^{18.1} Though perhaps unjust, among the measures taken to economize were suspension of publication in 1877 of the *Proceedings* of the Academy and of the purchase of publications for the library (W. N. Lockington to W. H. Dall, Dec. 21, 1878 and 27 Jan. 1879. SIArchives, RU 7073 ; William H. Dall Papers, 1865-1927, Box 13, Folder 25). In time these measures took their toll and the Academy alienated several of its most active scientist members (e.g., Robert E. C. Stearns, Joseph LeConte, George Davidson, Lockington, and Albert Kellogg, who declined to leave his plant drawings to the Academy).

proceeds of the personal property at the Lick homestead, which had been specifically donated to the Academy by the late James Lick, had not been fulfilled, although the property had been sold and “those claiming to be the Trustees of the Lick estate” had received the money. Such unreasonable conditions had been imposed upon the Academy, without compliance with which they would not pay over the money, that the Academy had been precluded from the receipt of the same. Although the managers of the estate had found or assumed authority to sell the property and receive the proceeds, they would not consent to pay us our portion, notwithstanding the authority to sell and to pay over the proceeds were inseparable under the terms of Mr. Lick’s deed. And he would further say that the parties managing the Trust under Mr. Lick’s deed did not seem disposed to acknowledge the relationship of the Academy of Sciences to the Lick property as indicated by Mr. Lick’s express declarations. Instead of adhering rigidly to the fulfillment of the Trust Deed in accordance with its spirit and letter, they had manifested a disposition to abandon Mr. Lick’s instructions so far at least as the Academy was concerned. They had assumed a right to donate to those claiming to be heirs a large proportion of the property expressly given by Mr. Lick to the Academy, ignoring the fact that Mr. Lick himself was the only proper judge of the amount he would give to those claiming relationship; and he regretted to say that the business had practically resolved itself into the proposition of the Academy being compelled to stand solitary and alone in defending and maintaining the Trust as originally designed by the Great Philanthropist. But notwithstanding this position of the Academy, and though it carried with it much annoyance and trouble, the Board of Trustees deemed it a sacred trust, which they had inherited from Mr. Lick, and they would endeavor to maintain inviolate his last wishes as expressed both in writing and verbally. The Board had therefore retained Messrs. S. M. Wilson and R. C. Harrison as attorneys to protect the trust; and there was every reason to hope and believe they would be successful, and that in the end the unjust and absurd claims of the managers of the Lick estate would be settled adversely to them in the courts.

By reference to the treasurer’s books, it would be seen that the Market Street property produced but little more than enough to pay its own taxes and expenses; and, as it came to the Academy already burdened with an unpaid tax, it had been necessary to borrow money to clear it, and thereby to incur and indebtedness. This would have been avoided if the money realized by the managers of the Lick estate from the sale of the homestead personal property had been turned over, which, as already stated, had not been done. In conclusion he said that the impression was strong upon his mind that under the existing management of the Lick Trust the Academy, as a residuary and therefore a favored beneficiary, would receive little or nothing out of the vast estate, instead of several hundred thousand dollars, as Mr. Lick sincerely believed it would. Trusting, however, that the course pursued by the Board of Trustees would meet with approval and hoping that the workings of a wise Providence may give us a more satisfactory showing in the matter before the close of another year,” he submitted the questions involved to thoughtful consideration.

JANUARY 21, ladies were for the first time elected and became resident members

of the Academy at this meeting. They were, in the order of their applications, Mrs. J. H. Sargent, Miss S. A. Plummer, Miss Jennie Smith,^{18.2} Miss Caroline L. Hunt, Miss Helen M. Thompson, Mrs. Mary E. Edmonds^{18.2} and Mrs. L. M. F. Wanzer. At the same meeting Alexander Del Mar, G. P. Rixford, E. S. Parker, J. G. Lemmon, C. C. Cadman, Thomas A. Holman, and John T. Evans were elected resident members. Professor Davidson read a paper "On the Habits of the Walrus," from information furnished him by Captain Thomas W. Williams; Dr. G. F. Becker, a paper "On Rainfall in California"; B. B. Redding, a paper "On the Climate of California," and W. N. Lockington, a paper on a new species of fish.

FEBRUARY 4, R. E. C. Stearns read a paper describing the shells found in a piece of earth from the bottom of a well 47 feet deep in the Colorado Desert, 195.54 feet below sea-level. J. G. Lemmon read a "Description of a New Plant, *Sagina Orata*." Dr. Henry Gibbons read a paper on rainfall, and particularly the downpour of January, 1878. A discussion followed, participated in by Professor Davidson, B. B. Redding and Dr. Gibbons. Mr. Partsch read a paper upon the disease of cattle usually supposed to be caused by eating the loco plant or rattle-weed and attributing it to the larvae of the gad fly. FEBRUARY 18, J. G. Lemmon read a paper "On the *Darlingtonia Californica*." Professor Davidson presented a problem and its solution in reference to the calculation of compound interest paid in advance. Alexander Del Mar followed with remarks upon the same subject. In the Board of Trustees, the officers of the previous year were re-elected. On motion of Gen. Miller, a committee of one consisting of Mr. Madden, was appointed to wait upon the president of the Lick Trustees, ask for, receive and receipt for any moneys in their possession coming to the Academy from the sale of the personal property at the Lick homestead. The secretary reported that the outstanding bills at that time amounted to \$4,964.72, and the cash in the treasury as \$317.99. At an adjourned meeting of the Board, held FEBRUARY 28, on motion of Gen. Miller, an instrument was executed setting forth the donation by James Lick to the Academy of one half the personal property of the Lick estate at the Lick homestead in Santa Clara County; the authorization by the Academy to the Lick Trustees to sell the same as such portions of it as they thought advisable; the sale of certain portions of the property for \$5,976.32, of which the Academy was entitled to one half, and the payment to the Academy of said half or \$2,988.16; in consideration of all which, the Academy thereby formally acknowledged the receipt of said sum and released and discharged the Lick Trustees from all claims on the part of the Academy to the property so sold, and authorized the execution of the instrument in the name and as the act of the California Academy of Sciences by the affixing thereto of its corporate name and seal by the secretary. This important and significant paper, as will be readily perceived, indicated a new movement in the Board of Trustees.

MARCH 4, George W. Prescott was elected a life member, and Charles Webb

^{18.2} Proposed for membership on Dec. 3, 1877, as Miss Jessie Smith and Mrs. M. E. Edwards. In the handwritten minutes for Jan. 21, 1878, at which new members were elected, Jessie Smith is shown as Jennie Smith; Mrs. M. E. Edwards appears in the minutes of Oct. 6, 1879, but on Jan. 3, 1881, on election to life membership, and in the Hittell manuscript, as Mrs. Mary E. Edmonds.

Howard, Mrs. Charlotte Blake-Brown, Elizabeth A. Follansbee, George C. Edwards, George Spaulding, A. Wendell Jackson, Jr., John M. Stillman, Solon H. Williams, and Josiah Keep, resident members. B. B. Redding read a paper on "Olive Culture in California," and Alexander Del Mar, a paper entitled "Interest on Money." MARCH 18, A. Del Mar read a paper "On the Gold Placers of Brazil," and Professor Davidson, a paper "On the Transit of Mercury and What It May Teach." In the Board of Trustees, a communication was received from the Lick Trustees, expressing their desire to turn over to the Academy and Pioneers all the unsold personal property remaining at the Lick homestead in Santa Clara County; and, on motion, Thomas P. Madden, who had acted so judiciously and successfully in the recent settlement, was appointed to receive and divide the same with the Pioneers or sell and divide the proceeds as he might deem most advantageous.

APRIL 1, Dr. W. M. Searsby, B. Murray, Jr., William T. Wenzell, F. C. Bauer, Miss J. G. Oakley, and William C. Belcher were elected resident members. Donations to the museum included 45 mineral specimens from W. G. W. Harford and five specimens of native silver from the Stonewall Jackson Mine, Maricopa Co., Arizona from Prof. Thomas Price. Professor Davidson read papers "On the San Francisco Time of the Transit of Mercury," "Note upon the Periodic Secretion of the Lachrymal Gland," and "Losing and Gaining a Day in Traveling around the World." Dr. Stout read a communication from Count Luboski suggesting the collection of "Statistics of Social Law." J. R. Scupham called attention to the Yucca tree of the Mohave Desert, which he said was peculiar. It had been already utilized for making paper. Engelmann had claimed there was but one variety; but there were more. For three years the trees had not flowered, but they were then in bloom. He then described the differences among several of the varieties. APRIL 15, Professor Joseph LeConte read a paper "On the Formation of Mountains."

MAY 6, a paper by Professor Davidson was read, entitled "A Forward Movement in Astronomy." A dispatch from "Summit" near Donner Lake on the Central Pacific Railroad, dated May 6, 4:20 P. M., announced that the transit of Mercury had been observed there by a party of the Coast Survey. W. N. Lockington read "Remarks upon the Star-Fishes and Serpent-Stars of the Pacific Coast." Rev. Dr. Bleasdale was introduced and spoke of the success attending the establishment of a museum embracing all subjects of interest, at Melbourne, Australia. He recommended in accordance with the Australian plan, an extension of the collections of the Academy to embrace not only scientific objects but all articles of utility to the country, so as to be of practical benefit as well as to popularize science. A discussion ensued as to the best method of popularizing science. MAY 20, Professor John LeConte, Professor Willard B. Rising, Dr. Joseph R. Davidson, and Jay G. Kelley were elected resident members. Dr. Stout called attention to a work on forestry by Professor Simony, a German author, which, he said, contained many facts of value to any country and especially to California. It was resolved, on motion of A. W. Jackson, Jr., that measures should be taken towards a translation and publication of Professor Simony's work in so far at least as it treated of the preservation of forests. R. E. C. Stearns read



A. Wendell Jackson (1874)
Bancroft Library, University of California, Berkeley



Josiah Keep
Bancroft Library, University of California, Berkeley

“Remarks on the Death of Professor Joseph Henry”; and Professor John LeConte, Dr. A. Kellogg, and J. M. Stillman were appointed a committee to prepare and present proper memorial resolutions. The formation was announced of a Zoological Section of the Academy, consisting of W. G. W. Harford, J. P. Moore, Henry Edwards, W. N. Lockington, Henry Chapman, Dr. A. W. Saxe, and Dr. A. B. Stout; also of a Section of Chemistry, consisting of Professors W. B. Rising, John LeConte, G. F. Becker, Joseph LeConte, S. B. Christy, A. W. Jackson, Jr., and J. M. Stillman. Dr. Henry Gibbons called attention to the peculiarity of a continuous rain during the night of May 19 and the day of May 20. The records kept for a number of years showed that some rain might be expected in May; but this rain had been much more copious than usual. He also called attention to a movement on foot to extend the U. S. Signal Service to the Pacific Coast, and suggested a committee to prepare and forward a memorial on the subject to Washington. Dr. Stout moved that the chairman, R. E. C. Stearns, chair the committee and appoint the others. Mr. Stearns agreed and appointed Dr. Henry Gibbons and B. B. Redding to serve with him. In the Board of Trustees, Judge A. C. Bradford, secretary of the Society of California Pioneers, presented a claim for services during the recent session of the State Legislature in procuring the passage of a bill settling the amounts due by the Lick estate for delinquent taxes for the years 1868 and 1869. These taxes were claimed to be unconstitutional and had been in litigation a number of years; but were finally held to be collectable. From the act passed by the Legislature it appears that the delinquency against the Lick estate was settled for the sum of \$15,966.76. Mr. Bradford stated that he thought his services worth \$1,000; that the Lick Trustees were willing to make him an allowance and the Society of California Pioneers had manifested its consent; but that the Lick Trustees desired also the consent of the California Academy of Sciences before taking any action. On motion of Gen. Miller, the matter was referred to the Lick Trustees with an assurance that the Academy made and would make no objection to such action as they might deem just and proper in reference to the subject. Thomas P. Madden reported that a satisfactory division had been made with the Society of California Pioneers of the unsold personal property of the Lick estate left at the Lick homestead.

JUNE 3, Dr. Henry Gibbons made remarks about the peculiar atmospheric currents on the Pacific Coast. The committee on the Signal Service reported that they had prepared a memorial for the extension of that service to California and forwarded it to U. S. Senator Sargent at Washington. A letter from Mr. Browne of Hobartstown, Australia, regarding the properties of the eucalyptus tree in resisting fire was read and discussed. An inquiry being made respecting the habits of the shad on the Pacific Coast, S. R. Throckmorton said that its habits here offered somewhat from the habits of the fish on the Atlantic Coast. There, after going down to salt water, it returned to the waters in which it had been propagated; but here it did not. On this Coast it seemed to have taken a new departure in this respect. Since 1870, about 350,000 shad had been propagated here, chiefly in the Sacramento River at Tehama; and since the propagation commenced, shad had been caught along the Coast from Wilmington, in Los Angeles County, to the Columbia River. This strange freak of abandoning its

natal place was attributed to the influence of the herring, which seemed to inveigle it from the staid and orderly paths of its ancestors. The companionship of the plebeian herring appeared to exert such a fascination over the patrician shad upon this Coast that they renounced their birthplace and traveled about with the roving schools of herring; while in the East the shad always made pilgrimages to the home of their nativity. Another inquiry was made as to the notion, common in some quarters, that under certain circumstances, wheat would change into cheat; but after a few words it was dismissed as an exploded idea and not worthy of discussion. JUNE 17, on the reading of the minutes of the previous meeting, J. R. Scupham questioned their correctness as to the habits of the shad on this Coast. He thought it improbably that Mr. Throckmorton said or intended to say all that was attributed to him; the fact being that the shad did return to their natal waters, only their habits in this regard were somewhat less marked on this Coast than elsewhere. R. E. C. Stearns read a paper "On the Theory of Protection as Illustrated in the Seeds of Several California Plants." Henry Edwards presented Nos. 27 and 28 of his papers on "Pacific Coast Lepidoptera." The committee on the death of Professor Joseph Henry presented a series of resolutions, which were adopted, in regard to the great services of Professor Henry to science, giving an account of his principal discoveries, particularly in reference to electro-magnetism and electric telegraphy; also his services on the U. S. Lighthouse Board, and his labors and influence in the development and administration for more than thirty years of the Smithsonian Institution. A copy of the resolutions, signed in behalf of the Academy by John LeConte, Albert Kellogg, J. M. Stillman and Robert E. C. Stearns, was forwarded to Prof. Henry's widow.

JULY 1, among the donations, was a piece of a redwood tree enclosing acorns supposed to have been deposited in the wood by the carpenter woodpecker. The rings of the wood indicated a growth of forty years outside of the acorns. Henry Edwards presented No. 29 of "Pacific Coast Lepidoptera." W. N. Lockington read a paper on "Constaces," and A. Del Mar, one "On the Silver Question." JULY 15, Dr. Stout, as corresponding secretary, reported the receipt from France of a pamphlet announcing the formation in Paris of an "Indo-Chinese Society," portions of which, after translation, he read. His remarks, especially in so far as they involved the Chinese question, then a matter of political controversy, elicited considerable discussion; but he insisted upon the importance of the subject and gave notice of his intention to move for the formation of an Oriental Section of the Academy. Henry Edwards presented No. 30 of his papers on "Pacific Coast Lepidoptera." AUGUST 5, J. P. Moore read a paper "On the Salmon Disease," and A. Del Mar, one "On Our Civilization." Dr. Stout stated that a Section of the Academy on Oriental Literature had been organized, and that the Council had reported favorably upon it. On his motion, the action of the Council was approved. He then made remarks upon the growing importance in California of artesian wells, and the need of further scientific investigation in regard to them. Rev. Dr. Bleasdale spoke about gems and particularly of those found in California. Henry Edwards, on account of intended departure from the State, tendered his resignation as first vice-president of the Academy, which was accepted; and the

matter of filling the vacancy was referred to the Council. It was moved that Academy member Dr. S. W. Dennis be appointed the Academy delegate to the meeting of the American Association for the Advancement of Science and that he ask the association to take under advisement a proposition to hold its next meeting in San Francisco. AUGUST 19, E. S. Pillsbury, L. E. Ricksecker, August Harding, and Edward Booth were elected resident members. Alexander Del Mar donated a large number of books to the Academy. Dr. O. M. Wozencraft read a paper on the "Proposed Irrigation and Improvement of the Colorado Desert." Amos Bowman presented a map of California, compiled from authentic sources and designed for the use of those interested in forest culture. The Council reported the election by them of Dr. Harvey W. Harkness as first vice-president of the Academy in place of Henry Edwards resigned.

SEPTEMBER 2, S. B. Christy read a paper "On Ocean Placers of San Francisco"; J. P. Dameron, one "On Magnetic Currents, Aurora Borealis, and Open Polar Sea," and A. Del Mar one, on "Finance." SEPTEMBER 16, among the donations was a number of plants collected on the Great Wall of China by the late B. P. Avery. Dr. Kellogg read a paper describing the plants collected by Mr. Avery. J. P. Dameron read a paper entitled "Evolution of the Soul." OCTOBER 7, a communication from the Council announced that they had adopted a resolution to the effect that thereafter all written papers should be submitted to the Council before they were read in the Academy, and that no paper should be read unless it had been accepted by the Council. On motion the resolution was adopted as that of the Academy. It appearing, however, that Alexander Del Mar had prepared for that evening a paper on "The Poorer Countries of Europe," the rules were on motion suspended, and the paper read. The formation of a Section of Geology and Mineralogy was announced and approved, consisting of Professor Joseph LeConte, A. W. Jackson, Jr., S. B. Christy, Thomas Price, C. D. Gibbes, Josiah Keep, Edward Booth, August Harding, Amos Bowman, Jay G. Kelley, and William Ashburner. OCTOBER 21, Dr. Hugh Whittell was elected a resident member. W. N. Lockington read papers "On Specific Names" and "Description of Two New Fishes." In the Board of Trustees, R. E. C. Stearns was requested to prepare resolutions of respect to the memory of Gen. David D. Colton, late president of the Board, who had died on October 9.

NOVEMBER 4, A. W. Jackson, Jr. read a paper "On the Microscope in Geology." J. P. Moore spoke on the "Relations of Fungi to Disease." Drs. Behr and Bleasdale made remarks upon the same subject. Dr. H. W. Harkness described the nest of a mud-wasp in which he had found living spiders some months after they had been confined there by the wasp. He said they had remained in a hypnotic condition and without food for that length of time. NOVEMBER 18, E. A. Parker and Alonzo Phelps were elected resident members. Professor Joseph LeConte made remarks in reference to the new Section of Geology, Mineralogy and Mining, saying that it had been intended to embrace not only all scientific cultivators of those branches of knowledge in the Academy, but also all members who had any practical knowledge of them. The object was to attract everyone interested in those subjects. He said that the formation of Academy Sections and the activity stimulated by them would, hopefully, react

[favorably] on the Academy and "review the vigor of the whole body." He spoke also of the commonly received opinion, among certain classes of the community, that there was an antagonism between theory and practice, but he said that true theory was indissoluble from true practice. Mr. Yale then announced that the Council had, at the request of the Section, approved renaming it to the Section on Geology, Mineralogy and Mining from Geology and Mineralogy as first proposed. W. N. Lockington read "Notes on Fishes," Dr. Harkness read a paper of "Observations on the Fungoid Diseases of our Forest Trees." B. B. Redding said the fungoid growths on cedar trees were so common along portions of the lines of the Central Pacific Railroad that he had supposed them to be natural characteristics of the trees. In the Board of Trustees, B. B. Redding was elected to fill the vacancy in the Board occasioned by the death of Gen. Colton; and William Ashburner was elected president of the Board. Gen. Miller was elected president *pro tem* in place of Mr. Ashburner.

DECEMBER 2, J. M. Stillman read a paper "On Chemical Synthesis," W. N. Lockington, one on "Claims of Zoology," and A. Del Mar, one on "Insanity and Suicides in Mining Countries." The latter was followed by a discussion, in which Messrs. Stretch, Scupham and Redding participated. DECEMBER 16, A. Del Mar read a paper "On Evolution of Words." A paper by C. D. Gibbes "On Artesian Wells," was read by Prof. Price. Diagrams were presented showing the strata underlying the City of San Francisco. The subject was discussed by Messrs. Harkness, Price and Dr. Gibbons. The nominating committee reported a ticket for officers of 1879. R. E. C. Stearns made remarks and presented resolutions of respect to the memory of Gen. D. D. Colton, late president of the Board of Trustees, which were read and adopted as expressive of the sense of the Academy.^{18.3}

^{18.3} Stearns remarks were subsequently printed and distributed as a "Memorial" publication of 3 pages.

Chapter XIX: Years 1879-1880

1879

At the annual meeting of 1879, held JANUARY 6, the several annual reports of the president and officers, showing the conditions and progress of the Academy during the previous year, were read. William Ashburner, the new president of the Board of Trustees, presented a report of the transactions of that body, and the secretary set forth the financial condition of the association. The officers of election reported the following as chosen officers for 1879, and they were accordingly so declared: Professor George Davidson, president; Dr. H. W. Harkness, first vice-president; Henry C. Hyde, second vice-president; S. B. Christy, corresponding secretary; Charles G. Yale, recording secretary; Elisha Brooks, treasurer; Charles Troyer, librarian; W. G. W. Harford, director of the museum; William Ashburner, R. E. C. Stearns, R. C. Harrison, George E. Gray, Thomas P. Madden, John F. Miller, and B. B. Redding, trustees. B. B. Redding read a paper on "The Foothills of the Sierra." Dr. James Blake made remarks upon the same subject. On nomination of the Council, Dr. H. H. Behr was elected an honorary life member. In the Board of Trustees, the president reported that, in accordance with authority conferred upon him, he had borrowed \$12,000 from the Bank of California, for which he had given the note of the Academy, drawing ten per cent per annum interest, and sent to the tax collector a certified check for \$3,286.08, the amount of taxes assessed against the Academy. The secretary reported the receipts for 1878 as \$3,001.86, from sale of personal property of the Lick homestead; \$2,805, rent of Market Street log; \$120, rent of hall; \$100, one life membership fee; \$2,323.50, monthly dues; \$317.99, cash on hand January 1, 1878; making a total of \$8,668.35. The expenditures, including \$2,684.61 for taxes and \$1,950 for rent of Academy building, were \$7,171.73, leaving a balance of cash on hand January 1, 1879, of \$1,496.62. The debts outstanding, however, amounted to over \$3000. JANUARY 20, among the donations was a sponge from the Farallon Islands, brought up from a depth of 140 fathoms by the donor, Francisco Forcada. S. B. Christy read a paper "On the Formation of Cinnabar Deposits." Dr. James Blake read a paper "On Comparative Rainfall in Different Places in California." Dr. Kellogg described two new plants.

FEBRUARY 3, among the donations was a sample of brown sugar, the first made from sugar cane in Arizona, presented by George A. Treadwell. Eadweard J. Muybridge presented a set of photographs, showing in continuous series the positions of

a horse in trotting, running, and walking. Professor Davidson read a paper "On Geodetic Instruments of Precision at the Paris Exposition and in European Workshops." W. N. Lockington read "Descriptions of Fishes Found in California Markets." Dr. Stout read a letter from Captain Howgate commending his plans for reaching the North Pole, it would have a beneficial effect by influencing legislation in the direction of a government appropriation. On motion of J. M. Stillman, the matter was referred to the Council for consideration. In the Board of Trustees, William Ashburner was elected president for 1879; B. B. Redding, president *pro tem*, and Charles G. Yale, secretary. Mr. Yale was credited with \$100 on back salary owing to him, to pay for a life membership in the Academy. The president was authorized to make a payment of \$400 on account of the note to the Bank of California. A salary of \$50 per month to the director of the museum was continued. FEBRUARY 17, Delos Lake, Mrs. Mary K. Curran, Mrs. Volney Cushing, and A. C. Russell were elected resident members. Professor Albin Putzker read a paper "On the Scientific Study of Languages." Dr. James Blake read a paper "On Temperature in Relation to Elevation." The president reported that the Council had adopted a resolution in favor of Captain Howgate's plan for Arctic discovery, and that a copy of it had been forwarded to U. S. Senator Sargent at Washington. Dr. Henry Gibbons exhibited apples gathered on February 16 from trees in Alameda County. For a considerable time the trees had been bare of leaves, but the apples still hung in good condition upon the branches, thus showing peculiarities of California climate. In the Board of Trustees, the president reported having paid \$426.67 in silver, equivalent to \$416.67 in gold, on the \$2,000 note owing to the Bank of California. Financial affairs appeared to be so stringent that it was resolved to present a statement to the Academy at large, representing the probably necessary expenditure, if the Academy was to be kept open, and that to keep it open more money would have to be provided.

MARCH 3, A. Del Mar read a paper "On the Growth of the Wealth of Nations." A paper by J. P. Moore was read, describing the red truffle, a specimen of which had been found at San Rafael, Marin County. It was one of the first truffles found in California. A discussion ensued in reference to the cultivation of truffles and mushrooms in California, in which Messrs. Harkness, Redding, and Stretch participated. Professor Davidson read "New Problems in Mensuration." A communication was received from the Board of Trustees, setting forth the financial condition of the Academy, the embarrassments in providing funds for carrying it on, and the necessity of active cooperation on the part of members to increase the sources of revenue. It stated the monthly income at \$393, and the monthly outlay, as the Academy was then carried on, at \$500, leaving a monthly deficit of \$107. This made no provision for printing of *Proceedings* or for legal expenses in reference to the Lick Trust affairs, in which the Academy was involved. All the other expenses were as low as they could be made, the main items being a monthly amount of \$250 for taxes, \$150 for rent of the Academy building, and \$50 as salary of the director of the museum. Under the circumstances, though the Trustees did not wish to be considered as prescribing any course of conduct, it seemed plain to them that, unless some action were taken by the

members themselves, such as submitting to a voluntary assessment or increasing the amount of their monthly dues, or in some other manner increasing the funds, there would be “no other course open to them excepting that of closing the Academy.” After the reading of the statement and some discussion in reference to it, on motion of Dr. Harkness, a committee of three, consisting of Messrs. Harkness, Ashburner, and Leo Eloesser, to which Professor Davidson was afterwards added, was appointed to solicit the necessary subscriptions to keep the Academy open. The Council reported the appointment of it by Dr. Kellogg as Curator of Botany and of Dr. Stout as Curator of Ethnology and Osteology. MARCH 17, B. B. Minor and Ivan Petroff were elected resident members. Among the donations were white crystals from the Colorado Desert, used by the Indians as a white paint, presented by J. P. Moore. There were also, among a number of ores and minerals presented by John T. Reed of Oak Grove, San Diego county, two specimens supposed to be cryolite, the first found in the United States. It appeared that Mr. Reed some time previously, in looking over the collections in the museum, had seen Greenland cryolite and said there was a mineral of the same kind in San Diego County. A piece of cryolite was given him; and, on his return home, he went to the deposit and sent to the Academy the specimens referred to, which were apparently of the same nature as the genuine article and, if so, of great commercial value for the manufacture of a particular kind of glass. B. B. Redding read a paper “On the Sanitary Influence of Trees.” J. M. Stillman read a description of a new mineral found in San Bernardino County and named by him, at the suggestion of the donor, B. B. Redding, “Bernardinite.” W. N. Lockington read a paper “On the Flounders of the San Francisco Markets.” The committee appointed at the last meeting reported progress in the matter of providing funds to keep the Academy open.

APRIL 7, Ross E. Brown, D. P. Belknap, and John G. Russell were elected resident members. J. M. Hutchings^{19.1} presented specimens of quartz and black shale and also white clay, used by the Indians at Warner’s Ranch in San Diego County as paint. Dr. Kellogg read a description of a new plant, and Professor Davidson presented four new problems in mensuration – one of which was, to subdivide a cone into any number of cones of equal volume. APRIL 21, among the donations was a water-newt from Marin County, supposed to be the Mexican axolotl, but afterwards identified as the *Amblystoma tenebrosum*. B. B. Redding drew attention to the interest and importance attached to the axolotl, and particularly from the standpoint of evolution, as having both lungs and gills, and wanted to know if it was a native of California. Dr. Kellogg stated that he had found the *Amblystoma* in the gill state not at all uncommon in Mendocino County. There it took the hook freely, and to the disgust of fishermen. Mr. Redding said that the axolotl was not uncommon in Mexico and that the Aztecs had been fond of it. Mr. Lockington called attention to the fact that

^{19.1} In 1861, Hutchings published a 267-page popular English-language travel guide, *Scenes of Wonder and Curiosity in California*, one of the earliest to describe for the tourist Yosemite [Yo-semite] Valley, the Calaveras [Mariposa and Fresno {sic}] Big Trees, New Almaden mines, the Farallones Islands, Mt. Shasta, The Geysers, and other natural as well as man-made attractions in the State. This guide, with its descriptions of the routes to the locations and the sites themselves, includes many engravings, some ludicrous, but most historically important images of some of California’s most visited places. Hutchings’s guide, published by the J. M. Hutchings Publishing Co., predates the better known guide by Charles Nordhoff (1876) or Josiah Dwight Whitney’s popular guides to Yosemite (1863, *et seq.*)

the *Amblystoma tenebrosum* and allied species were very common in California and that it was possibly a mistake to call the specimen presented an axolotl. A paper by R. E. C. Stearns was read "On Certain Much Abused Mollusks," in which he pointed out various errors in recently printed books of popular scientific character in reference to those animals. A paper by E. J. Molera was read on "The Economic Divisibility of Light," particularly referring to the electric light. Professor Davidson asked for the authority of a statement in it that 6,000 candles of electric light per horse-power could be obtained, as the authorities so far had asserted that 3,000 candles per horse power was the theoretical limit, and practically only 1,500 candles were really obtained. Mr. Molera stated that he had himself seen 300,000 candles produced by a 25-horse power machine. Considerable discussion ensued in reference to the subject between Mr. Molera and Mr. Scupham. A discussion also took place in reference to Dr. Blake's paper, read at a previous meeting, "On Temperature in Relation to Elevation." A communication was received from the California Pharmaceutical Society, asking the cooperation of the Academy in the establishment of a botanical garden in Golden Gate Park. It was laid over for discussion at a subsequent meeting.

MAY 5, a paper by Professor Joseph LeConte was read "On the Glycogenic Functions of the Liver." Mr. Molera read a continuation of his paper "On the Economic Divisibility of Light." Professor Davidson quoted various authorities to show that the candle-power of electric light obtainable per horse-power was much less than that claimed by Mr. Molera. Dr. Kellogg was appointed a committee of one to confer with the California Pharmaceutical Society in reference to the proposition to establish a botanical garden in Golden Gate Park. A. W. Jackson, Jr. stated that he had analyzed the substance received from San Diego County, supposed to be cryolite, and found it to be silica. MAY 19, W. N. Lockington read "Notes on New and Rare Species of Fishes." A discussion ensued in reference to the organs of hearing of fishes, which was participated in by Messrs. Lockington, Scupham, Stout, Harkness, Redding, Christy, Brooks, and Behr. JUNE 2, Dr. Frisch, then on his way to make natural-history researches in Polynesia, was introduced and presented advanced sheets of a work by him on Siberia. J. M. Stillman described the peculiar characteristics of the new mineral "bernardinite" from San Bernardino County. He said it burned freely like wax, but contained no paraffine. In the Board of Trustees, it was shown that the \$2,000 note to the Bank of California had been reduced to \$1,200. JUNE 16, the meeting was devoted to the reception of Lieutenant G[eorge] W[ashington] De Long, U.S.N. and other officers of the Bennett Exploring Expedition to the North Pole.¹⁹² A large audience was present. Dr. Stout initiated the exercises by

¹⁹² The story of the ill-fated voyage of the *Jeannette* is vividly told in a somewhat romanticized but carefully researched historical narration by Cmdr. Edward Ellsberg, *Hell on Ice: The Saga of the Jeannette*, published in 1938 (Dodd, Mead & Co., New York. x + 421 pp.). A quasi U.S. Naval polar exploration expedition, it was sponsored and fully funded by James Gordon Bennett (1841-1918), son of James Gordon Bennett (1795-1872), owner and publisher of the *New York Herald*. The vessel was outfitted for Arctic exploration at Mare Island, just north of San Francisco, during the spring of 1879. It left San Francisco for the Bering Straits on July 8. The vessel became ice-bound in September after encountering unexpectedly severe early pack ice about 100 miles east of Wrangel Island in the East Siberian Sea at latitude 71°N. The ship was lost and in time most of the crew perished. A few survived and a stirring chronicle of survival can be found in the account by the *Jeannette*'s engineering officer (later Admiral) George W. Melville, *In the Lena Delta* (1885, Houghton, Mifflin & Co., Boston. 497 pp.). De Long's own journals, edited by his wife, Emma, were published in two volumes in 1884 by Houghton, Mifflin, *The Voyage of the Jeannette*

reading a paper on “Arctic Discovery,” after which Lieutenant De Long was introduced and made an address^{19.3} in reference to the proposed attempt to reach the North Pole by way of Behring’s Straits. He said the expedition would commence its real work about latitude 71°, beyond which all was practically unknown. It expected to undergo the same trials and embarrassments that other polar explorers had met with; but as to what might be accomplished he could tell better upon his return. Dr. Harkness, who occupied the chair, called upon several gentlemen for remarks; and in reply, Dr. Behr gave a brief outline of the probable features of high Arctic flora, and J. P. Moore, of probable discoveries of great interest to microscopists. C. W. Brooks also made remarks. William Bradford, the artist noted for his pictures of Arctic scenery, spoke of the great daring manifested by the attempt to reach the pole by the way of Behring’s Straits, above which the general drift of the ice was northward or away from home, while on the other, or Baffin’s Bay and Greenland side, the drift was southward or towards home. He expressed admiration for the courage of the adventurers and a fervent hope for their success. Jerome J. Collins, a member of the expedition, who went in the double capacity of specialist in meteorology and representative of the press, made remarks about proposed meteorological observations in the high north and closed the evening with a statement of the unbounded^{19.4} confidence he and his companions felt in their leader and the determination on their part to leave nothing undone to render the results of the expedition of great value.

JULY 7, among the donations was the foot of a deer from Mendocino County, having a single, solid hoof, instead of a double or cloven one, presented by Joseph Clark. Dr. Henry Gibbons presented seventeen specimens of chrome iron and one of infusorial earth from San Luis Obispo County. W. N. Lockington read a continuation of his paper on “Fishes found in the San Francisco Markets.” Mr. Brooks said that he had received letters from Eastern scientists expressing gratification on the Academy’s actions in regard to the Jeannette Polar Expedition. The death of Dr. John B. Trask was announced, and Dr. Kellogg was requested to prepare appropriate resolutions. JULY 21, Dr. Kellogg read a eulogy upon the late Dr. John B. Trask, one of the founders and a life member of the Academy, giving an account of his scientific work. He submitted resolutions, which were adopted, to the effect that in the death of Dr. Trask the Academy “had lost a highly honored and zealous member, whose faithful services in nearly every department had left lasting memorials of his great industry and devotion to the cause of science, to be long and gratefully remembered.” A letter from Dr. Behr was read in reference to larvae found in the root of an English-walnut tree by Ellwood Cooper of Santa Barbara County. He pronounced them the larvae of a species of *Prionus*, a genus belonging to the *Cerambycidae*. Dr. Kellogg supplemented the letter with a description and drawing of the insect. Mr. Lockington

^{19.3} For a transcription of the proceedings of the reception see Appendix F.

^{19.4} *Fide* Hittell, not in the handwritten records of the meeting (Appendix F) and perhaps a little too exuberant a statement on Hittell’s part in the light of subsequent events. According to the handwritten record of the events of the evening, Collins said that he and his companions were “satisfied with their leader,” which is a far cry from “unbounded confidence.” And it is questionable that Collins, in using the unenthusiastic descriptor “satisfied” spoke for others among the crew who may, indeed, have had more confidence in De Long than he, Collins.

presented descriptions of new species of crustacea and fishes of this Coast. The discussion in reference to the organs of hearing in fishes, begun at a previous meeting, was resumed and participated in by Messrs. Redding, Kellogg, Lockington, Saxe, and Scupham. Dr. Saxe spoke of grape-vine pests and recommended the application, just before the budding out of the vines, of a wash composed of 4 pounds of sulphate of copper to 5 gallons of water as a cure for "mildew" which, he said, was caused by the *Oidium Tuckerii*, a fungus. AUGUST 4, Pedro Del Ospina and Tulio Ospina were elected resident members. B. B. Redding read a paper describing the manner in which the native Indians manufactured obsidian arrow-heads, as observed by him on a recent visit to the McCloud and Pit Rivers at the head of the Sacramento Valley. Dr. Behr read a paper on "The Passion Flower," noticing some of its malformations. Dr. Kellogg presented a new violet from Yuba County, discovered by Mr. Brooks and for which he proposed the name of *Viola Brooksii*.^{19.5} AUGUST 18, R. W. Simpson was elected a resident member. Professor Edward D. Cope delivered a lecture on "Palaeontology," which was "highly interesting and instructive" as characterized in a note of thanks tendered him.

SEPTEMBER 1, among the donations were many specimens of fish presented by B. B. Redding; a section of pile showing the ravages of the marine borer *Xylotria* [= *Bankia*], a teredo, and a new species of *Dalea* from Arizona, presented by George A. Treadwell, which was described by Dr. Kellogg, who proposed for it the name of *Dalea Treadwellii*. Dr. H. W. Harkness tendered his resignation of the office of first vice-president, which was "accepted with regret." Dr. Stout stated that a movement had been set on foot in San Francisco to organize an Arctic Expedition under the auspices of the Academy; but that it had fallen through for want of sufficient support. SEPTEMBER 15, W. A. Goodyear read a paper "On the Auriferous Gravels of California," and A. Pinart, one on "The Shell Mounds of the Pacific Coast." OCTOBER 6, Professor O. S. Ingham, James O'B. Gunn, W. A. Bissell, N. T. Smith, and J. C. Stubbs were elected resident members. Major J. W. Powell, of the U. S. Geological Survey, was introduced and described his explorations, and particularly his perilous boat voyage in the Great Cañon of the Colorado River. Dr. Stout made remarks on recent Arctic discoveries by the Swedish explorer Nordenskyold. OCTOBER 20, Dr. Quintius C. Smith of Cloverdale was elected a life member on an understanding made with the Council that a fine aneroid barometer, given the Academy, should be accepted as equivalent to a life membership fee. W. N. Lockington read a paper "On California Fishes," and Dr. Kellogg described a new plant. Professor Edward D. Cope, who had recently returned from a short visit to the northern part of the State, spoke of his trip to Klamath Lake and the fauna of that neighborhood. He also spoke of Silver Lake, Summer Lake, and Christmas Lake and the fish found there. OCTOBER 27, Professor Cope delivered a lecture on "A Review of the Modern Doctrine of Evolution" in which he stated that both probabilities and conclusive evidence support it as a "truth."^{19.6}

^{19.5} *Viola Brooksini* in the *Minute Books*, Aug. 3, 1874 to Nov. 15, 1880, p. 241.

^{19.6} A lengthy abstract of this lecture was published a few months later (see Cope, E. D. 1880. A Review of the Modern Doctrine of Evolution. *American Naturalist* [13 March 1880]:166-178, 261-272).

NOVEMBER 3, Professor Frederick Slate, Mrs. Theodore H. Hittell, Oscar T. Barron, John H. Saunders, C. A. Webb, Frederick Ludermann, and E. C. Locke were elected resident members. Professor E. D. Cope exhibited a skull of what he supposed to be a cave bear found in a cave in the McCloud River country. He compared it with skulls of existing grizzly and polar bears and showed that it was an animal very much larger than either of them, and had peculiar characteristics. He also called attention to a new species of lizard, belonging to the collection of the State Geological Survey at Berkeley, which had been found by Dr. J. G. Cooper. He likewise called attention to the specimen of a deer's foot in the museum of the Academy, the hoof of which was not cloven but formed one solid piece. It was not, he said, a monstrosity, but was curious and very interesting in many respects. Judge S. C. Hastings read a paper on "Hog-wallows," in which he expressed an opinion that similar formations were going on in various places in the State, such as Sherman Island near the mouths of the Sacramento and San Joaquin Rivers. The "hog-wallows" are small depressions and accompanying small elevations scattered over the ground, making the surface very irregular. Judge Hastings' idea was that large pieces of the surface ground, cracked into layers during the dry season, were floated off by the high waters of the flood seasons and lodged on neighboring land, forming the peculiar elevations and leaving the corresponding depressions. His theory provoked a discussion on the subject, participated in by Messrs. Cope, Christy, Currey, and Brooks; but there is no record of their remarks. NOVEMBER 17, Elija Nichols was elected a resident member. Dr. Stout donated a large collection of natural-history and ethnological specimens. J. P. Moore suggested the expediency of forming a properly identified collection of Pacific Coast coals and fossil woods.

DECEMBER 1, among the donations were specimens of abnormal growths of cedar wood from Port Orford, Oregon, presented by Captain Simpson. They resembled tubers and had been dry out of the ground at the roots of the trees. The trees that produced them were rare and in almost every instance grew in poor, gravelly ground. Upon the roots of some of the trees great numbers of these tubers were found, the larger ones being apparently defective or, in other words, not solid, while the smaller ones were firm and hard and might be turned into balls. When dry, the wood was very light. Dr. Kellogg said that abnormal growths of similar character were sometimes found on cypress trees. Fred Kuhnle presented two spiders found in holes in the ground near Petaluma in Sonoma County. J. P. Moore gave a description of ground-spiders, to the habits of which he had devoted some attention. He said he had frequently found in their holes numbers of beetles, Coleoptera, which were always packed in closely, heads down. Dr. Behr thought the beetles had been placed in the holes to provide food for the young spiders. DECEMBER 15, the nominating committee presented a ticket of the officers proposed for the next year. W. J. Fisher read a paper descriptive of Kodiak Island in Alaska, and Professor Davidson, a paper on "Scientific Explorations in the United States." In the Board of Trustees, important matters for consideration came up; but the records of their transactions from about the middle of 1879 to the beginning of 1881 are missing, and the particulars of their action can

therefore not be given. The main and most important fact, however, in reference to the temporal affairs of the Academy, which were in their keeping, was a settlement of the Lick estate controversy. The suit brought by the Lick Trustees to validate and authorize the compromise with John H. Lick had been decided in the lower or district court adversely to the Academy; and the Academy, represented by its Board of Trustees, had then appealed the case to the Supreme Court of the State. On December 17, 1879, the Supreme Court affirmed the judgment approving a compromise, and thus at last put an end to the litigation. The result was that John H. Lick received out of the Lick estate \$535,000 or \$385,000 in addition to the \$150,000 given him by the Trust Deed; the claim of the Academy that the additional sum should be assessed *pro rata* upon all the beneficiaries was defeated; and, on the very simple ground that the Academy and the Pioneers were only entitled to the residue after the full settlement of the other portions of the Trust, it, of course, followed that the additional \$385,000 had to be paid, like costs and expenses of administration, out of what might otherwise have become a part of the residue. On the other hand, a long and costly litigation, which might have swept away all the residue and jeopardized the entire Trust was put an end to; the Lick estate, which was known to be amply sufficient if properly managed to pay all the benefactions designed by Mr. Lick, was cleared of complication; and his Trustees, whose hands had hitherto been tied, as it were, were now enabled to proceed with the work of fulfilling and settling up the Trust; and, as it happily turned out, they did perform the work faithfully and well, and to the advantage of all the beneficiaries and everybody interested.

1880

The annual meeting of 1880 took place JANUARY 5. On nomination of the Council, Charles D. Gibbes was elected an honorary life member, and J. P. Sweeney and W. H. Wallace, resident members. Vice-president J. P. Moore read an annual address, reviewing the work of the Academy in its various departments for a number of years. The president of the Board of Trustees presented a report of the condition of the temporalities of the institution. The secretary reported the expenditures for the last year as \$11,152.07 – a large amount, considering that the income did not at that time exceed \$4,800. The record of the items of these expenditures seems to be missing from the archives of the Academy; but it is probable that they included considerable expenses incurred in the litigation in reference to the Lick Trust. It is certain that none of the amount was expended for publications; for nothing had been published for several years. The corresponding secretary reported that there had been many complaints made by foreign societies that they had for a long time received nothing in exchange for their own publications promptly forwarded. The annual election resulted in the choice, for officers of 1880, of Professor George Davidson as president; J. P. Moore, first vice-president, H. H. Behr, second vice-president; S. B. Christy, corresponding secretary; Charles G. Yale, recording secretary; Elisha

Brooks, treasurer; Charles Troyer, librarian; W. G. W. Harford, director of the museum; William Ashburner, R. E. C. Stearns, George E. Gray, B. B. Redding, Thomas P. Madden, R. C. Harrison, and James M. McDonald, trustees. A communication from Professor Davidson was read "On the Total Solar Eclipse of January 11, 1880," which he had gone to the Santa Lucia Mountains in Monterey County to observe. JANUARY 19, B. B. Redding read a paper on "The Buried Treasures of Our Remote Ancestors." Professor Davidson, in attendance, described the total eclipse of the sun of January 11, which he had observed from the Coast Survey Station, Santa Lucia Mountains, Monterey Co., and had earlier communicated to the members.

FEBRUARY 2, A. T. Dewey, W. B. Ewer, and Dr. J. B. Trembly were elected resident members. J. M. Stillman read a paper "On the *Larrea Mexicana* or Creosote Bush," giving an analysis of the lac produced from it; also a paper "On the Laurel or *Umbellularia Californica*." Dr. Behr read a paper describing the changes which had taken place in the vegetation of the Peninsula of San Francisco within the previous thirty years. A paper by J. P. Moore was submitted "On a Cave Fungus, found in the 400-foot Level of the Yellow Jacket Mine in Nevada." FEBRUARY 16, J. P. Moore read a paper "On the Edible Fungi of the Vicinity of San Francisco." Dr. Kellogg presented descriptions of three new species of plants in a collection brought from Fresno County by Dr. Gustav Eisen. A communication was received from Franklin W. Choate, asking permission to speak before the Academy on the causes which produce the flying of birds, his theory being that it was produced in a peculiar manner by currents of electricity. W. N. Lockington read a paper, entitled "Is Evolution Immoral?" MARCH 1, B. B. Redding exhibited a salmon from the Truckee River, where it had always lived, showing how large a salmon of that kind would grow in four years. Professor David Starr Jordan of the U. S. Fish Commission, being present, was asked to speak of the fishes of southern waters as recently observed by him. He said that but little was as yet known about the fishes of this Coast, and especially those of the Southern Coast. In his remarks he spoke of the finding of a true sole, the first ever found on the Pacific Coast of North America. J. M. Stillman presented a paper, in continuation of a previous one, on the lac of *Larrea Mexicana*; and also one on the lac of *Acacia Greggii*. Mr. Redding made remarks upon the importance from an economic point of view of California lac. MARCH 15, Dr. William F. McAllister, Anton Roman, and William F. Buswell were elected resident members. Dr. Eugene Dupuy lectured on "Hereditary Transmission in Nerve Lesions."

APRIL 5, Captain R. W. Simpson spoke of the oil of white cedar. He said it was obtained by burning the wood under certain conditions. It had powerful medicinal qualities and was very volatile but left a sediment. B. B. Redding described fly-fishing as practiced by the Indians on King's River with artificial flies of their own manufacture. APRIL 14, E. J. Molera read a paper describing the details of "Triangulation in making the Connection between the Geodetic Surveys of Europe and Africa." J. M. Stillman read a paper "On the Mode of Production of Gum Lac."

MAY 3, H. C. Eggers, Frederick R. King, and Charles H. Hinton were elected resident members. Hermann Wenzell explained by means of models the working of

his pneumatic system of driving a number of clocks by a common central power. Professor Davidson thought that while the system might answer for ordinary purposes and for clocks close to one another, it would not be accurate enough for astronomical purposes or for clocks at wide distances apart. His remarks elicited some discussion. MAY 17, J. P. Moore read a paper "On the Parasitic Fungi found on Living Plants." Prof. Davidson reported on the time of the slight earthquake of April 14, 1880 at 1h 07m 45s. A communication was read from the California Horticultural Society in reference to a proposed Botanical Garden, and asking the cooperation of the Academy in its establishment. It stated that the Horticultural Society had selected the grounds of the State University at Berkeley as the best location. The matter was referred to a committee consisting of Messrs. Moore, Behr, and Kellogg.

JUNE 7, P. S. Buckminster read papers "On Cyclonic Winds" and "On Some Forms of Ice in Mines." Professor Davidson made remarks in reference to phenomena observed by Mr. Buckminster, and explained the theory of Professor John LeConte, who in 1850 correlated the observations of Elliott (1824), Herschell (1833) and others concerning the formation of projecting ice crystals on the circumference of plants and in moist grounds. The subject elicited a discussion, in which Messrs. Buckminster, Kellogg Redding, and Stillman took part. C. W. Brooks read a paper on ethnology, especially devoted to evidences of the discovery of the Hawaiian Islands by Spanish navigators in the sixteenth century. Remarks upon the subject were made by Messrs. Redding and Behr. A letter was received from Prof. Baird announcing that the Smithsonian Institution had forwarded 148 books and papers to the Academy. JUNE 21, W. A. Russell presented specimens of so-called "candle-fish." The corresponding secretary read in connection therewith a paragraph from the *Reno Gazette* newspaper, in which it was stated that the fish were found in a spring just east of Honey Lake. They were different from any other fish found in the lakes of that region. They appeared to have come up with the water from clefts in the rocks. The spring was eighty feet long, twenty feet wide, and six feet deep. Remarks in reference to the development of such fish in so strange and isolated a locality were made by B. B. Redding. On behalf of parties residing on the Mohave Desert, Mr. Redding presented samples of a textile plant growing wild upon that desert. It was used by the Indians for medicinal purposes and for food, as well as for making cordage. The gentleman sending it thought it could be grown in this state as a valuable fiber. Dr. Kellogg said that it might be a variety of *Salvia columbaria*. He said further that it produced a large number of seeds, which might be successfully used, like flax-seed, for removing foreign substances from the eyes. The seeds, when put in water, would swell to five times their bulk when dry. Similar seeds had been found in Aztec graves, showing that in the pre-Columbian days the country produced a similar plant and that the people knew and availed themselves of its valuable qualities. Mr. Buckminster read a paper in continuation of a previous one on forms of ice crystals, in which after referring with particularity of observations on the subject by Stephen Elliott, Sir John Herschell, and Professor John LeConte, he mentioned a number of details which he thought they had not attempted to account for. He referred to the six-sided perpen-

dicular needle-form of ice crystals. Mr. Redding gave some interesting facts in regard to a practical utilization of this peculiarity in the formation of ice-crystals in the matter of storing and preserving ice. He said that cakes of ice, when stored for keeping, should be placed on edge, instead of on their flat surfaces; as it had been found that if placed in such position in the ice-house, there would be considerably less rapid disintegration and less waste from melting. Mr. Brooks suggested that electrical currents were probably the active agents of Nature in the organization of crystalline forms. Mr. Buckminster said he had evidence that certain mineral crystals were continually forming in the old workings of certain mines.

JULY 5, the secretary reported receiving a large number of scientific papers and serials for the library. The meeting adjourned early because only a few members were present. JULY 19, W. N. Lockington read a paper on "The Fish of the Pacific Coast Waters." in which he spoke of the investigations prosecuted by Professor Jordan of the U. S. Fish Commission. He said that forty new species of fish had been discovered upon this Coast, many of which would furnish material for future description. There were 240 species of marine and from 40 to 50 species of fresh water fish now known to exist in Pacific Coast waters. There were 21 species of flat fishes, resembling flounders in shape, found upon the Coast, of which the halibut was the largest. He explained the reason for the recent finding of so many new species along the Coast to be that the fishermen were seeking deeper waters for fishing. Mr. Lockington called attention to a small "tope," *Galeorhinas galens*, among the donations. He said it was abundant along the Coast and was caught extensively by Chinese fishermen for the oil they yielded. He also called attention to a specimen of king-crab, the first that had been found in California waters. It had been found near the San Leandro draw-bridge in Alameda County; and he thought it had been brought there, when very young, among the young oysters imported from the East and planted along the Alameda shore. He added that the king-crab, when very young, more nearly resembled the fossil trilobite than any other living species of crab. He closed his remarks by saying that Professor Jordan had caught a large fish, in whose stomach he had found a smaller fish just swallowed, and in the stomach of the latter, a still smaller fish, which it had swallowed – thus forming a sort of nest of boxes, one within the other.

AUGUST 2, Volmar A. Hoffmeyer was elected a resident member. Dr. Kellogg described a new species of gentian, *Gentiana Dunnii*, given to him by Mr. Dunn. C. D. Gibbes read a paper "On the Manufacture of Pencils." AUGUST 16, Professor Jordan addressed the Academy on the fishes of the Pacific Coast, particularly the salmon. The subject of a supposed peat formation underlying portions of the southern part of San Francisco was called up, and a discussion ensued. SEPTEMBER 6, among the donations was a piece of wax from the wreck of a Japanese junk near the mouth of the Columbia River presented by Captain R. W. Simpson. The junk appeared to have been laden with a cargo of wax and was wrecked in 1839. C. W. Brooks gave a brief account of the vessel and spoke generally about Japanese wrecks on this Coast. Dr. Kellogg described a new plant, *Trilium [sic] arnesii*. Josiah Keep read a paper on "The Apparent Distortion of the Disk of the Sun," and Mr. Lockington one "On the

Sharks and Rays of this Coast.” Remarks were made as to the deleterious effects on fishes and mollusks of coal oil floating on the surface of the water of San Francisco Bay. It was stated that petroleum refuse was allowed to run into the Bay from the oil-works at Alameda Point. B. B. Redding called attention to a stringent law of the State against the matter complained of, and said it could be prevented by applying to the proper authorities. SEPTEMBER 20, Dr. C. C. Parry was introduced and spoke of arrow-grass and bulbs and also of *Panax*, characterized by its very large leaf. OCTOBER 4, Mr. Moore made some remarks on the honey found on the leaves of the Madrone. Dr. Behr said that the honey is produced by aphids, and illustrated how it is done. Mr. Moore then read a communication from Professor Davidson on Jupiter’s satellites as seen by the naked eye. OCTOBER 18, a paper by J. A. Mellon was read, giving an account of the mesquite tree and its uses, and Dr. Kellogg spoke upon the same subject. W. N. Lockington read a paper on the “Fishes of Our Coast,” giving a list of all then known. Dr. Engelmann gave an account of his travels in Arizona, and also an account of the California oaks and their economic value.

NOVEMBER 1, Dwight Whiting,^{19.7} Daniel Cook, and Mrs. Ellen M. Colton were elected life members. Among the many donations to the museum was a “metate,” a stone slab for grinding seeds, found at Hawkinsville, Siskiyou County, nine feet under ground. Mr. Redding called attention to it and said that it could not have been transported from Mexico but was probably an aboriginal work of California Indians. Mr. Gibbes presented a letter from Gov. Durdy requesting the Academy to send its *Proceedings* to the Geographical Society, Cairo, Egypt. J. P. Moore read a paper on the *Phylloxera*, which called out remarks on the same subject by Dr. Behr. NOVEMBER 15, W. H. Dall, who had just returned from a trip to Alaska and the Arctic regions, gave an account of his summer’s work, and Dr. Engelmann spoke of the varieties of Pacific Coast oaks.

DECEMBER 6, Ivan Petroff donated several articles of Indian dress and impliments. C. W. Brooks read a paper on “The American Exploring Expedition: An Inquiry and Review of the Probable Situation of the *Jeannette* [Lieut. De Long’s vessel] and missing whalers *Vigilant* and *Mount Wollaston*.”^{19.8} A discussion ensued, participated in by Captains Hooper of the Revenue Cutter *Corwin*, Williams of the *Hidalgo*, and E. E. Smith, ice pilot of the *Corwin*, and Messrs. W. H. Dall and Wells. DECEMBER 20, B. B. Redding read a paper on “The Future of Fish Culture”; Dr. Stout, a paper “On the Aleutian Islands,” and C. W. Brooks, a paper by Commander Henry Glass

^{19.7} Recorded as Dwight Whitney in the *Minute Books* for Nov. 1, 1880, but in the minutes of later meetings at which the person was present, in both 1882 and 1883, the name is clearly recorded as Dwight Whiting. Dwight Whiting is also listed in a separate “Membership Records” volume, which was compiled by two or more persons, otherwise unidentified, likely around the turn of the century. A pencilled notation at the beginning of this volume states, “Book correct to Jan. 7, 1901.” Unfortunately, even in this book there are occasional errors in the spelling of member names as well as dates of election to membership so that it cannot be taken as gospel unless verified by other sources. Dwight Whitney does not appear in the membership records compilation.

^{19.8} Publication of the Academy’s *Proceedings* was still suspended. Brooks’ comments were published in the *Daily Alta California* on December 8, 1880 and issued as a reprint of 14 pages under the title, “Proceedings of the California Academy of Sciences at a Reception Given to the Captain and Captains of the Pacific Whaling Fleet on their return from the Arctic. Their Views, and Unanimous Expression of Belief in the *Jeannette*’s Safety, Speculations Concerning the Whereabouts of the Missing Whalers *Vigiland* and *Mount Wollaston*.”

“On the Hurricane of October 26, 1880 at Sitka, Alaska.” He also presented a paper, read by title, on “Early Migrations – An Examination of the Claims that Buddhist Priests visited the West Coast of North America in the Fifth Century, including Translations of all Passages relating thereto from the *Nun Szu* or Southern History found in the Grand Annals of China, with critical and explanatory notes.”

The nominating committee reported a ticket for officers of 1881.

Chapter XX: Year 1881

The annual meeting of 1881 was held on JANUARY 3. The following officers were announced and declared elected for the year: Professor George Davidson, president; Justin P. Moore, first vice-president; Dr. H. H. Behr, second vice-president; S. B. Christy, corresponding secretary; Charles G. Yale, recording secretary; Elisha Brooks, treasurer; Charles Troyer, librarian; W. G. W. Harford, director of the museum; William Ashburner, George E. Gray, R. E. C. Stearns, B. B. Redding, Thomas P. Madden, R. C. Harrison, and James M. McDonald, trustees. The secretary reported the expenditures of \$7,500 in the course of 1880, and a deficiency of about \$1,000. The librarian reported that 436 books had been added to the library during 1880, and C. D. Gibbes said that 778 specimens of minerals had been received during the same time. The president read his annual address on the condition and progress of the Academy and concluded it with a paper "On the Benefit of Scientific Investigation and the Relations of Science and Industry." On nomination of the Council, Samuel M. Wilson and Ralph C. Harrison were elected honorary life members. Mrs. Mary E. Edmonds,²⁰¹ having paid the required fee, was declared a life member. The Council announced the appointment of the following curators: C. D. Gibbes, mineralogy; Dr. Stout, ethnology; Dr. Kellogg, botany, W. N. Lockington, ichthyology and crustacea; Josiah Keep, conchology; Dr. Behr, entomology, and Henry Chapman, birds and mammals.

JANUARY 17, Joseph G. Eastland and Adolph Sutro were elected life members, and C. S. Capp a resident member. A. W. Jackson, Jr. read a paper "On the Occurrence of Precious Metals in Sedimentary Deposits," and W. N. Lockington one on "California Fishes." A letter was read from Dr. Schroeder of Frankfurt-on-Main, in which he stated that he was able to make 50-inch refractor glasses for telescopes by a new method cheaper than 36-inch ones could be ordinarily made. In the Board of Trustees, Benjamin B. Redding was elected president; George E. Gray, vice-president; and, on account of Mr. Yale's declining further to serve, Charles Wolcott Brooks, secretary.

FEBRUARY 7, Thomas E. Fraser was elected a life member, and Henry E. Mathews, Rev. Horatio Stebbins, and Frank Jaynes, resident members. Mrs. Theodore H. Hittell read a paper "On Sericulture in California"; Dr. Behr, a paper "On Fungoid Growth on Grape Vines"; and J. G. Lemmon, a paper "On Pacific Coast Acrididae." A paper by W. J. Fisher "On the Sea Otter" was read by the secretary. FEBRUARY 21, Professor E. T. Cox and L. Oesterreicher were elected resident members. Notes were read from a report by W. H. Dall, in which he expressed an opinion based upon his observations

^{20.1} Earlier shown as M[ary] E. Edwards (*q.v.* and footnote 18.2).

in the Arctic that the Japan Warm Current did not enter Behring's Straits as was popularly supposed, and that the northern current through the Straits and in the Arctic ocean was chiefly dependent for its direction and force on the tides and for its heat on the warming of the shallow waters of Norton Sound and the Yukon River. This opinion and the statement of facts led to a discussion as to the influence of Arctic currents on the course of Lieut. De Long's vessel, the *Jeannette*; and this to a discussion on Arctic climate and the reasons for finding in Arctic regions the remains of tropical or subtropical animals. Mr. Brooks stated that he had received a letter from Mrs. De Long thanking the Academy for its interest in her husband. In the Board of Trustees, R. C. Harrison, to whom had been referred delinquent tax bills on the library and furniture of the Academy for the years 1872-3 and 1873-4 and a tax bill on the First Avenue lot, claimed by some to belong to the Academy, reported in favor of paying the delinquent taxes on library and furniture but against paying the tax on the so-called Academy lot on First Avenue.

MARCH 7, among the donations was a striped bass taken outside the Golden Gate, presented by D. J. Staples. Mrs. J. G. Lemmon read a paper on "Pacific Coast Ferns." Dr. Harkness described a new grape-root fungus. A paper by Ivan Petroff "On Internal Water Communication in Alaska" was read. In the Board of Trustees, a proposition to employ a Mr. Clark to make a complete catalogue of the property of the Academy for \$75 per month for three months was lost; and the director of the museum and curators asked to hand in lists of all the property in their respective departments. MARCH 21, Captain R. W. Simpson described his efforts to cultivate wild rice on this Coast. Dr. Harkness described a new earth fungus found by Mrs. Mary K. Curran in Golden Gate Park, which he named *Octaviana*. Dr. Behr read "Observations on a Species of Fungoid Growth on a *Phylloxera*-infested Grape Root." Professor Davidson stated that he had constructed two 25-foot pendulums, which he would hang in the Academy Hall, and with them illustrate the effect of the rotation of the earth.

APRIL 4, Joseph D. Grant was elected a life member, and James V. Coleman, a resident member. Captain A. E. Bruno read a paper describing his adventures and researches in South Pacific Islands, particularly New Guinea. Dr. Harkness presented a list of 29 new species of California fungi, and particularly described one species infesting the oak trees in Golden Gate Park. Dr. Henry Gibbons exhibited a number of roses and called attention to the fact that the bushes had been infested with scaled bugs, and that he had entirely cured and cleaned them by applying a compound of petroleum and castor oil. A discussion ensued on the subject of the use of petroleum, in which Dr. Gibbons, Dr. Behr, Dr. Kellogg and Mr. Verder joined. APRIL 18, Dr. Behr read a paper "On the Scale Bug." MAY 2, Charles F. Crocker and L. E. Blockman were elected resident members. The Alaska Commercial Company presented an outfit designed by the Swedish government for marine dredging. W. G. W. Harford read a paper "On Seals," and Captain A. E. Bruno, a continuation of his paper on adventures and researches in South Pacific Islands, referring particularly to New Guinea. In the Board of Trustees, it was deemed necessary to advise the Pharmaceutical Society that when it used the Academy building there should always be at least

one professor or person in authority present. It was resolved that meetings of the Adelpic Society had best be held elsewhere. MAY 16, among the donations was a stone axe from the Tucson Mountains in Arizona, presented by E. T. Gerald. Professor Davidson said he had never seen a more perfect specimen. Mr. Redding said that, so far as he knew, that kind of stone axes was only found in Arizona and New Mexico. Professor Cox said that he had seen many of them in Indiana, Ohio and Kentucky. Dr. Harkness reported that he had made an examination of what had been supposed to be showers of sulphur and found only pollen from a species of pine trees. Professor Davidson spoke at some length calling in question the correctness of W. H. Dall's observations to the effect of the non-existence of the Japan Warm Current in Behring's Straits. The brothers Krause of the Bremen Geographical Society, on their way to the Arctic, were introduced to the Academy. In the Board of Trustees, among bills acted was an old one of Spaulding & Barto, amounting to over \$12.00 for printing the *Proceedings* of the Academy for 1875 and 1876. It appeared that the work had been done by order of the Council, without technical authority of the Trustees, and that it was understood to be "outlawed" by lapse of time; but by vote of Ashburner, McDonald and Redding, as against that of Gray, \$4.00 of it was ordered paid. Dr. Behr was granted permission to deposit his private collection of Lepidoptera in the Academy building during the pleasure of the Trustees and on the condition of no responsibility on their part.

JUNE 6, George C. Perkins and James G. Fair were elected life members. A large audience was present on account of a reception tendered by the Academy to Lieutenant R. M. Berry, Ensign H. M. Hunt, Col. W. H. Gilden, Asst. Surgeon Costello, Engineer A. V. Vane, and other officers of the U. S. Arctic Exploring Expedition ship *Rodgers*, as well as Capt. Howgate. C. W. Brooks opened the exercises by reading a paper "On Evidences regarding the Discovery of Wrangel Land and the Course pursued by the Exploring Ship *Jeannette*."^{20,2} Professor Davidson read a paper by James Gamble, superintendent of the Western Union Telegraph Company, advocating the use of 20-pound-per-mile steel wire for telegraphic communication between headquarters and sledge parties. In answer to an inquiry by the president, Lieutenant Berry said that he did not consider the claim of Captain Dollman to the discovery of Wrangel Land as well founded. He proceeded to express his thanks to the Academy for the assistance it had afforded him and the Naval Relief Board in making up their proposed route in the Arctic seas. As to Mr. Gamble's proposition about the use of

^{20,2} This and other papers read at this meeting were published in the *Daily Alta California* and other San Francisco newspapers between June 7 and June 11, 1881. The articles were then extracted from the papers and published as a post-print booklet bearing the title, "Proceedings of the California Academy of Sciences at its Regular Meeting held June 6th, 1881. Reception of Lieut. Robert M. Berry, U.S.N. commanding U. S. Steamer *Rodgers* of the *Jeannette* Search Expedition." The post-print included at least one paper by C. W. Brooks given at an earlier meeting. The following papers are included in the post-print: (1) Introductory summary of the presentations [unsigned but likely a *Daily Alta California* reporter attending the meeting]; (2) Charles Wolcott Brooks, "Early Discoveries of Wrangel Island"; (3) an "Addenda" by George Davidson; extract of a paper by C. W. Brooks read at a previous meeting, "The Object of Arctic Explorations"; (4) "Description of the *Rodgers*," an unsigned article, probably by a reporter for the *Daily Alta California*, published first in the *Daily Alta California* on June 10, 1881; (5) extract of a letter addressed to the Academy by Col. Charles S. Bulkley stating that he had observed an "almost constant northerly flow of water" in the Bering Strait, contradicting William Dall's earlier observations relating to the Kuro Shiwo or Japanese warm current; (6) James Gamble on "The Telegraph in Arctic Regions" [first printed in the *San Francisco Mining and Scientific Press* on June 11, 1881].

telegraphic wires, he would be happy to try them; but it was to be remembered that in extensive sledge journeys, weight was a matter of prime consideration, and Arctic sledges were generally overloaded with absolutely indispensable articles. He did not deem it necessary to say much in reference to the purposes of his journey, as that subject was already understood and had been explained as well as he could explain it; and as to the course he should pursue, he would have to be guided by circumstances as he might find them after reaching Wrangel Land. JUNE 20, a paper by C. D. Gibbes "On Extinct Animals" was read by J. P. Moore. Professor Davidson referred to the proposition of Mr. Gamble to use steel wire for telegraph communication between headquarters and exploring sledge parties in the Arctic regions, and said that Augustus Harding had suggested the use of aluminum wire instead of steel, as it had greater conductivity and was much lighter. He himself thought that fine silver wire might be used, as having still greater conductivity and being much stronger than aluminum. In the Board of Trustees, the matter of paying a part of Spaulding & Barto's old bill for printing the *Proceedings* of the Academy for 1875 and 1876 was, on motion of McDonald, reconsidered on a showing that when the work was done the Trustees had declined to authorize it or assume responsibility, and had only informally said that when the Academy might find itself free from debt and with sufficient funds, it might consider the equities of the claim. The matter was then referred to R. C. Harrison for a legal opinion as to how payment might be made with safety to the interests of the Academy, when it should be deemed best to do so.

JULY 18, John Richards was elected a resident member. Among the donations were several Shoshone arrow-heads and a number of tubers of a plant used as food by the Shoshone Indians, all from Humboldt River, Nevada. B. B. Redding called attention, in connection with the above, to a donation made at a previous meeting by J. A. Wellon of specimens, from the same locality, of the wood used by the Shoshone Indians to make arrows. Dr. Kellogg had examined the wood and said it was *Tessaria borealis*. Dr. C. C. Parry read a description of a new plant called *Gilia Veatchii*. Professor Davidson made remarks upon the comet. In the Board of Trustees, the secretary reported a credit balance of \$900 in bank. JULY 29, a special meeting was held for the purpose of giving a reception to Lieutenant Schwatka, the Arctic explorer. That gentleman was introduced and read a paper on "Arctic Exploration," in which he gave an account of his recent expedition to the polar regions. AUGUST 1, David Cahn was elected a life member, and Charles Nelson and Thomas P. H. Whitelaw, resident members. John Richards read a paper "On the Application of Standard Measures to Industrial Processes." AUGUST 15, B. B. Redding read a paper "On the Discovery of Nitrate in Nevada"; W. J. Fisher, a paper "On the Earthquakes of September and October 1880 at Uga[*m* or *ni*]{*o*} or *a*}{*k*?]}^{20 3} Island, Alaska"; Dr. Stout, "On Artesian Wells"; and Henry D. Wolfe, "On Aleutian Family Names and their Ethnological Value." SEPTEMBER 5, Alpheus Bull, Jr. was elected a life member, and Robert Caldwell and George H. Sanderson, resident members. Dr. Behr called

^{20.3} Handwriting in the *Minute Books* (Stated Meetings, Dec. 1880-Dec. 1890, p. 29) difficult to interpret: Uga[*m* or *ni*]{*o*} or *a*}{*k*?]. The most likely extrapolations are Uganik Island, which is embedded along the north coast of Kodiak Id., or Ugamak Island, a small island off the southwest coast of Unimak Island, which is centrally located in the Aleutian chain.

attention to the facility with which injurious insects could be introduced into the State and the necessity of care to prevent it. He had himself received specimens of insects from abroad, which were still alive although they had been several weeks on the way.

J. P. Moore read a paper "On Parasitic Fungi." SEPTEMBER 19, among the donations were plants used by the Shoshone Indians for making mats and ropes, presented by J. A. Palmer. A book on "Earthworms" by Dr. Gustav Eisen was presented. Dr. Behr read a paper "On Insecticides," which elicited a discussion from J. P. Moore, Dr. Stout and G. P. Rixford on the subject of bisulphide of carbon and other washes. The chairman announced the death of James A. Garfield, president of the United States; and the Academy adjourned. In the Board of Trustees, a question had been raised as to a possible or shadowy claim of the Academy to a strip of ground, 40 feet wide, on the northeast side of their property on Market Street, embraced in one of the early conditional deeds of James Lick, and the expediency of arranging with the Society of California Pioneers to make a common thoroughfare out of it. R. C. Harrison reported verbally as to the interest of the Academy in it and presented an abstract of the title made by C. V. Gillespie. A letter from the Council was received recommending Professor Davidson for superintendent of the U. S. Coast and Geodetic Survey. On motion of Ashburner the letter and recommendation were adopted, subscribed by the Trustees and forwarded to the Secretary of the Treasury at Washington. On motion of Madden, Spaulding & Barto's bill for printing the *Proceedings* of 1875 and 1876 was approved and ordered paid, provided no interest was claimed; but, on motion of Gray, on account of the necessity of soon paying taxes, only \$4.00 were ordered paid at that time. The secretary reported \$1,577.65 to the Academy's credit in the bank.

OCTOBER 3, Frank S. Douty, Andrew J. Hatch, and William Robinson were elected resident members. B. B. Redding presented a hook and line used by the Shoshone Indians for catching trout, and described their use. C. W. Brooks gave a synopsis of the latest news from the Arctic. In the Board of Trustees, the use of the Hall was granted for monthly meetings of the Geographical Society of the Pacific, it to pay \$7.50 per meeting for gas, janitor and incidental expenses. OCTOBER 17, R. E. C. Stearns read a paper on "Certain Aboriginal Relics from Napa County." He also presented a section of yellow-pine bark, filled with acorns deposited in it by woodpeckers, and read a paper "On the Acorn-Storing Habits of the California Woodpecker." His remarks called out a discussion. Dr. Behr exhibited an insect found in the Lord of Lorne Mine, Nevada, in a stratum of stiff clay 700 feet from the mouth of the tunnel and 300 feet below the surface. It had been sent by J. T. McDougall, Superintendent of the mine, with a statement of the circumstances. Dr. Henry Gibbons remarked that he remembered when Dr. R. K. Nuttall sank a well at the corner of Montgomery and California Streets, an insect without eyes or wings was brought up from a depth of 60 feet. Dr. Kellogg described a plant presented by Professor Davidson and commonly called "turkey feed." Dr. Gibbons said it afforded a cure for poison oak and its root a decoction valuable in cases of pulmonary consumption. A letter from Professor Davidson announced that on October 14 he had finished his first measurement of the Yolo baseline and expected to finish the second by Nov. 15.



Charles Crocker
California Academy of Sciences Special Collections

Mr. Brooks announced inquiries about a steamer being seen by natives at the mouth of the Lena [River], being the *Jeannette*, but he thought it improbable for it to have been there at the time.^{20.4}

NOVEMBER 7, Mrs. J. C. Campbell, Mrs. John H. Sargent (a previous member who had temporarily dropped out), and Thomas H. Buckingham were elected resident members. B. B. Redding, as president of the Board of Trustees, announced the receipt on November 7 from Charles Crocker of a donation of \$20,000 in aid of scientific research under the auspices of the Academy. The donation consisted of twenty 6-per-cent bonds for \$1,000 each, of the Southern Pacific Railroad Company. In his letter, making the donation, Mr. Crocker said that he desired the money to be derived from these bonds at maturity, to “be again invested by you or your successors” in other safe and interest-bearing securities, so that the sum of twenty thousand dollars should be a permanent fund for the use of the Academy; and that the income from the fund should be annually expended “in assisting in their investigations, in California, Oregon, Nevada, and Arizona, such worthy and studious investigations and experiments, largely and necessarily excluded themselves from acquiring support through the ordinary avocations of current industrial life.” The Board of Trustees, Mr. Redding said, had made an appropriate reply, thanking Mr. Crocker for the donation and the high appreciation he had manifested of the benefits conferred upon society by scientific investigation. On motion, the Academy supplemented what the Trustees had done by adopting unanimously a series of resolutions, proposed by them,

^{20.4} In fact, there was some truth to the rumors because two boats of survivors of the *Jeannette* did make landfall on the delta of the Lena [in northern Siberia], but not together. The one bearing Engineer George Wallace Melville and his party was to survive; the other, with Lieut. De Long, perished with the exception of William F. C. Nindemann, Quartermaster, and Louis Noros, who had been sent ahead by De Long to seek help from the first inhabitants they could find.

to the effect that the endowment should always be known and designated as the "Crocker Scientific Investigation Fund," and that a special report of its use and condition should be made at each annual meeting. Dr. Henry Gibbons, referring to the donation, called attention to the fact that the arduous labor for thirty years, under great difficulties and discouragements, of many willing and enthusiastic men had built up an institution of which the Pacific Coast might well be proud; and it was in every respect worthy of the munificent gift so generously bestowed upon it. Considering the circumstances and the very limited means at its command, it was wonderful what the Academy had accomplished. It had struggled long and hard against great disadvantages; but it had acquired a character which gave promise that it would make excellent use of Mr. Crocker's endowment. J. P. Moore said that the world demanded of science practical results, and that the Academy had a valuable corps of hard workers, who would be greatly stimulated by the interest thus manifested in, and the substantial aid thus given to, scientific investigation. A paper from Professor Davidson was read "On the Transit of Mercury." R. E. C. Stearns read a paper "On the Botanical of *Physianthus albens*, the Structure of its Flowers, and their Peculiarities as an Insect Trap." Dr. Behr stated, in reference to Mr. Stearns' paper, that several asclepiadeaceous plants were known to play tricks on insects. *Ceropegia* caught them, like *Physianthus*, by a mechanical contrivance; other insectivorous plants in other ways. *Stapella*, an African plant, deceived them by smelling like rotten meat, so that flies would blow upon its flowers; and their offspring thus deposited would, of course, die of starvation. Dr. Gibbons said that he had long before made observations on plants similar to those described by Mr. Stearns and had noticed that as long as the insect struggled the plant held it fast; but, as soon as the insect became quiet, the plant released its grip. Dr. Behr read a paper "On the Part Played by Hawk Moths in the Economy of Nature."

NOVEMBER 21, Charles H. Bradford, John T. Doe, George Spaulding were elected life members. Among the donations were spiders found in the Keystone Mine in Amador County 800 feet below the surface. They were found by James F. Parks, superintendent of the Mine and presented by Captain James M. McDonald. Dr. Behr read a paper describing them. J. G. Lemmon read a paper "On Arizona Forest Trees." DECEMBER 5, J. G. Lemmon read a paper on a new species of gentian, which he named *Gentiana microcalyx*, R. E. C. Stearns read a paper "On the Growth of Certain California Forest Trees and Meteorological Data Suggested Thereby." The paper evoked considerable discussion, particularly on the point, advanced in it, that some connection could be traced between the rings of growth and the character of the seasons in which they were produced. The discussion was participated in by Messrs. Davidson, Behr, Kellogg, Brooks, and Stearns. The death of Henry Chapman, curator of birds and mammals was announced, and a tribute of respect to his memory was read by the Secretary. Professor Davidson, Mr. Redding, Mr. Stearns, Dr. Kellogg, and Mr. Harford each spoke of the great merits of the deceased and the many obligations the Academy was under to him for valuable and gratuitous services. A series of resolutions were adopted by the Academy, which referred to Mr. Chapman

as “one of its most energetic and useful members, and one to whom it was indebted for a large amount of faithfully performed work.” DECEMBER 19, among the donations was one from Commodore Thomas S. Phelps, consisting of a piece of canvas brought up on the anchor of the U. S. Ship Lackawanna in the early part of the year at the Island of Juan Fernandez, where it had been lying submerged for from 150 to 200 years. J. R. Clifford presented an insect pest, which infested artificial flowers and fancy featherwork in the manufacture of which paste had been employed.

J. G. Lemmon read a paper, describing a new species of *Ranunculus*, which he named *Ranunculus heterophyllus*. He proceeded to say that he had been encouraged by Dr. Asa Gray to make descriptions of new species, even if all the literature upon the subject were not on hand or available. There were only ten libraries in the world where all the botanical works were to be found, and only one of these on this continent. We had only a nucleus of one here in California. He said he was therefore, on account of want of all the most recent publications, apt to make a mistake and name as new something that had already been described. It had been the custom of some Eastern men to describe all sorts of California plants from any kind of specimens, without ever having seen them grow, and take the chances as to their being new and the descriptions accurate; and they had not infrequently received credit which should have remained in California. Professor Davidson expressed a hope that all young investigators would go ahead without hesitation. “Get what literature you can; but, at all events, go on and describe your specimens.” Dr. Behr said that California botanists had been roughly handled by Eastern scientists for describing old things; that is, plants already described; but they did not take into consideration the fact of the want of scientific literature on the Pacific Coast. Professor Davidson resumed by saying that one member of the Academy had become involved in a controversy with Dr. Theodore Gill of the Smithsonian Institution on a similar subject. Dr. Gill had described certain species of Pacific Coast fish from dried-up specimens. Mr. Lockington had described the same species from fresh specimens; but Dr. Gill had considered his own descriptions as most accurate and had arraigned Mr. Lockington for describing, as new, old species and describing them inaccurately. Mr. Harford said that Dr. William O. Ayres, an able and efficient member of the Academy in its earliest years, had described new species of fish and Dr. Gill had attacked him in the same way; and the result was that Dr. Ayres, who disliked controversy, was so disgusted that he gave up the study of ichthyology. Mr. Harford went on to say that Professors Jordan and Gilbert had recently had occasion to make use of Dr. Ayres’ descriptions, as contained in early volumes of the *Proceedings* of the Academy, and with their help identified all but one of the species, showing that his work had been carefully and well done. A discussion then took place in reference to the skin of what was called an “albino” deer, which had been presented by D. M. White of Port Townsend, Washington. The skin was not entirely white, but had large white patches on it. The nominating committee presented a ticket for officers of 1882. In the Board of Trustees, Professor Davidson, as president of the Council, asked for an appropriation to print and publish a pamphlet from the correspondence and

resolutions in reference to the "Crocker Scientific Investigation Fund," for distribution to scientific societies corresponding with the Academy; and the Trustees authorized the expenditure of \$50 for that purpose.

Chapter XXI: Year 1882

This year the annual meeting was held JANUARY 2. Edgar Mills, Squire P. Dewey, J. D. Fry, G. M. Josselyn, and William S. Wood were elected life members, and C. Mitchell Grant, Isidor Cohn, Ignatius E. Thayer, John Dolbeer, A. Crawford, W. R. Bentley, Augustus E. Elliott, Hippolyte Dutard, and J. G. Harding, resident members. On recommendation of the Council, Charles Crocker was elected an honorary life member. Professor F. V. Hayden and Major J. W. Powell were elected honorary members. The officers declared elected for 1882 were Professor George Davidson for president; Justin P. Moore, first vice-president; H. H. Behr, second vice-president; S. B. Christy, corresponding secretary; Charles G. Yale, recording secretary; Elisha Brooks, treasurer; Charles Troyer, librarian; W. G. W. Harford, director of the museum; B. B. Redding, George E. Gray, Thomas P. Madden, James M. McDonald, William Ashburner, Ralph C. Harrison and Robert E. C. Stearns, trustees. The treasurer reported a balance on hand of \$91.07. The secretary reported the total membership as 284, of which 105 were life members and 179 resident members. The librarian reported an accession in the course of 1881 of 388 books. The president read his annual address on the condition and progress of the Academy, and included also extended remarks on the subject of "Science in the Public School System." A report from the Council was read, which called specific attention to the fact that no publications of the Academy had been printed since 1876, owing to want of funds. A memorial addressed to Congress on the subject of Alaska and asking for appropriations to extend and continue the U. S. Coast and Geodetic Surveys in and through that Territory was presented. It appeared that the memorial had already been considered and approved by the Council and also by the San Francisco Chamber of Commerce and the Geographical Society of the Pacific. Professor Davidson said that the government surveys in Alaska had not, up to that time, been systematic for want of regular appropriations; and it was becoming more and more important to have accurate and full information regarding the navigable waters and topography of that region. On motion the memorial was approved and adopted as the act of the Academy.

In the Board of Trustees, B. B. Redding, the president, presented an annual report. he said that two years ago the Academy owed \$4,022.95 and last year, \$2,955.47; but at that time all bills, including taxes, had been paid, and there was a balance of \$91.17 in the treasury. The receipts during the past year had been \$8,683.67, of which \$3,306 was for life and resident membership dues, and \$4,171.67 for rents. The expenditures for the year had been \$8,542.60. The property of the Academy consisted of the lot

on Market Street, 80 feet front; a claim to a lot on First Avenue; one half interest as residuary beneficiary in the Lick estate, and the Crocker Scientific Investigation Fund, besides its collections and library, including 132 volumes of unsold printed *Proceedings*. The use of the Academy Hall had been granted without charge for day meetings to the Ladies' California Silk Culture Association, and, for small sums to cover expenses, to the Geographical Society of the Pacific, the Horticultural Society, and the College of Pharmacy.

JANUARY 16, among the donations were Indian bones from the same cave near the McCloud River, in which Professor Cope had found the remains of the cave bear, the only remains of that animal ever found in this State. A specimen of amber was presented, found 35 feet below the surface in a well in Tulare County, donated by C. P. Converse of Visalia, and former Governor Purdy presented several specimens of silver ore from the Santa Teresa Mine. Dr. Kellogg described two new plants, *Gilia secundina* and *Spomoca muricata*. Dr. Harkness read a paper "On the Vegetable Cell and Some Facts pertaining to its Life History." A discussion took place on the subject of the "Influence of North Winds," in which Messrs. Harkness, Gibbes, and Gibbons participated. On JANUARY 28, in the Council, the director of the museum stated that books were missing from the library. He recommended restricting access to the library to members and that new keys should be made. A letter from the Geographical Society of Bremen was read in which the Academy was asked to acknowledge the truthfulness of Capt. E. Dollman's statements as to the discovery of Wrangell Land. The letter drew attention to the fact that at the meeting of the Academy held June 6, 1881 (*q.v.*) doubts had been raised about Dollman's statements. The letter argued that Lieut. Berry's reports determining the position of the (?) on the south side of Wrangell Land, visited by Dollman, proves Dolman's [*sic*] original assertions that he was the first to land there. The society asked the Academy to declare that the report of Capt. Dollman was a truthful one and that the doubts expressed earlier were erroneous and without foundation. No immediate action was taken on this request, but the president was asked to examine the matter and report back to Council.

FEBRUARY 6, W. G. W. Harford read a brief paper "On the Angel Fish" to the effect that specimens exhibited in the city as new were well known and fully described in the books. A paper by (Mrs.) Dr. Mary K. Curran was read "On Caenums of the Hare (*Lepus Californicus*)." From its meeting held on January 14, the Council reported the appointment of the following curators for the year: E. F. Lorquin, mammals and birds; Charles G. Yale, fishes; A. B. Stout, ethnology and osteology; Edward T. Cox, geology and palaeontology; Justin P. Moore, botany; H. H. Behr, entomology; Josiah Keep, conchology, and C. D. Gibbes, mineralogy. In the Board of Trustees, the officers of last year were reelected, with B. B. Redding as president. FEBRUARY 20, A. W. Manning, Isaac L. Requa, Walter E. Dean, A. K. P. Harmon, and John G. Kellogg were elected life members, and F. A. Hyde, Charles G. Hooker, Charles E. C. Apponyi, Henry Ferrer, and W. F. Nolte, resident members. An invitation was received from the Board of Trade to a lecture on the Nicaragua Canal by Mr. Menocal. Professor H. A. Ward of Rochester, New York, was introduced and

spoke of his method of collecting specimens for casts, and announced the presence in the City of a large collection of his casts, which would shortly be exhibited to the Academy. The president announced the death of ex-Governor Purdy, who, though not a member, had made many donations to the Academy.

MARCH 6, Professor Ward read a paper "On the Mammoth." Professor Joseph LeConte read a paper prepared by himself and Professor Rising, "On the Formation of Metalliferous Veins," and Professor Davidson, a paper entitled "Notes on the Temperature of Air and Water at the Golden Gate." Professor Ward announced that his collection was on exhibition to members of the Academy and their friends at Mercantile Library Hall on Bush Street. The committee appointed to consider Capt. Dollman's claims as the first to land on Wrangell Land reported that they now have the charts, received from Prof. Davidson, needed to examine the question of its supposed location. In the Board of Trustees, the sum of \$821.50 was ordered paid to Spaulding & Barto in full on their old bill for printing the *Proceedings* of the Academy for 1875 and 1876. This was in addition to \$400 paid on the bill September 20, 1881. The secretary reported a balance of \$1,290.47 in banks. MARCH 18, a special joint meeting of Trustees and Council was held. Professor Davidson stated the object to be to obtain Ward's Palaeontological Collection. He said it could be purchased for \$18,000, and he hoped it would be. Messrs. McDonald, Moore, Gray, Hickox and Davidson were appointed a committee to report as to what could be done. At the regular meeting of the Academy held on MARCH 20, William T. Coleman and Henry T. Scott were elected life members, and Arthur A. Smith a resident member. A. W. Jackson, Jr. read a paper "On the General Principles of the Nomenclature of the Massive Crystalline Rocks." A paper by Charles Froman of Virginia City, Nevada, was read "On the Increase of Temperature with Depth." Mr. Harkness exhibited a new fungus, allied to the puff ball, found by Mrs. Mary K. Curran, which he had named *Polyplorium Curranii*. In the Board of Trustees, the treasurer was authorized to collect the semi-annual interest of \$600 on the 20 Southern Pacific Railroad bonds constituting the "Crocker Scientific Investigation Fund." At a joint meeting of Trustees and Council, held MARCH 25, McDonald reported that the Ward Collection could be purchased any time before March 31 for \$16,000, and after that time for the same with current expenses added. At another joint meeting, held MARCH 29, at the suggestion of Davidson, he, Moore and Harkness were appointed a committee to solicit subscriptions to purchase and maintain the Ward Collection as a part of the Academy.

APRIL 3, John F. Boyd, Hermann Schussler, Daniel E. Hayes, John W. Ackerson, J. H. Goodman, Jacob Z. Davis, and W. S. Keyes were elected life members, and Thomas Brown, H. A. Ward, W. T. Reid, M. H. Hecht, and J. J. Rivers, resident members. Among the donations was a spindle-whorl, a small disklike perforated stone, found in the ruins of Troy and described as probably "used by the Trojan women as a votive-offering to Pallas Athene Ergane, the tutelary deity of sacred Ilion." It was presented by Lloyd Tevis, with a letter from Professor Schliemann, the archaeologist, transmitting it to the donor. A communication was received from the

Board of Supervisors, asking the Academy to make an investigation on the subject of sewer gas and to spread information by lectures and reports in reference to the condition of the City sewers, their engineering and what might be shown by microscopical and chemical examination. The supervisors added that the investigations suggested might have an important bearing upon the exceptionally high death rate; but, on account of the condition of the City finances, would have to be made without expense to the City. The matter was referred to a committee consisting of Messrs. Gray, Behr and Moore. The committee on the Ward Collection reported that they had consulted with a number of life members in reference to the matter and, among others, with Charles Crocker, who had already manifested munificent liberality to the Academy; that, upon the subject being mentioned, Mr. Crocker had said that he would propose to Governor Stanford that they two should purchase the entire Ward Collection and present it to the Academy; that Governor Stanford, when spoken to, had promptly acceded to the proposition; that thereupon each of them drew a check for \$8,000 and handed it to the committee, and the result was that the Academy had become the owner and possessor of the property. It was thereupon resolved that the collection should thenceforth be known as the "Crocker-Stanford Collection of Geology, Mineralogy and Natural History" and that, for the time, it should continue on public exhibition in Mercantile Library Hall. In the Board of Trustees, a bill for rent of the Academy building was presented by the executors of Henry M. Newhall, who had recently died, at the rate of \$250 per month. It will be recollected that when the building was rented in 1874 Mr. Newhall stated that he would contribute \$100 per month to the Academy, and it was done by allowing \$100 off of each month's rent. The matter was referred to the prudential committee of the Board.

APRIL 8, at a special meeting of the Trustees, the prudential committee reported that an arrangement had been made with the executors of the Newhall estate for a verbal continuation of the lease of the Academy building at the rate of \$150 per month. The Council recommended the payment from the "Crocker Scientific Investigation Fund" of monthly sums of \$50 to Charles D. Gibbes for work on mine-petrography of the Pacific Coast. On motion of Madden, \$40 per month to each from April 1 to October 1, 1882, was allowed. A notice was received from the Lick Trustees of the commencement of a friendly suit against the Academy for the purpose of settling and quieting the title to the 40-foot strip of ground adjoining on the northeast the Academy's lot on Market Street, all the expenses of the suit to be at the expense of the Lick Trustees. APRIL 17, Dr. Harkness read a paper "On a New Bacterium found in the Waters of Mono Lake." Dr. George M. Sternberg, U.S.A., addressed the Academy on the subject of microscopic objects. A. W. Jackson, Jr. described rock soap from Tres Piños, San Benito County, giving its characteristic features. The committee appointed to collect subscriptions for the "Crocker-Stanford Collection" reported the receipt of various sums to defray the expenses of keeping the exhibition open; and, among other things, stated that Daniel Cook had offered to pay the rent of Mercantile Library Hall, where it was exhibited, for one year. Mr. Redding, on behalf of the Trustees, announced that the exhibition would be open to the public free on

every Saturday afternoon and evening, and ten cents admission charged on Tuesdays and Thursdays. It was also announced that a large archaeological collection had been presented to the Academy. Vice-president J. P. Moore announced that a large archaeological collection had just been presented to the Academy. In the Board of Trustees, various deeds from John H. Lick and others to the Academy were ordered on record or deposit in the Academy's special deposit box in the vault of the Bank of California. They included deeds from John H. Lick, Samuel Lick, H. S. Lick, Sarah Helper, Jane A. Graham, Julia Anne Antrim, James W. Lick and Andrew J. Ely, as heirs of James Lick. The treasurer reported that he held \$1,145 collected by Messrs. Harkness and Moore for maintenance of the Crocker-Stanford Collection and subscriptions for \$2,595. The president reported that he had taken out a fire insurance policy of \$12,000 on the collection at a premium of \$150, the commission on which, \$28, allowed Mr. Moore, was by him donated to the Academy. A catalogue of the property of the Academy was authorized to be made at an expense not to exceed \$500. W. G. W. Harford, director of the museum, was made director of the Crocker-Stanford Collection also; and his salary fixed, during the pleasure of the Board at \$1,000 per year, payable monthly, with an allowance of \$240 per annum for two assistants to aid in the care of the museum and collection, – “said sum to include all cleaning expenses, etc. and no payments to be made in advance of services rendered.”

MAY 1, Dr. Kellogg exhibited and described *Mimulus alpestris*. In the Board of Trustees, the Lick Trustees submitted accounts of their administration of the Lick Trust, which were pronounced to be in all respects satisfactory. The secretary reported the cash on hand as \$520 from the Crocker Scientific Investigation Fund, \$2,375 from collections for maintenance of Crocker-Stanford Collection; \$979.20 from admissions – total \$3874.20. At the meeting of the Council held on MAY 13, J. J. Rivers was appointed curator of herpetology. MAY 15, Louis A. Garnett, Seth Cook, William J. Shaw, and Stanley Forbes were elected life members, and Henry A. Sonntag^{21.1} a resident member. An audience of 120 members is said to have come to this regular meeting of the Academy, but no explanation is given for the larger than usual turnout. A letter from Professor Davidson was read, giving results of observations on the occultation of Jupiter on April 19 by Messrs. Lawson and Gilbert at the San Francisco observatory of the Coast Survey. Dr. George M. Sternberg read a paper on “Biology,” illustrating his remarks with enlarged photographs. The Council presented a series of resolutions, which were adopted, in tribute to the memory of Captain De Long and his associates of the *Jeannette* Exploring Expedition, who had perished in the Arctic seas.^{21.2} In the Board of Trustees, the cash on hand counting all funds, was reported to be \$4,826.66. MAY 29, in the Council, it was resolved to recommend to the Trustees that the Academy commence immediately publication of a proceedings for 1881-82 and that once the papers in arrears are printed, the Academy then issue monthly *Bulletins*. The publications committee was instructed to prepare the arrears papers for printing. JUNE 5, J. P. Moore read a paper by Dr. Arthur Krause of the Bremen

^{21.1} Spelt Sonntag in the handwritten *Minute Books* (vol. *Stated Meetings* Dec. 1880-Dec. 1890, p. 76).

^{21.2} De Long perished on the *Lena Delta*, northern Siberia, on October 30, 1881. For references see footnote 19.2.

Geographical Society on his recent explorations in Alaska. He also described the characteristics of certain parasitic plants. Dr. C. C. Parry, by request, gave an account of a trip in Southern and Lower California, mentioning especially the most interesting plants he had met with. In the Board of Trustees, the cash on hand, counting all funds, was reported at \$5,351.06. JUNE 19, Dr. Harkness presented specimens of red snow from the Sierra Nevada, the first ever brought to the Academy. He described the plant which caused the red color. He also called attention to the fact that what appeared to be a mountain beaver had been tracked near Blue Cañon on the Central Pacific Railroad in the Sierra Nevada, and said that means had been taken to obtain a specimen. Dr. Behr thought from the description given that the animal was a new rodent. Dr. Behr also read a recipe for [treating] snake bite, sent him by Dr. Holford, government botanist of Australia. A discussion ensued on the subject of venomous reptiles.

JULY 3, Dr. Kellogg exhibited a new and beautiful columbine from the Yosemite Valley, with a description of it by J. M. Hutchings. JULY 17, Horace Fletcher, A. H. Breckenfeldt and Frank P. Deering were elected resident members. C. W. Brooks, by request, described a cyclone he had witnessed, which called out a discussion on the subject of cyclonic storms, participated in by Messrs. Stout, Harkness, Brooks and Redding. Dr. Kellogg described a species of large-sized purple heather bell found in this State. He also gave an account of the manner in which Indians make water-tight baskets, with fast-colored patterns woven in, from a species of native grass, the colored parts being taken from the outer covering of a maidens-hair fern that grows at an altitude of from 5000 to 6000 feet and has a comparatively large leaf. Dr. George M. Sternberg presented and described a collection of fossil bones of the Quaternary period, which he obtained from an old lake basin between the Snake and Columbia Rivers in a stratified yellow sandy soil among dunes overlying basalt. In the Board of Trustees, it was found necessary to order that "the director of the museum or one of his assistants shall be present at all meetings (of the Pharmaceutical Society in the Academy Hall) to open and close the building and guard and protect the property of the Academy." On motion of Gray, it was resolved "to procure plans for the erection of a one story and basement brick building, with truss roof, for immediate occupancy on the Academy lot on First Avenue." JULY 20, at a joint meeting of Trustees and Council it was resolved to be inexpedient, on account of financial conditions, to invite the American Association for the Advancement of Science to meet in San Francisco in 1883.

AUGUST 7, Mrs. E. B. Crocker of Sacramento, widow of Justice E. B. Crocker, by a letter dated August 4, donated to the Academy her collection of birds and mammals, together with the cases in which they were contained. They consisted of about 1,000 specimens of birds from all parts of the world and 100 mammals, all mounted, labeled, classified and arranged in their respective cases. She requested that they might be preserved in the same form and known as the "Collection presented by Mrs. E. B. Crocker of Sacramento." It was resolved, in accordance with her request, that the collection, which was estimated to be worth \$12,000, should be marked on each case

“Collection donated by Mrs. E. B. Crocker of Sacramento, Cal.,” and a letter of thanks returned to the donor. Dr. Harkness read a paper, prepared by himself and C. D. Gibbes, describing large and strange footprints found in the quarry of the State Prison at Carson, Nevada, and in connection with the paper in which some of the footprints were supposed to be those of primeval man, exhibited plaster casts, drawings and photographs of them.^{21.3} J. R. Scupham also read a paper describing the same footprints. In the Board of Trustees, it appeared that the Mechanics’ Institute of San Francisco had asked the privilege of exhibiting the Crocker-Stanford Collection in their pavilion as part of their Exposition; that the Academy had desired, if so exhibited, that it should be housed and protected in the pavilion for a period of four years, and that on a conference no satisfactory terms could be arranged; and it was therefore resolved that the offers made would not justify a removal of the Collection to the Mechanics’ Institute pavilion. AUGUST 21, the sudden death by apoplexy this day of Benjamin B. Redding, president of the Board of Trustees, was announced; and, on motion of Harkness, the Academy adjourned out of respect to the memory of the deceased. AUGUST 28, at a special meeting Messrs. Scupham, Gray and Harkness were appointed a committee to present appropriate resolutions in memory of B. B. Redding. Professor Joseph LeConte read a paper on “The Carson Footprints,” embodying his observations from personal inspection of them.^{21.3}

SEPTEMBER 4, Miss Nellie G. Sanborn and E. B. Rail were elected resident members. R. E. C. Stearns, on behalf of the Board of Trustees, read a memorial and presented resolutions in respect to the death of B. B. Redding.^{21.4} They spoke of Mr. Redding’s life as one “of exceeding excellence and eminent usefulness” and said that “his generous nature, spotless character, public spirit, and distinguished and intelligent service, extending through many years, entitled him to be regarded as an illustrious citizen and a benefactor to be commemorated.” The resolutions were adopted as “the sentiment of the Academy.” C. D. Gibbes read a paper “On the Carson Footprints,” illustrated by stereopticon views, for the expense of which the Trustees

^{21.3} The discussion of the Carson Prison footprints continued well into 1883. Several papers were published, four of which, two by C. D. Gibbes, and one each by H. W. Harkness and Joseph LeConte were privately printed although they bear an imprint, “From the Proceedings of the California Academy of Sciences.” The Academy did not publish any *Proceedings* volumes between 1877 and 1884, but individuals who presented papers at its meetings did pay to have their remarks issued as separates. The four papers read before the Academy and then published privately are as follows:

Harkness, Harvey Willson. 1882. Footprints found at the Carson State Prison. Pp. 1-7, 2 illus. (of footprints) (read Aug. 7, 1882);

LeConte, Joseph. 1882. On certain remarkable tracks, found in the rocks of Carson quarry. 10 pp. (read Aug. 27, 1882);

Gibbes, Charles Drayton. 1882. Pre-historic foot-prints in the sandstone quarry of the Nevada State Prison. Pp. 1-8, 4 illus. (read Sept. 4, 1882);

Gibbes, Charles Drayton. 1882. Fossil jaw of a mammoth. Pp. 9-10, 1 illus. (read Oct. 2, 1882).

^{21.4} In a letter to William Dall dated Aug. 27, 1882, Robert Stearns laments the loss of Benjamin B. Redding (Redding was a trustee of both the Academy and the University of California; Stearns was at the time Secretary to the University’s Board of Regents). “The Univ’y. and Acad’y have met with a really great loss in the death of Mr. Redding, which occurred suddenly on Monday last - a most useful and estimable man. I hardly know where to look for one to take his place; and am sure we can’t find anybody who can fill it. So we go - these hopes discourage me - I had hoped to see the Acady, with a proper building, well equipped and efficiently manned, the endowment fixed before I kicked the bucket, but the way things work, the inertia that someone has to check or guard against is severe upon the persons to whom such work a duty falls - and so in the Univ’y, the environment has so many opposing elements that it wears a fellow to the bones to stand watch and want to thwart unfriendly movements.” (SIArchives, RU 7073 ;William H. Dall Papers, 1865-1927}, Box 16, Folder 31.)

allowed a sum not exceeding \$15. In the Board of Trustees, Charles F. Crocker was elected a trustee in place of Mr. Redding, deceased. George E. Gray was elected president of the Board, and Thomas P. Madden, president *pro tem*. On motion of R. C. Harrison it was resolved that the Academy should make no defense to the action to quiet title brought by the Lick Trustees in respect to the strip of ground, 40 feet wide, adjoining the Academy's property on Market Street, inasmuch as it appeared to the satisfaction of the Board that, by his absolute conveyance to the Academy of the lot of 80 feet front, Mr. Lick intended that the Academy should retain no interest in the adjoining 40 feet. SEPTEMBER 18, Miss Isabel Downie, Robert Hawxhurst, James M. Kelley, Alfred Barstow, and John A. Paxton were elected resident members. E. F. Lorquin read a paper "On the Disappearance of the California Vulture." A large collection of reptiles, fishes and crustacea, collected and arranged by W. N. Lockington, was donated by James M. McDonald, R. W. Simpson, Charles Crocker, J. G. Fair, B. B. Redding, J. H. Saunders, C. H. Hinton, J. D. Douty, and J. O'B. Gunn.

OCTOBER 2, Dr. F. R. Waggoner, W. E. James, G. W. Brush, Joseph D. Redding, Dr. W. R. Cluness, Dr. David Wooster, and George Cadwalader were elected resident members. A. W. Jackson, Jr. read a paper on "The Glauconite Rocks of California" and C. D. Gibbes, a paper on "The Fossil Jaw of a Mammoth from the Carson Quarry, Nevada." C. W. Brooks exhibited a specimen of aerolite which had fallen beside Dwight Whiting, a member of the Academy while standing on the bank of the Wynootche River. A paper by Professor Davidson was read "On the Comet Now Visible." His observations had been made from the U. S. Coast and Geodetic Survey station on Mount Tamalpais, Marin County. OCTOBER 16, E. F. Lorquin spoke of the "Hanging Nests of Birds," and Dr. Behr of the "Work of Mason Bees." Professor Joseph LeConte addressed the Academy on "The Life and Work of Charles Darwin." Professor Davidson made remarks "On Comets" and read from a paper prepared by him some time previously on the subject. In the Board of Trustees, Dr. Kellogg was allowed his monthly payment of \$40 for three months longer, commencing October 1. The "Voy Collection," which had been exhibited at Mercantile Library Hall in connection with the Crocker-Stanford Collection, was ordered to be transferred to the Academy building. R. C. Harrison reported that he had filed a disclaimer for the Academy in the suit of the Lick Trustees to quiet their title to the strip of 40 feet of ground adjacent to the Academy's lot on Market Street, and that a decree in favor of the Lick Trustees had been entered in the case. OCTOBER 24, in the Council, it was resolved that the papers submitted for publication by Keep, Harkness, LeConte, and Gibbes be given to the publications committee for publication in a *Bulletin*. OCTOBER 30, at a special meeting of the Board of Trustees, it was resolved that the Crocker-Stanford Collection should be removed from the Mercantile Library Hall as soon as possible, for the reason that there were no satisfactory means of heating the apartment, and it was therefore an unfit place to keep the collection. It was also resolved that a committee, consisting of Messrs. Crocker, McDonald, and Madden, should search for new quarters for the occupancy of the Academy and its collections. The secretary reported the total cash on hand as \$4,627.84.

NOVEMBER 6, A. T. Hatch was elected a resident member. Dr. Kellogg stated that a specimen of pine had been handed him, the foliage of which had an acid taste like sorrel. He thought it was *Pinus Douglasii*. A discussion took place on the question of the poisonous qualities of certain leguminous plants. J. G. Lemmon spoke of a recent botanical trip of himself and wife to Arizona. In the Board of Trustees, it appeared that the sum of \$3,415 had been contributed for maintenance of the Crocker-Stanford Collection, of which all but \$195 had been paid in. Among the contributors were Daniel Cook, \$750; Claus Spreckles, \$500; Moses Hopkins, \$250; Alaska Commercial Company, \$200; and J. S. Doe, \$200. NOVEMBER 20, among the donations were 18 specimens from the nitrate deposits of Peru, presented by Lucius H. Foote, U. S. Consul at Valparaiso, Chile. R. E. C. Stearns read a paper "On the History and Distribution of the Fresh Water Mussels, and the Identity of Certain Alleged Species." Dr. Harkness submitted descriptions of 40 new species of fungi. In the Board of Trustees, the total cash on hand was reported to be \$4,995.41. The College of Pharmacy, having been requested to remove its property as early as convenient, asked to be permitted to leave it in the building for some time longer; and its request was allowed on conditions. On motion of R. E. C. Stearns, the Council was requested to report the actual performance of duties by parties participating in the benefits of the Crocker Scientific Investigation Fund. DECEMBER 4, J. G. Lemmon presented a number of specimens of ore from Arizona and described the localities where collected. Dr. Harkness made remarks on the galls infesting the *Quercus agrifolia*. Dr. Behr made remarks on a wild potato found by J. G. Lemmon in Arizona. DECEMBER 18, Dr. Harkness read a paper describing 15 new species of fungi. Dr. Henry Gibbons spoke of the influence of the upper currents of air on the local climate, and especially on rainfalls frequently coming from the northwest. Dr. Harkness exhibited the jaw of a mastodon found in a tunnel in Butte County, 700 feet below the surface and 500 feet in from the mouth of the tunnel. L. J. Sketchley read a paper "On Ostrich Farming in California." The nominating committee presented a ticket for officers of 1883. In the Board of Trustees, it appeared a controversy had arisen between the secretary of the Board of Trustees and the recording secretary of the Academy as to who was the secretary to give legal notice of the election. Mr. Harrison expressed an opinion that the election notice should come from him. It had been usual for the recording secretary of the Academy to give it. This year a printed notice was given by both secretaries.

Chapter XXII: Year 1883

The annual meeting was held JANUARY 2. The president, having been absent, asked a month's indulgence for his annual address. The recording secretary reported the total membership to be 306, and the average attendance at meetings during 1882 to have been 51. The director of the museum reported that the Academy received during the past year, including the Crocker-Stanford Collection, an addition of 10,967 specimens. J. P. Moore reported the donation of what was known as the Voy Ethnological and Palaeontological Collection by Irving M. Scott, Andrew Carrigan, William B. Hyde, Jr., J. O'B. Gunn, Christian Froelich, Jr., R. H. Pease, Jr., A. Chabot, and W. B. Randol. On nomination of the Council, Dr. Gustav Eisen was elected an honorary life member. J. P. Moore, H. W. Harkness and A. Kellogg were appointed a committee to draft suitable resolutions of appreciation of the labors of Robert E. C. Stearns, who was about to leave for scientific work in the East.²²¹

²²¹ Stearns had decided to leave California to take a position at the Smithsonian Institution as curator of conchology. Just when Robert Stearns first entered into negotiations with Spencer F. Baird, mostly through an intermediary, William H. Dall, regarding a curatorship, we do not know. We do know it had to be before March 17, 1881 because on that day Baird wrote to Dall, "Dear Mr. Dall, Did you write, as suggested to Mr. Stearns, to know how he took the idea of coming to Washington in charge of our collection of shells, and *possibly bringing his own to be deposited, subject to the future negotiations for acquiring it.* [italics ours, eds.] I think I could arrange a payment of \$1500 or even \$1800 a year as curator . . ." (SI Archives, RU 7073 {William H. Dall Papers, 1865-1927}, Box 7.) It is clear from this and later correspondence that Baird was anxious to acquire the Stearns shell collection, and that he recognized the fact that he could not do so without Stearns accompanying it. On July 19th, 1881, Baird again wrote to Dall, "I did not before understand that Mr. Stearns had resigned for the purpose of taking charge of the collection of shells in the National Museum; but supposed it was from disinclination to continue in the service of the University of California. I also supposed that his coming to Washinton depended entirely upon his selling his collection; and at any rate that the main body of it at least should come to the National Museum, and be still subject to his control. Of course, if the sale were made, and the collection transferred to the Museum, all the conditions made with Mr. Stearns would have been fulfilled. If his collection comes I will make some arrangement by which I will pay him at least \$1200 a year.

"Away from my records and memoranda, I am unable to speak positively in regard to engagements of this kind. Did I agree to appoint Mr. Stearns conchologist curator, expecting on the condition of the acquisition of his cabinet? I am of course perfectly willing to fulfil [*sic*] any promise that I have made conditionally or unconditionally.

"In the reorganizing of the Museum for the fiscal year 1881 and 1882, I found it necessary to exercise a very rigid economy in order to make both ends meet, and the margin for permanent additional employees is but small. — considerably less than I had supposed possible. . . . Acting under the impression that the Stearns' call to Washington was on condition of his being accompanied by his collection of shells, and in the uncertainty as to whether this could be secured, I had not made any definite provision for him . . ." (SI Archives, RU 7073 {William H. Dall Papers, 1865-1927}, Box 7.)

Although Stearns let it be known that he planned to leave California for the East, he does not seem to have taken any positive steps for several months. Indeed, on August 22, 1883, Stearns wrote to Baird, "I had a letter from Mr. Dall dated the 30th June in which he informed me that you intended to put my name on the roll of curators and allow me the usual monthly salary, the amt thereof to go on (—?—) of the collection, until I entered upon the regular duties of the curatorship . . . so that I supposed that the arrangement would commence with the new fiscal year July 1st and have been expecting a remittance accordingly.

"My health on the whole is better; our house has been placed in the hands of a real estate broker to sell, and we are praying for speedy good fortune in the matter of a quick sale. . ." (SI Archives, RU 7002 {Spencer Fullerton Baird Collection, 1793-1923}, Box 33.)



Gustavus Augustus Eisen (ca. 1910)
 (Photo by Dr. Peder S. Bruguiere, who taught Eisen photography)
 Courtesy Mrs. Ann-Lisa Måneskjöld-Lower, Altoona, Pennsylvania

The annual election resulted in the choice of Professor George Davidson as president; Justin P. Moore, first vice-president; H. H. Behr, second vice-president; Samuel B. Christy, corresponding secretary; Charles G. Yale, recording secretary; Elisha Brooks, treasurer; Charles Troyer, librarian; W. G. W. Harford, director of the museum; George E. Gray, Ralph C. Harrison, James M. McDonald, Robert W. Simpson, Thomas P. Madden, Charles F. Crocker, and Lewis Gerstle, trustees. Professor Davidson described the Transit of Venus, as observed by him in New Mexico; and J. P. Moore described the same Transit of Venus, as observed by him on Monte Diablo in California. In the Board of Trustees, the allowance to C. D. Gibbes from the Crocker Scientific Investigation Fund was discontinued on request of the Council. The financial report showed the receipts from all sources for 1882 to have been \$28,445.14, and the disbursements \$25,707.04 leaving a balance of \$2,738.10. Donations had been received during the year of \$19,758.50 in cash and \$12,300 in property (being \$12,000 for the Mrs. E. B. Crocker Collection and \$300 for the Voy Collection) making a total of \$32,058.50. The Crocker Scientific Investigation Fund yielded \$1,200 out of which had been paid the allowances to Dr. Kellogg and C. D. Gibbes and also certain expenses attending investigations of the "Carson Footprints."

JANUARY 15, J. G. Lemmon read a paper "On the Potato; Its Early History; its Properties, Uses, Degeneration and Restoration." Professor Hitchcock,^{22.2} of Dart-

^{22.2} Charles H. Hitchcock, son of Edward Hitchcock, Sr., and New Hampshire state geologist, 1868-1878.

mouth College, was introduced and spoke of the "Northern Glacial Moraines." In the Board of Trustees, George E. Gray was elected president; Thomas P. Madden, president *pro tem*, and C. W. Brooks, secretary. JANUARY 29, in the Council, president Davidson read a letter from Mr. Hamburger of Sacramento that called attention to bill no. 302 offered in the State Senate to publish the maps of the State Geological Survey. On Prof. Davidson's recommendation the Council adopted a resolution to endorse the act.

FEBRUARY 5, Francesco Lambertenghi (Italian consul), Dr. Paoli de Vecchi, S. B. Leavitt, and William R. Eckert^{22,3} were elected resident members. W. J. Forsyth read a paper "On the *Cinchona* and the Method of its Cultivation as Conducted in the East Indies." J. G. Lemmon read a continuation of his paper "On the Potato." Interest in establishing a Microscopical Section of the Academy was expressed by some members. The Council announced the appointment as curators of E. F. Lorquin on birds and mammals; J. J. Rivers, radiates, reptiles and crustacea; C. G. Yale, fishes; A. B. Stout, ethnology and osteology; J. P. Moore and Mary K. Curran, botany; H. H. Behr, entomology; Josiah Keep, conchology; C. D. Gibbes and J. T. Evans, mineralogy; Edward Booth, geology and palaeontology. In the Board of Trustees, the committee on new quarters reported that they could find no satisfactory building available. The cash on hand was \$3,439.50. FEBRUARY 19, Dr. F. V. Hopkins, Henry B. Osgood, Miss M. H. Jones, and Mrs. Donald McLennan were elected resident members. Professor Joseph LeConte read a paper "On the Genesis of Metalliferous Veins." A joint committee, chosen by members of the Board of Trustees, the Council, and the Academy at large, was appointed to consider the most expedient manner of obtaining a much needed permanent building for the use of the Academy and the proper display of the museum to the public. It was composed of James M. McDonald, Charles F. Crocker, Thomas P. Madden, Lewis Gerstle, George Davidson, Justin P. Moore, Charles G. Yale, H. H. Behr, H. W. Harkness, William A. Aldrich, William Norris, Frederick Gutzkow, Jacob Z. Davis, and Thomas Price. In the Board of Trustees, there was much discussion in reference to a new building and the unsatisfactory condition of Crocker-Stanford Collection.

MARCH 5, Gen. J. F. Houghton was elected a resident member. Mrs. J. G. Lemmon read a list of 36 ferns, mostly from Arizona, collected by her and presented to the Academy. A paper by C. L. Hooper of the U. S. Revenue Marine, on "Arctic Currents," was read. In the Board of Trustees, on recommendation of the Council, Dr. Behr was allowed the use of the Academy Hall for one hour each Monday for instruction in botany to the senior class of the Pharmaceutical Society. It was announced that the settling of the main floor of the Academy building had been arrested by the owners. A communication was received from the secretary of the Society of California Pioneers in reference to giving of a portion of the Academy's lot on Market Street, parallel to Market, and cutting the Academy lot into two parts. It was laid on the table for future consideration. MARCH 19, Richard Rising, E. J.

^{22,3} Spelt "Eckert" in the handwritten *Minute Books* (Stated Minutes, Dec. 1880-1890, for both Dec. 18, 1882 (p. 92) and Feb. 5, 1883 (p. 98). In the *Membership Records* book, someone pencilled in a change of spelling to "Eckart."



Charles F. Crocker
California Academy of Sciences Special Collections



James John Rivers
E. O. Essig Portrait File
California Academy of Sciences Special Collections

Wilson, W. S. Campbell, and Rev. B. F. Rattray were elected resident members. Dr. Behr read a paper "On Remains of Elephants from Siberia." Professor Davidson read a paper on the "Temperature of Sea Water of the Pacific and its Influence on Propagation of Oysters." The president said the secretary, Mr. Yale, had prepared the proceedings of the Academy for some years back for publication;^{22 4} and Dr. Kellogg exhibited a large number of sketches of California trees and other plants, prepared for photo-lithographing. He stated that his work was being done under the auspices of the Crocker Scientific Investigation Fund management. So far as *Proceedings* of the Academy were concerned, however, none were ever published for the ten years between 1876 and 1887, as has already been stated.

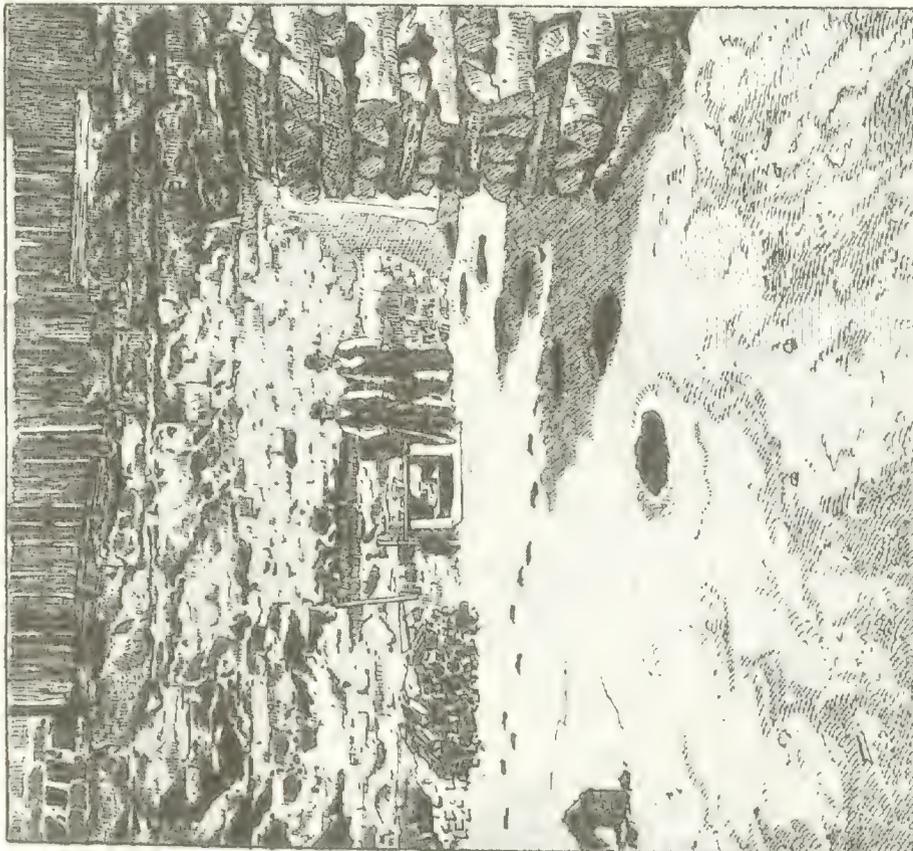
APRIL 2, among the donations were the first ostrich eggs laid in California; also the lower jaw of an animal found in the sandstone quarry of the Nevada State Prison at Carson, which C. D. Gibbes pronounced to be from a specimen of *Machairodus* or saber-tooth tiger. Dr. Kellogg read a catalogue of plants donated by C. G. Pringle, Dr. Behr described a new flowering plant found near San Francisco, which he named *Anemone Grayii*. Col. John E. Gowan, a specialist in marine engineering, was introduced and described the method in which the Russian vessels, sunk at Sebastopol in the Crimean war, had been raised. Dr. Harkness read a paper, describing his "*Homo Nevadensis*," which he claimed to be a new species of the genus *Homo*, whose footprints had been found at the State Prison quarry at Carson, Nevada. As these Carson footprints attracted great attention, and as the claim that some of them were human and proved the existence of man as early as the beginning of the Quaternary period became a subject of considerable discussion and caused not a little comment on the mistake made in reference to them, it is deemed proper to give the main facts in detail.

About the middle of May 1882, W. J. Hanks, sheriff of Storey County, Nevada, while on a visit to the Crocker-Stanford Collection in San Francisco, called the attention of Charles D. Gibbes of the California Academy of Sciences to reports of footprints, both of men and animals, at the quarry of the State Prison at Carson, Ormsby County, Nevada. He suggested that they should be examined by scientific men, and said that he would make arrangements with his friend, William Garrard, the warden of the Nevada State Prison, for the entertainment and furnishing of all facilities for examination to any scientist who might be sent there for that purpose. On his return to Nevada, Mr. Hanks went to the State Prison quarry and on June 26 wrote to Mr. Gibbes that he had examined the footprints and found mastodon tracks 22 inches in diameter, "as plain as if made yesterday." In speaking of the other footprints, he said "the man's track is very plain, his track measures 22 inches in length. There are bird tracks, women's tracks, and many other fossil remains. It is the most wonderful formation in the world." Mr. Gibbes showed this letter to B. B.

^{22.4} Destined to become volume 1 of the *Bulletin* (Number 1 of volume 1 issued Feb. 29, 1884), a short lived serial publication of the Academy which was replaced by the *Proceedings* series when the latter was revived in 1887-88. Although Charles G. Yale initially served as "editor" of the first number of volume one of the *Bulletin*, it was Mrs. Mary K. Curran who did the final editing and saw it through the press. Volume 1 of the *Bulletin* consisted of four parts or numbers, the last of which was issued on Jan. 2, 1885. Volume 2, numbers 5 through 8 (the last number published), covers the period Jan. 27, 1886 to the end of September, 1887.

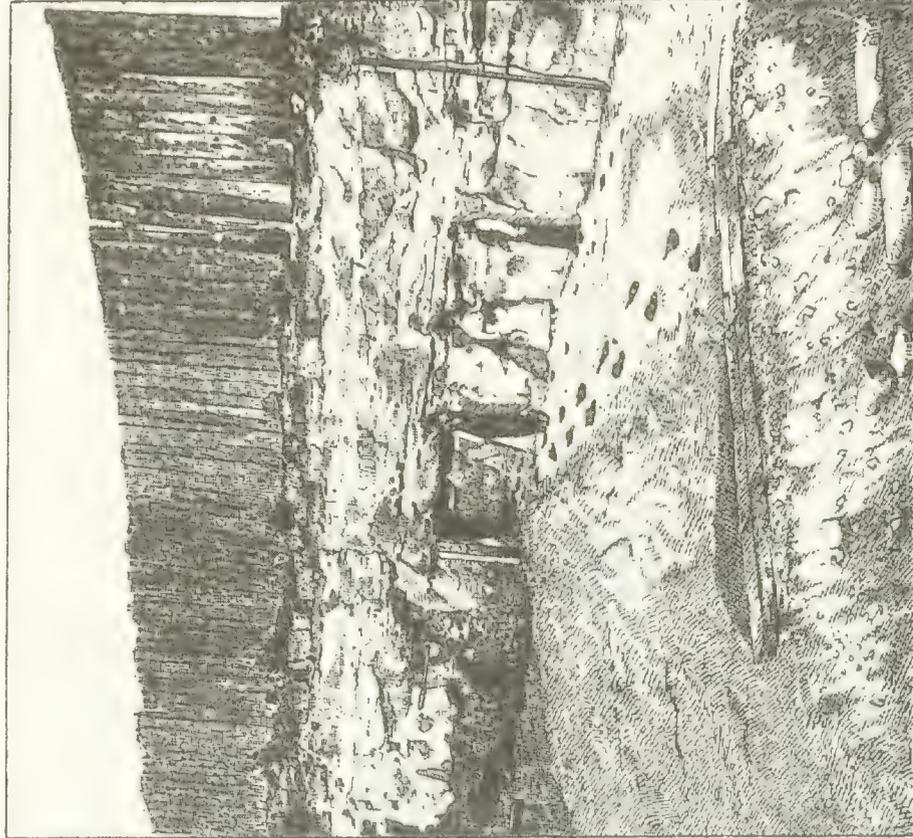
Redding who agreed to go with him and examine the footprints; and Mr. Gibbes then wrote to Mr. Garrard, who on July 2 answered, inviting Mr. Gibbes and Mr. Redding to come up and remain with him, while making their examinations, as guests of the State of Nevada, at the same time stating that he was expecting a visit from Professors Joseph LeConte and W. B. Rising of the University of California. Mr. Garrard, in his letter, said of the tracks that had been laid bare in the quarry: "well defined human footprints, 21 inches long, covered by 34 feet of sandstone, are found nowhere else that I know of." On the receipt of this invitation, Mr. Gibbes again saw Mr. Redding, whose business engagements, however, prevented him from going to Nevada at that time; and Mr. Gibbes then spoke to Dr. Harkness and Mr. Scupham, who both agreed to go at once. They accordingly went to Carson, Dr. Harkness and Mr. Gibbes on July 20, and Mr. Scupham met them there the next day. Professors LeConte and Rising arrived on July 22. All these gentlemen, after remaining a couple of days and making a very careful examination of the tracks, left again; but Mr. Gibbes remained ten days, making drawings, photographs, measurements and casts.

The Nevada State Prison is situated about a mile and a half east of Carson City, at the north end of a low ridge of sandstone, the termination of a short spur of Pine Nut Mountain, about three miles east of the edge of the foothills of the Sierra Nevada, and at an elevation of 4,490 feet above sea level. A portion of the sandstone ridge, of an area of about one and a half acres, had been quarried out to a depth of from 12 to 32 feet; and the floor of this excavated portion constituted the site upon which the prison buildings had been erected and the prison yard in which the tracks referred to were exposed. These tracks were described by Mr. Gibbes as consisting mainly of a mammoth track and six series of footprints shaped like those of moccasined or sandled human feet. The mammoth track, situated near the east wall of the yard, consisted of eight large, somewhat rounded footprints, 21 by 22 inches in diameter, with an average step 4- $\frac{1}{2}$ feet long, and a straddle of from 12 to 16 inches, apparently made by a mammoth or mastodon. A line of eighteen smaller footprints, 4 by 3- $\frac{1}{2}$ inches in size, shaped something like a dog's track and supposed to have been made by a hyena or some animal like it, crossed the line of the large tracks. The first series of the footprints, resembling human ones, situated near the southeast corner of the yard, consisted of twenty-seven footprints disposed in three lines. The first and principal line was straight and regular, the footprints being 19 inches in length by 8 inches wide at the ball of the foot and 6 inches at the heel. The step was about 27 inches, and the straddle 18 inches. The second line seemed to be a return of the first. The footprints of the third line were of the same character but considerably smaller and crowded together; and near these last mentioned footprints but apart from all the other tracks were indications of a large animal lying down or wallowing. Between the second and third of the above mentioned lines were five footprints of some large animal, about 8 inches in diameter; and running from the first to the third line was a line of smaller footprints, about 5 inches in diameter, apparently made by some feline animal. The second, third, fourth, fifth and sixth series were all near the southwest corner of the prison yard. They were all of footprints similar to those of the first and



No. 1
Mammoth tracks.

UPPER FLOOR.



No. 2
Footprints series No. 1.

Woodcut engravings prepared from photographs showing the positions of some of the footprints discovered in the sandstone quarry of Nevada State Prison, Carson City. (From C. D. Gibbes. 1882. Pre-historic Foot-prints in the Sandstone Quarry of the Nevada State Prison. 8 pp., 4 figs. [From the *Proceedings of the California Academy of Sciences*; privately printed])

second lines of the first series. No. 2 consisted of 13 prints straight and regular; No. 3 of 15 prints, rather irregular; No. 4 of 14 prints going parallel to No. 2 and crossing No. 3; No. 5 of 44 prints, extending 112 feet to the west wall of the yard, and No. 6 of 15 prints, crossing No. 5, near the wall. In addition to these, there were numerous tracks of large wading birds with three toes 5 inches long, having a step of from 23 to 24 inches, crossing portions of series 1, 2, 3 and 4, and a few deer tracks. All the tracks had apparently been made in a soft clay or mud deposit from three to five inches deep, sufficiently consistent to retain the impressions, which afterwards hardened and were subsequently covered with other deposits, but too soft to preserve impressions of nails or claws.

The almost immediate results of the examination of these tracks by the gentlemen above named were the four papers read before the Academy as already mentioned under their proper dates – the first by Dr. Harkness on August 7, the second by J. R. Scupham on the same day, the third by Professor LeConte on August 27, and the fourth by C. D. Gibbes on September 4, 1882.^{22.5} Dr. Harkness, who read the first paper, showed that the deposit in which the footprints appeared were of the lower Quaternary period and of fresh water origin, and he pronounced the six series above described to be “the tracks of men,” and that they wore sandals. He said that no single impression furnished conclusive evidence of the sandal; but that when studied as a whole we can determine with a good deal of exactness the actual length and breadth of the sandal, which we find to be eighteen and one half inches in length, eight inches (wide) at the ball of the foot, while the heel is six inches in breadth.” He gave the breadth of the straddle as eighteen inches “as measured from the center of the sandal of one foot to the center of the corresponding one,” meaning the transverse distance from the middle of the center line of one foot to the center line of the other. He noticed, as the main objections to the claim that the footprints were those of men, the colossal size of the sandal, and the width of the straddle which was “so marked as to cause a suspicion that they were those of an animal other than of man.” He argued that the sandal was made of wood, gouged out with an obsidian or flint chisel, and having a raised border, through holes in which it was tied to the foot, and for these reasons was necessarily large. As to its length, he said he had a diagram of a shoe worn by a man, six feet in height, then living in an adjoining county, which was but one half inch shorter than the sandal in question. In reference to the straddle, he would only say that, “in walking in muddy slippery places, we all walk with our feet further separated,” and that “by using such an unwieldy foot gear as we have described, such a position of the feet would be almost a necessity.” After Dr. Harkness had finished, Mr. Scupham read a paper upon the same subject, in which he seems to have confined himself chiefly to a description of what he had seen; but he intimated that, if the footprints were human, the individual who made one the tracks was probably dragging a heavy weight for the reason that the toes were so far out and the step was so short and irregular.

Professor Joseph LeConte, who read the next paper on August 27, devoted his first

^{22.5} See footnote 21.3.

attention to the deposit and determined it to be either of the Quaternary or Upper Pliocene period. As to the so-called mammoth or mastodon tracks, he said they were "undoubtedly those of an elephant"; but as to the "supposed human tracks" he was not so certain. He said that no one who saw them could "fail to be struck with their remarkable general resemblance, both in their form and in their apparent singleness of each impression, to human tracks." But their size was far too great for any human foot, and the form, he thought too much curved, and added, "if human, it is more like the jaunty step of the parlor than the careless tread of the forest." On the subject of size, he continued that it was, however,

not necessary to suppose the foot bare. There may have been a foot covering, and this would at once explain the absence of toe marks. Major Garrard's original suggestion was that the foot was moccasined; but this still leaves the great size unexplained. The acute suggestion of Dr. Harkness is more plausible. He supposes that the foot sole was protected by a large sandal of wood. He finds evidence of this in certain flat spaces at the toe and along the sides of some few of the tracks. But in most cases, especially where the track is deep, nothing of the kind is seen; the bottom is round, more like the impression of a moccasin than a sandal. It is well known that the Mexican Indians now wear a sandal of thick leather or rawhide, called 'huaraché,' and that it is often made much larger than the foot. If we regard the tracks as human, the best suggestion I can make is that the foot was protected by a huaraché, which at first was stiff enough to make a flat track, but becoming soft by wetting would soon make a round track like a moccasin. I say, the best suggestion I can make; but even so, the prodigious size of the tracks can hardly be explained.

He, however, found the most serious difficulty in the straddle. After remarking that "the necessary conditions of steady and effective walking in a biped is that the feet should barely pass each other without touching," he continued:

with broad sandals on, of course, the foot-centers would be more separated; but only by the width of the sandal. Perhaps in boggy ground, with sandals encumbered with mud, the separation of the foot-centers would be still greater, viz: the width of the mud encumbered sandal. But making every allowance of this kind, still the straddle is inexplicable.

He then turned to the quadrupedal theory, and said he had little or no better success than with the bipedal theory.

On this view, the tracks were made by a large, clumsy-footed plantigrade animal, each track being a double track of the two feet on one side – the one foot partly or wholly treading out the track of the other. This would account for the irregularity in the shape of the tracks of the same series, and especially for the wide straddle.

But,

if it be asked what animal, on this view, made the tracks, I must confess I do not know. The two animals, which came into my mind while looking at the tracks, were the bear and the extinct gigantic ground-sloth, the *Mylodon* – perhaps more likely the latter.

He, however, could not find any toe marks or claw marks, and he looked in vain for any certain indications of double tracks. And he ended his remarks on these human-looking tracks with the words:

In conclusion, then, the one strong argument for the bipedal theory is the apparent singleness of the tracks and the absence of the toe-marks, while the one strong argument for the quadrupedal theory is the wide space between the right and the left series of tracks. To this may perhaps be added, also the size and shape. It seems to me that

inductive caution requires that the judicious mind should hold itself in suspense awaiting more evidence. Meanwhile, however, my own mind inclines strongly to the latter theory.

On the other hand, C. D. Gibbes, who read his paper on September 4, 1882, and who spent ten days in his examinations, measurements, drawings and descriptions, was very positive that the disputed tracks were human. It is true that in his printed paper, he sometimes put an interrogation mark after the word "human"; but he believed and argued that they were human. He said:

When we tread in these gigantic foot prints, made by a race of men that passed away many thousand years ago, it tells a story of the ancient life of man written on the sands of time, that makes it difficult to overcome the fact that they are of human origin.

In reference to one series of the tracks, called by him the third series, where the toes were turned out more than usual and the stepping was irregular, he said that it was the one the Mr. Scupham thought might have been made by a man dragging a heavy weight; "but," continued Mr. Gibbes, "if he had been, his own track would have been obliterated, and another trail left in its place. May it have been a woman with a heavy burden as the squaws carry now?" Mr. Gibbes further said:

With regard to the size of the foot prints, presuming they are of human origin (of which there can scarcely be a doubt) they were not made by any person of an ordinary size; for would any common man take such long steps in mud? Why should there not have been a large race of man in the old world, as well as animals of enormous size?"

And again:

In conclusion, as doubts have been expressed as to the human origin of these foot prints, particularly by those who have not seen them, thinking perhaps that they were made by a bear or some unknown animal, I would say that both in Texas and in this country, have I trailed not only animals, but the Indian or the war path, for miles at a time. And that many frontiersmen of great experience in tracking Indians, and also bear and other game, have witnessed these foot prints, and all give their judgment without question in favor of their human origin.

Subsequently on October 2, 1882, Mr. Gibbes read a paper on the "Fossil Jaw of a Mammoth" found in the Carson State Prison yard, which he took to be a portion of the lower jaw, with part of a tooth attached, of an *Elephas Americanus* or *Elephas intermedius*, and also a paper on a "New Discovery of Fossil Bird Tracks," found at the same place, which had four toes, the middle one of which measured five inches and the hind one two inches, with a foot spread of nine inches, and a step of from 21 to 23 inches.

No further paper upon the "Carson Foot-prints" was presented to the Academy, although there was more or less talk upon the subject, until this meeting of APRIL 2, 1883, when Dr. Harkness read his paper, as above stated, on his "*Homo Nevadensis*", in which he seems to have reiterated his former opinion as to the human origin of the disputed footprints and thought himself justified in regarding them as proofs of a new species of the genus *Homo*, to which he gave the specific name of *Nevadensis*. This paper, though read to the Academy, was not published; nor was that of Mr. Scupham; but all the others mentioned above were printed as loose sheets of *Proceedings* of the Academy; and it is from them that the account here given is made up. It may be added that at the end of the printed copy of Professor LeConte's paper, there was an "Addendum," subsequently written, in which he spoke of an article, published by

Professor Edward D. Cope, and a letter written to him by Professor Marsh of Yale University, in which the deposits of the Carson quarry were pronounced to belong to the *Equus Beds*, belonging to the Upper Pliocene or early Quaternary period. He also, at that later writing, substantially indicated what is now accepted as the solution of the questions involved by giving the opinion of Professor Marsh in the following language: "From deposits of this age three species of gigantic ground sloths are known, viz: two species of *Morotherium* and one species of *Myiodon*. It is not at all improbable, as suggested by Marsh in his letter, that the supposed human tracks were made by one of these. The size, the stride, the curve, and the straddle, all agree with this supposition."

APRIL 16, Melville Attwood, Mrs. F. S. Vaslit, and H. G. Parker were elected resident members. Professor Davidson spoke of the unusually favorable conditions under which the Transit of Venus observations had been made on the Pacific Coast. MAY 7, E. L. G. Steele, Rev. Edward L. Greene, William McM. Woodworth, J. A. Richardson, Samuel J. Clarke, August Liliencranz, and Walter M. Wolfe were elected resident members. Among the donations were 71 Arizona plants, including seven new species, from Mr. Lemmon, and land snails and 10 birds, two of which are new, from Mr. Belding. Prof. Davidson deposited with the Academy 13 photographs of the Transit of Venus taken at Cerro Roblero Stateion, New Mexico. The committee on the contemplated departure of Robert E. C. Stearns, who was about to proceed to the East to be attached to the conchological department of the Smithsonian Institution at Washington, presented a series of resolution, which were adopted, giving expression to the high appreciation entertained by the Academy of the great service Mr. Stearns had rendered it and wishing him God speed in his new sphere.^{22.6} A. W. Jackson, Jr., read a paper "On the Structure and Genesis of the Bassick Ore Deposits, Custer County, Colorado." MAY 21, J. G. Lemmon presented 97 different species of Arizona plants; and Ivan Petroff read a paper on "Alaskan Boars." The president called attention to the gift of an eight-inch refracting telescope by A. Chabot for the benefit of the school children of Oakland, Alameda County.

JUNE 4, Chancellor Hartson was elected a resident member. R. E. C. Stearns read a paper "On the Molluscan Fauna of the Colorado Desert and Regions East Thereof." A discussion ensued on the fresh-water and salt-water shells of the Colorado Desert. Dr. Harkness spoke of the havoc caused by the sycamore tree pest, then more general than it had been for some years. Professor Davidson read a paper "On D'Arrest's Comet." Mr. and Mrs. J. G. Lemmon presented 96 plants from the Huachuca Mountains in Arizona with descriptive lists. In the Board of Trustees, it appeared that there was a balance of over \$800 in the Crocker Scientific Investigation Fund; and \$40 per month from it was ordered paid to Mrs. Mary K. Curran for botanical work on the herbarium. The Council, at its meeting on June 2, took note that Mrs. Curran "had for many months given her whole time to the proper arrangement and classification of the botanical collections of [the] Academy, and travels at her own expense to different parts of the country to fill wants in the collection, etc. From knowledge

^{22.6} Also reported in the *San Francisco Mining and Scientific Press* for May 12, 1883, p. 329, col. 4.



Mary Katharine Layne (Curran) (Brandege)
 Hunt Institute for Botanical Documentation
 Carnegie-Mellon University

of her successful labors on this special unit, the Council unanimously recommends this action.” JUNE 18, Dr. Henry Gibbons made remarks on the “Meteorology of this Coast,” and Dr. Harkness described a fungus attacking the leaves of cherry and apricot trees.

JULY 2, among the donations were: from John Barker of Summer, Kern County, 573 fossil sharks’ teeth and other fossils from 200 feet above the bed of Kern River; and from Frank Bell three fossil teeth of a horse from the State Prison quarry at Carson, Nevada; also the rib of some large animal found there, and the cast of another foot print uncovered ten feet below the surface. J. P. Moore donated 18 bound books of reference. Professor W. P. Blake read a paper “On Remains of the *Megatherium* found in Honduras.” In a discussion which followed, in reference to the Carson footprints, Professor Blake expressed an opinion that they were not made by a giant, sloth. In the Board of Trustees, it appeared that the balance of cash on hand was \$3,010.78, including \$775.85 in the Crocker Scientific Investigation Fund and \$658.88 in the Crocker-Stanford Collection maintenance fund. JULY 16, among the donations was a fine specimen of shad from the Columbia River, presented by Dwight Whiting, who said that thousands of them were “being caught and thrown away by salmon fishers because of their abundance.” Professor Pierre J. C. Janssen, director of the National Observatory at Meudon, France, and Professor Etienne L. Trouvelot, for many years astronomer at Harvard University but then detailed by the French government on the French Solar Eclipse Expedition, of which Professor Janssen was the chief, were introduced to and welcomed by the Academy. Professor Janssen returned thanks, speaking in French. Professor Trouvelot spoke in English in refer-

ence to the solar protuberances and corona and also of the "red star, of 4 and 4- $\frac{1}{2}$ magnitude, three degrees north and three degrees east of the sun at time of solar eclipse." Professor W. P. Blake read a paper on the fossil remains of the "*Glyptodon* in Honduras." Dr. Kellogg spoke of a specimen of pine, presented by Thomas Holt as "black pine from Redwoods towards San Jose, Cal." and said it was a variety of *Pinus Jeffreyi*. Miss Rosa Smith of San Diego addressed the Academy on the "orb weaver," a small species of spider, named after her, by the Philadelphia Academy of Sciences, *Zilla Rosa*. Dr. Henry Gibbons gave illustrations of the remarkable ingenuity of the common house spider. In the Board of Trustees, Professor Davidson, as chairman of the Council, asked the Board to pay the expenses of himself, Professor William P. Blake and C. D. Gibbes to the Carson State Prison quarry to examine and report upon some new fossil foot prints recently uncovered, as well as to reexamine the old ones. He said that Professor Blake agreed to make a full report to the Academy. C. F. Crocker offered to furnish railroad tickets at half rates; whereupon it was ordered that the Academy pay the necessary expenses. H. E. Mathews, secretary of the Lick Trustees, reported the cash surplus at that date of the Lick estate over specific gifts to be \$171,185.42, and that all the unsold property was yielding adequate rentals, the former estimate of \$66,000 being considerably exceeded.

AUGUST 6, L. Heinze and John Barker were elected resident members. Among the donations was a large collection of casts, fossils, and sandstone specimens of foot prints from the Carson quarry, presented by Frank Bell, William Garrard, Professor Davidson and C. D. Gibbes; also serpentine from St. George's Reef, Crescent City Lighthouse rock, from Captain A. H. Payson, U.S.A., and a cube of Oregon sandstone from the beach north of Port Orford, said to be one of the finest building stones found on the Pacific Coast. Dr. Harkness read a new paper entitled "Remarks on Footprints of *Homo Nevadensis* at Carson." C. D. Gibbes made a new report on the same subject, and Professor Davidson read a report purporting to be made on behalf of the committee appointed by the Trustees to examine the locality. None of these papers was published. In the Board of Trustees, Professor Davidson asked for \$76.62 for the expenses of himself and party out of the Crocker Scientific Investigation fund; and it was so ordered against the objections of Captain McDonald, who insisted upon a strict construction of the express purposes for which that fund had been given to the Academy and contended that nor part of it should be used except for those express purposes. AUGUST 20, Dr. Harkness presented fresh-water sponges from a small lake at the summit of the Sierra Nevada. A paper by Captain C. L. Hooper on "Arctic Summer" was read, and also a letter from William R. Bentley, describing perpetually frozen ground in a shaft 108 feet deep, in Idaho. SEPTEMBER 3, among the donations were 151 freshwater land and fossil shells by F. A. Sampson. Dr. Behr read a paper on "Organic Underground Life." SEPTEMBER 17, Miss Rosa Smith, William H. Mathews, and W. W. Elliott were elected resident members. General J. F. Houghton read a paper on the "King Fish" or spat, *Lampris guttatus*,^{22.7} found in Monterey Bay. Professor Davidson called attention to a controversy going on in the American

^{22.7} Incorrectly shown as "grettatus" in the handwritten minutes (*Minute Books*, p. 117) for this date.

Association^{22.8} in reference to glaciers, and referred to papers read in the Academy, showing the action of glaciers (*q.v.*) on this coast.

OCTOBER 1, Professor Davidson spoke on "Earthquake Waves and the Means of Recording Them." Dr. Harkness called attention to the fact that a paper had been read in the Academy on August 6, purporting to be a report of a committee appointed to examine the Carson footprints, and asked the secretary who appointed that committee. The secretary answered that he had no knowledge of any such committee. Professor Davidson then stated that no committee had been appointed by the Academy, but that he and another member had been requested by the Trustees to go to Carson and investigate certain new tracks, and they had invited Professor Blake to accompany them. OCTOBER 15, in the Board of Trustees, it appeared that there was some talk of procuring a new lot and building for the Academy as indicated by a formal offer by C. G. Hooker to sell a lot on the east side of Van Ness Avenue between Fulton and Grove streets at the rate of \$300 a front foot. OCTOBER 27, at a meeting of the Building Committee, there was more talk about selling the Market Street property and purchasing a new lot for the Academy. Dr. Davis submitted a plan for buying a lot on the northwest corner of McAllister and Larkin, for about \$50,000. Dr. Harkness, who seemed favorable to selling the Market Street lot, also said that San Francisco Park Commissioner Pixley had assured him that a location for a building might be obtained in the Park itself. Following further discussion, a vote to recommend to the Trustees the selling the Market Street property resulted in 5 ayes and 5 noes, and the motion was defeated. This was followed by a vote on Mr. Bowman's proposal to recommend that the Board of Trustees lease the Market Street property for a term of 20 years. The motion passed by a vote of 8 ayes and 2 abstentions.

NOVEMBER 5, N. W. Tallant, Lewis B. Harris, and William Zimmerman were elected resident members. Among the donations: a container of snakes from Isthmus Darien, Panama, from Mr. Wasserman, 13 bird skins from Point Barrow, Alaska, from A. C. Dark, and from Mr. Lemmon, 35 specimens of the Polemonium family of plants of which seven are new. Dr. Steneker read a paper on the Steller sea cows, found on Behring and Copper Islands. The species was said to be extinct, no living specimen having existed for sixty years. Mrs. Mary K. Curran read a paper "On a Hybrid Oak near Folsom, *Quercus Kelloggii* and *Quercus Wislizenii*." Professor Davidson read papers on "Solar Eclipse of October 30th," "Notes on Appearance of Saturn," "A Brilliant Meteor," and "Trouvelot's Red Star." In the Board of Trustees, it appeared that the resolution, which had been adopted September 4, 1882, declining to make any defense to the suit of the Lick Trustees to quiet title to the strip of 40 feet of ground adjoining the Academy's lot on Market Street, and disclaiming any interest therein had gone too far, inasmuch as the Academy did have a very considerable interest in it as one of the residuary beneficiaries of the Lick estate, of which that lot was a part. The former resolution, therefore, was rescinded and a new resolution adopted, setting forth the interest of the Academy as above indicated, which was ordered to be transmitted to the Lick Trustees. NOVEMBER 19, W. F. Goad

^{22.8} American Association for the Advancement of Science.

was elected a resident member. Mary K. Curran donated three volumes of "Genera Plantarum" by G. Bentham and J. D. Hooker. Mrs. J. G. Lemmon read a paper entitled "Field Notes on Arizona Plants," and E. J. Molera, a paper "On the Aztec Calendar Stone."^{22,9}

DECEMBER 3, Dr. Behr read a paper on "Evolution." Professor Davidson read a paper on the "New Bogoslov Volcano." He also spoke of the Pons-Brooke comet, and said it had been visible to the naked eye on December 1. He likewise spoke of the shadows and bright portions of Saturn's rings, and, on request explained, as far as he knew, the progress of the telescope for the Lick observatory. In the Board of Trustees, R. C. Harrison reported that the Lick Trustees did not desire any appeal from the decision and decree of the Superior court construing the Lick Deed of Trust and requested all parties interested to file papers expressly waiving their right of appeal so that final settlement of the Trust might thereby be expedited. A resolution was adopted to authorize the waiver of all right to appeal, if, and after, all other parties filed such waiver. The secretary reported that the maintenance fund to defray the expenses of the Crocker-Stanford Collection, which seems to have been still kept on exhibition, was overdrawn \$302.20. DECEMBER 17, Professor Davidson gave an explanation of the method of determining the difference of declination between the Pons-Brooke comet and any star. A discussion took place as to the causes of the "red sunsets." The nominating committee presented a ticket for officers of 1884. In the Board of Trustees, C. D. Gibbes reported that 5400 persons had visited the Crocker-Stanford Collection during the past year. The sum of \$100 was ordered paid the secretary for services rendered.

^{22,9} Because the Academy had suspended publication of its *Proceedings* series, Molera published his remarks in a privately printed paper, printed in San Francisco in late 1883 (15 pp., 1 pl.). On Nov. 27, Molera gave the same paper at a meeting of the Geographical Society of the Pacific.

Chapter XXIII: Years 1884-1885

1884

At the annual meeting of 1884, held JANUARY 7, Joseph Pescia was elected a resident member. The various officers presented their annual reports, showing the condition of the Academy and its progress during the past year. The following were declared elected officers for 1884: Professor George Davidson, president; H. W. Harkness, first vice-president; H. H. Behr, second vice-president; S. B. Christy, corresponding secretary; C. G. Yale, recording secretary; Elisha Brooks, treasurer; Carlos Troyer, librarian; W. G. W. Harford, director of the museum; Charles F. Crocker, George E. Gray, Ralph C. Harrison, R. W. Simpson, Thomas P. Madden, James M. McDonald, and Louis Gerstle, trustees. Professor Davidson read a paper on "Astronomical Research." On nomination of the Council, Dr. Harvey W. Harkness and Charles G. Yale were elected honorary life members. In the Board of Trustees, it appeared from the annual report that "every obligation had been audited and promptly paid, and no debt of any kind existed against the Academy. The income from the Crocker Scientific Investigation Fund is being expended in original research, in accordance with the intention of the donor and the suggestion of the Council of the Academy. During the year, the Trustees have had constantly in view the question of the disposal by lease or sale of the Market Street lot. Negotiations are still pending; but as yet no definite conclusions have been reached." The report further stated that the First Avenue lot had been fenced in, but was still vacant. It spoke of the various collections and said that the expenses of the Crocker-Stanford Collection for the year had been \$2,066.15, exhausting the fund raised from special maintenance and also \$408.17, drawn from the fund of the Academy. The total receipts for the year had been \$7,056.07, which added to \$2,829.17, on hand at the beginning of the year, made a total of \$9,685.24. The disbursement had been \$8,253.52, leaving on hand \$1,631.72. Thanks were tendered R. C. Harrison for gratuitous services in legal proceedings in reference to the Lick Trust. The taxes paid during the year amounted in all to \$2,032.83.

JANUARY 21, J. Carlos Mexia, Dr. S. M. Mouser, Dr. W. F. Smith, H. R. Taylor, and Philip Labadie^{23.1} were elected resident members. Among the donations were a collection of 20 species of spiders, eight of which were new, from Prof. G. W. Peck of Milwaukee, and a large collection of curios from the Solomon and New Hebrides

^{23.1} J. Labadie in the handwritten minutes for Jan. 21, 1884 (p. 126 of the *Minute Books*).

Islands, from Capt. Tierney of the whaler *Rainbow*. E. J. Molera read a paper "On the Storage of Electricity." The Council announced the appointment for the year of Messrs. Davidson, Yale and Behr as publication committee, and the following curators: E. F. Lorquin of birds and mammals; J. J. Rivers, radiates, reptiles and crustacea; Miss Rosa Smith, fishes; Dr. A. B. Stout, ethnology and osteology; E. L. Greene and Mary K. Curran, botany; H. H. Behr, entomology; Josiah Keep, conchology; J. T. Evans and W. M. Wolfe, mineralogy; Melville Attwood, geology and palaeontology. In the Board of Trustees, George E. Gray, was elected president; Thomas P. Madden, president *pro tem*, and C. W. Brooks appointed secretary.

FEBRUARY 4, among the donations were specimens of "flukes," *Distoma hypaticum*, found in the livers of sheep in Humboldt County, where many hundreds of sheep had been killed by them. Dr. Behr gave a sketch of the life history of *Distoma hypaticum*. Dr. Henry Gibbons spoke of the phenomena of "Red skies." On motion of Dr. Gibbons, a resolution was adopted recommending Professor Davidson to the Governor for reappointment as one of the Regents of the University of California. Seven papers were submitted for publication in a special "Bulletin" of the Academy. They were by Dr. Asa Gray, Miss Rosa Smith, Drs. Behr and Kellogg, Mrs. Mary K. Curran, Dr. H. W. Harkness, T. H. Evans, and Professor Davidson respectively. FEBRUARY 18, William M. Lent was elected a life member, and P. S. Buckminster, G. A. Moore, and Holger Berkedel resident members. J. T. Evans read a description of the new mineral colemanite. E. L. Greene read an obituary notice of the late Dr. Engelmann. Mr. C. W. Brooks read an extract from the last number of *Nature* describing some of the phenomena attending the volcanic eruption of Krakatoa in the



Edward Lee Greene
Bancroft Library, University of California, Berkeley

East Indies. In the Board of Trustees, \$125 were appropriated to pay for printing a special *Bulletin* at the request of the Council.

MARCH 3, Dr. Behr submitted a paper entitled "A Classification of Plants, Founded on Evolution." A paper by C. Burckhalter and C. B. Hill was read, describing the transit of the fourth satellite of Jupiter on February 20, and the phenomena connected therewith. In the Board of Trustees, W. B. Farwell of the Society of California Pioneers attended and called for a positive answer regarding a proposition to square the end of the Academy's lot on Market Street. He announced that the Pioneers, jointly with J. C. Flood, the owner of the adjoining property on the south corner of Market and Fourth Streets, had purchased from the Lick Trustees, for \$41,000 a strip of land, adjacent to the Pioneers' lot and running from Fourth Street to the Academy's lot, to be kept open as a court for the purpose of giving light and access to the buildings proposed to be erected on each side of it. The matter was referred to the prudential committee, consisting of Messrs. McDonald, Crocker and Gerstle, to consider and report. MARCH 17, the publication was announced of *Bulletin* No. 1, the first regular publication of the Academy since 1876.^{23.2} It consisted of 59 pages. The secretary stated that Mrs. Curran had prepared the manuscripts and oversaw their publication. On motion of Dr. Stout, a vote of thanks was extended Mrs. Curran for her volunteer efforts. A discussion took place on the subject of artesian wells and natural gas. APRIL 7, E. L. Greene read "Botanical Notes of a Trip in San Luis Obispo and Monterey Counties." A letter was read from William Carter of North Vallejo, Solano County, stating that his grain fields had been attacked by the Hessian fly. Dr. Harkness explained the progress of growth of the fly, and exhibited under the microscope its eggs and larvae. He also exhibited galls from an oak tree in Yosemite valley and described the life history of the cynips found in them. APRIL 21, A. D. Wilder, W. H. Smyth, Frederick H. Jenssen,^{23.3} Dr. J. M. Selfridge, and William Freeborn were elected resident members. Dr. Behr read a paper on "Classification of Insects." Dr. Harkness presented a species of truffle found at Santa Cruz and a species found by J. J. Rivers near Duncan's Mills in Sonoma County.

MAY 5, Edward Probert was elected a resident member. Dr. Behr read a paper on the "Germ Theory of Disease." Dr. Harkness did not exactly agree with Dr. Behr in his conclusions on the germ theory; and a discussion ensued between those gentlemen on the subject. Professor Davidson made remarks about a recent trip by him to the City of Mexico. Two days earlier, in the Council, long-time member Amos Bowman was ordered dropped from membership for non-payment of dues. C. D. Gibbes was appointed assistant curator of mineralogy. In the Board of Trustees, a new policy of fire insurance for \$12,000 on the Crocker-Stanford Collection was ordered to be taken out at a premium of \$150. Col. Abraham Andrews, in answer to a letter by him, asking for an exhibit for the World's Fair at New Orleans, was informed that the Academy,

^{23.2} The date of this issue of the *Bulletin* is recorded as Feb. 29, 1884; part 2, Jan. 31, 1885; part 3, Feb. 28, 1885; part 4, pages 179-234, Aug. 29, pages 235-255, Oct. 13, pages 256-271, Nov. 19, 272-282, Dec. 14, pages 283-336, Dec. 15, pages 337-357, Dec. 31 (although the issue date printed on page 337 says January 6, 1886), 1885, and pages 358-372, Jan. 26, 1886. The volume was closed on January 31, 1886.

^{23.3} Shown as Jenssen in the handwritten minutes for April 21, 1884 (p. 133 of the *Minute Books*), but Jenssen on the announcement of his death, April 18, 1887 (p. 230 of the *Minute Books*).

though it wished success to the Fair, had no means or material suitable for exhibition. MAY 19, Joseph D. Redding read a paper on the "Fish Interests of California." R. E. C. Stearns made verbal remarks on edible shellfish of the Pacific Coast. Captain Simpson spoke of their destructiveness to fish. JUNE 2, A. G. Bell^{23,4} of Washington gave a brief description of a "System of Visible Speech," invented by him for teaching deaf persons. Dr. Behr exhibited grape leaves with *Phylloxera* in the "gall form," the first time it had been presented to the Academy. JUNE 16, E. L. Greene described a new plant, which he named *Crockeria* in honor of Charles Crocker, the donor of the Crocker Scientific Investigation Fund. Dr. Behr described the habits of the army worm and the vine moth, giving suggestions as to remedies. Professor C. A. White of the U. S. Geological Survey was called on and gave an account of the biological work being done by the survey.

JULY 7, A. Pierce was elected a life member, and Richard H. Sinton, a resident member. Dr. Henry Gibbons made remarks upon the poisonous qualities attributed to tin when acted on by the acids of fruits and vegetables. He exhibited samples of pure tin and tin adulterated with lead, such as is used for making fruit cans. J. T. Evans stated that he had made some examinations and found lead salts in cases of asparagus, evidently from the lead mixed with the tin to cheapen it. Dr. Gibbons called attention to the recurrence of the phenomena of red sunsets. JULY 21, Dr. Behr stated that he had received from Baron Koels a curious web from New Mexico. It was a product of a colony of butterflies, which protected them from rain and wet weather. He thought the caterpillars belonged to the Lepidoptera family. Frederick Gutzkow spoke on the subject of poisoning by canned fruits. He had looked it up and found there had been extensive researches in respect to alloys of tin and lead – one by Professor Hull in America, others by Professor Weber under the auspices of the German government. These researches proved that the danger was insignificant and overestimated. They agreed that a slight addition of tin to lead overcomes the poisonous qualities. There would be in a tin can a very insignificant amount of lead. Professor Weber found the remarkable fact that if the lead was in a solution of tin and lead, it was precipitated by the alloy itself. He did not think there would be any danger at all from the minute quantity of lead. The subject of poisoning from ice-cream was also described briefly. In the Board of Trustees, a letter was received from W. B. Farwell, stating that he was authorized by J. C. Flood to offer \$200,000 in cash for the Academy's Market Street lot. The matter was referred to the prudential committee.

AUGUST 4, the subject of poisoning by canned fruits again came up for discussion. Mr. Gutzkow reiterated his previous statement that thorough, careful and scientific investigation had proved that there was no danger in using lead with tin for fruit cans. Descriptive notes of the volcano of Bogoslov in Behring's Sea by Lieutenant Doty of the U. S. Revenue Marine, were read and photographs exhibited showing views of the new island formed during the recent eruptions. Professor Davidson described a recent brief visit to the Grand Cañon of the Colorado River. Frederick Gutzkow

^{23,4} Recorded as A. M. Bell in the handwritten minutes (p. 136 of the *Minute Books*).

described the method of retorting quicksilver *in vacuo*. AUGUST 18, among the donations was a "*Boa imperator*," presented by Captain William Lund of the brig "Dora." A letter was read from W. C. Chapin in reference to the sinking of a deep well in the Forty-mile Desert, White Plains, Nevada, where specimens of wood had been brought up from a depth of 1615 feet, the stratum or piece of wood pierced being 9 feet thick. Professor Davidson gave the results of a computation of the occultation of Venus by the moon. Charles W. Brooks was requested to find out from Mr. Lorquin if it were really true that sixty small snakes were taken from the specimen of *Boa imperator*, presented by Captain Lund, when it was being prepared by the taxidermist. Captain Lund described briefly the Tres Marias Islands in the Pacific Ocean about 60 miles off San Blas. In the Board of Trustees, the prudential committee, consisting of Messrs. McDonald, Crocker and Gerstle reported that "at present it is not advisable to sell the Academy's Market Street lot." The report was approved and adopted, and Mr. Flood's offer of \$200,000 cash for it declined. SEPTEMBER 1, Joseph Durbrow was elected a resident member. A paper giving an account of the first ascent of the volcano Makushin on the Island of Unalaska in the Aleutian chain was read; also a paper by C. W. Brooks on "Arctic Drift and Ocean Currents."^{23 5} SEPTEMBER 15, among the donations was a cast of a fragment of the lower jaw of a mammoth, found at the Carson, Nevada, State Prison quarry, presented by C. D. Gibbes. A letter was read from Lieutenant Doty, describing the old and new volcanic islands of Bogoslov in Behring's Sea. In the Board of Trustees, an invitation was received from the Society of California Pioneers asking members of the Academy to attend the laying of the corner stone of the new Pioneer Building on Fourth Street.

OCTOBER 6, among the donations were a plant and seeds of *Chenopodium Quinoa*, presented by William N. Meeks. Dr. Stout made remarks in reference to the plant, describing its uses in Peru, where it was cultivated as a food plant. He said that Mr. Meeks, having described its uses in Peru, where it is cultivated as a food plant, had raised some of the grain in this State and was desirous of seeing it cultivated on a large scale in California. Professor Davidson submitted by title several papers on astronomical subjects. He read papers on "Partial Solar Eclipse, October 18, 1884." "Volcanic Activity of Four Islands, Behring's Sea," and "The Comet Wolf." A. W. Jackson, Jr. of the University of California gave the morphology of the new mineral, "Colemanite." OCTOBER 20, Dr. Behr addressed the Academy on the habits of a beetle, called *Tigiodera croza*, which always follows locust and grasshopper pests. The specimens shown had been brought from the Gila Desert by Mrs. Curran. Professor Davidson exhibited the Foucault pendulum in illustration of the rotation of the earth. J. Z. Davis asked if notice had been given the Board of Trustees to remove the Crocker-Stanford Collection from Mercantile Library Hall. The question was prompted by the general understanding that the managers of the Mercantile Library Association desired the use of their hall for other purposes; and in view of the

^{23 5} Brooks' extended remarks on studies of Arctic drift and currents were privately printed in 1884 (Geo. Spaulding & Co., San Francisco, printers) in a pamphlet of 18 pages bearing the title, "Arctic Drift and Ocean Currents, Illustrated by the Discovery on an Ice-Floe off the Coast of Greenland of Relics from the American Arctic Steamer 'Jeannette.'"

necessary removal of the Crocker-Stanford Collection, there was a question where it should be removed to and what should be done with it. Dr. Harkness protested against any proposition to remove it to the Academy building on California and Dupont Streets, and advocated hiring a safe place to store it. Mr. Davis offered a resolution that the collection be boxed up and stored. Mr. Harford thought the resolution out of order for the reason that the matter was in the exclusive jurisdiction of the Board of Trustees. Dr. Harkness thought the Trustees would desire to have an expression of opinion from the Academy. A general discussion ensued; and it was finally determined, on motion of Mr. Molera, to appoint a committee of three to confer with the Trustees on the subject. Messrs. Molera, Harkness and Behr were appointed such committee. In the Board of Trustees, it appeared that on October 15 a notice had been served upon the Academy by the Mercantile Library Association to raise the rent of Mercantile Library Hall from \$60 to \$500 per month, payable in advance, commencing with the next month. At a special meeting of the Trustees on OCTOBER 22, Messrs. Molera, Harkness and Behr appeared before the Board and expressed an opinion that it was inexpedient to move the collection to the Academy building. The result was a discussion, and finally a reference of the subject to the prudential committee; but it seemed evident that the Trustees did not see so much objection as the committee did to storing the collection in the Academy building, objectionable in many respects as it was.

NOVEMBER 3, Dr. Harkness referred to remarks made by him at the previous meeting in regard to the removal of the Crocker-Stanford Collection from Mercantile Library Hall. He said that he had regarded the matter as a case of urgency, and that he did not intend to reflect in any manner upon the Board of Trustees. Mr. Molera, who appears to have been a trustee of the Mercantile Library Association, said that there had been a discussion among the Library Trustees as to the lease to the Academy of their Hall; that a suggestion had been made that the Academy could not be required to move as it had at least a verbal lease; that the notice to raise the rent had been served only as a legal measure and under an apprehension that litigation might arise, and that the Library Trustees had no desire to incommode the Academy or give it trouble. And he added that a communication had been received from the Academy Trustees that the Crocker-Stanford Collection would be packed up, removed and stored. C. W. Brooks then stated that he was the person who had made the suggestion about the Academy's verbal lease, and that he had based it upon the fact that there was an understanding with the Mercantile Library Association that the Academy should have thirty days after notice to remove. Professor Davidson said that, in conjunction with president Gray of the Board of Trustees, he had shown the notice to raise the rent to R. C. Harrison for his legal opinion, and was informed by him that it was strictly legal and business-like. Mr. Harford stated that the Crocker-Stanford Collection had already been almost all removed to the Academy building and was being stored there. In the Board of Trustees, the prudential committee reported that the entire collection had been removed except the mammoth, *Megatherium*, *Glyptodon*, and a few other large pieces, which were being taken down and would be

removed as soon as possible. NOVEMBER 17, John Birmingham^{23.6} and George P. Reynolds were elected resident members. Dr. Behr read a short paper by W. H. Dick, a student of the Pharmaceutical College, "On the Medicinal Effects of the Volatile Oil of Oregon Cedar." Mr. Harford announced the death of Dr. Henry Gibbons, Sr. one of the charter members of the Academy; and on motion Dr. Kellogg and Dr. Harkness were appointed a committee to draft appropriate resolutions of respect to his memory. In the Board of Trustees, Mr. Harford reported the complete removal of the Crocker-Stanford Collection from Mercantile Library Hall to the Academy building, where it was stored in the basement, and that the possession of the Hall had been surrendered on November 10. As there appeared to be still some question as to who should give notice of the annual election, it was ordered that two notices should be published, one by the secretary of the Board of Trustees and one by the secretary of the Academy.

DECEMBER 1, Dr. Kellogg read an obituary notice of Dr. Henry Gibbons, Sr., one of the original founders of the Academy, who had died on November 6, 1884 at the age of 75 years. He compared his death to the setting of the sun amid celestial twilight splendors, prophetic of another dawn. He spoke of his unfaltering zeal for the cause of science and the welfare of the Academy, and his attendance, fidelity and appreciative support of the institution, through good and through evil report for two generations. He also spoke of his services in reference to many other public institutions; his ability as a lecturer, debater and public speaker, and the facility with which he wielded the pen. A series of resolutions were then adopted in recognition of the services of Dr. Gibbons as those of one, who, by his devotion to science for many years and his communications to the Academy since its organization, had contributed largely to its present position and influence. Professor Davidson then gave the result of recent observations on the planet Saturn. He said that recent reports had asserted the disappearance of the Enke division of the ring; but he had within a week seen it distinctly on three successive nights. He also communicated the observations of Captain Hague of the Alaska Commercial Company; who had witnessed an eruption of the volcano Kigamilgach on the southernmost of the Four Islands in Behring's Sea, Lat. 52°45'N., Long. 170°00'W. He also exhibited the rupture of short glass tubes by passing a heated wire through them – a phenomenon called to his attention by Mr. Cheever. He said he had no theory to advance upon the subject; but he thought that a slight scratch was made on the inner surface of the glass and that when the next change of temperature took place, the unequal tension was relieved and the rupture took place, somewhat as in a Rupert drop; and the quicker the change of temperature the more likely the rupture to occur. DECEMBER 15, Professor Davidson read a note concerning astronomical errors due to local deflection of the plumb line. The nominating committee presented a ticket for officers of 1885.

^{23.6} Birmingham in the handwritten minutes (pp. 146 and 151 of the *Minute Books*), but Birmingham in the later-assembled *Membership Records Book*.

1885

The annual meeting of 1885 was held JANUARY 5. Professor Pier Andrea Saccardo of Padua, Italy, was elected an honorary member, and J. H. Smythe, a resident member. On nomination of the Council, Mrs. Mary K. Curran and E. F. Lorquin were elected honorary life members. The various officers presented their annual reports. The officers declared elected for the year were: Professor George Davidson, president; H. W. Harkness, first vice-president; H. H. Behr, second vice-president; S. B. Christy, corresponding secretary; C. G. Yale, recording secretary; Elisha Brooks, treasurer; C. Troyer, librarian; W. G. W. Harford, director of the museum; George E. Gray, Thomas P. Madden, R. C. Harrison, J. M. McDonald, L. Gerstle, C. F. Crocker and R. W. Simpson, trustees. In the Board of Trustees, it appeared that the receipts of 1884 had been \$7,046.62, which added to \$1,631.72, balance from the year before, made \$8,678.44. The disbursements had been \$8,210.95, leaving on hand \$468.49. The maintenance of the Crocker-Stanford Collection had cost the Academy \$2,301.04, including \$436.26, the cost of removal. The total cost of maintenance since its acquisition in 1882 had been \$6,124.24 of which \$23,415.10 had been raised by subscription. JANUARY 19, William Churchill addressed the Academy on the "Ethnology of the Polynesian Archipelago as Illustrated by the Native Language and Religion." In the Board of Trustees, George E. Gray was elected president; Thomas P. Madden, president *pro tem*, and C. W. Brooks appointed secretary.

FEBRUARY 2, John W. Hendrie was elected a life member, and Granville W. Stewart, Edgar L. Allen, and Henry F. Lorquin,²³⁷ resident members. William Churchill²³⁸ read a paper on "Certain Data Leading to the Belief of the Subsidence of a Continent in the Pacific Ocean." C. W. Brooks asked about volcanic action in the South Pacific, and Mr. Churchill gave a general description so far as volcanic activity was concerned. Dr. Harkness asked about the method of "swarming" or moving off of a portion of the younger population from one island to another or others, which was described. Mr. Churchill also, by request, described the sculptured stone-work on Easter Island. In the Board of Trustees, allowances were made out of the Crocker Scientific Investigation Fund during the pleasure of the Board, of \$40 per month of Mrs. Curran and \$40 per month to Dr. Kellogg, and a gross sum of \$100 to Edward L. Greene for valuable services rendered. FEBRUARY 16, apart from routine matters, Dr. Harkness described the method of development of galls, particularly oak galls, and said that the season had arrived, for those who wished, to collect them.

MARCH 2, Timothy Hopkins and Joseph P. Hale were elected life members, and Dr. William P. Gibbons, who had previously dropped out for the second time, a resident member. Capt. Wm. Churchill read a paper entitled "An Introduction to the Study of the Present Inhabitants of the Islands of the Intra-Tropical Pacific." In the

²³⁷ Son of Ernest F. Lorquin, Academy curator of mammals and birds, and grandson of the distinguished lepidopterist Pierre J. M. Lorquin (see footnote 4.11).

²³⁸ Reported as Capt. Thos. Churchill in the *Minute Books* for Dec. 1880-Dec. 1890 (p. 160), but later references in those *Minute Books* are to Capt. Wm. Churchill (p. 162, 197, 198, 205, *et seq*).

Board of Trustees, the prudential committee reported in substance that they had been wrestling with the San Francisco Gas Company to obtain a reduction on a gas bill for \$21.60 charged for the use of gas in Mercantile Library Hall from November 8 to November 12, 1884. Considering that all but a few boxes of the Crocker-Stanford Collection had been moved from Mercantile Library Hall before November 8 and that the Hall had been surrendered on November 10, the bill appeared at least strange; but the Gas Company insisted on its "bond." On motion, the matter was turned over to the secretary to try his hand at the business and settle on the best terms he could. MARCH 16, Josiah Keep exhibited specimens of Eastern oysters, *Ostrea virginiana*, spawned in the Bay of San Francisco and therefore native of California, and also, specimens of *Modiola hancata* and *Modiola formicata*, both of which had been introduced accidentally from Eastern waters by being mixed with imported "seed oysters." Capt. Churchill spoke of his travels in the Amazon region of South America.

APRIL 6, among the donations, 140 samples of California woods. Professor Davidson stated that it was the general opinion of astronomers with whom he had talked in the Eastern states that the limit of proper size for telescopes, designed for observations of precision, had been reached, and described the difficulties to be overcome with glasses of any large telescopes. But these large objectives, he said, had great value in the light-collecting power and therefore exhibited details of objects where smaller ones would fail. APRIL 20, Josiah P. Stanford and John W. Taylor were elected resident members. Among the donations were two bottles containing two different varieties of truffles, one from Sonoma and the other from Marin County. Dr. Harkness described the occurrence of truffles, and the method adopted in finding them. Professor Davidson called attention to a new system of telegraphy, invented by J. C. Ludwig of San Francisco, which Messrs. Hewston and Garnett were about to introduce to the Ocean-cable companies of the East. Gen. John Hewston read a paper describing the electrical apparatus and the new system of telegraphing. Professor Davidson also, by means of large drawings, described the details of the apparatus and its mode of operation. In the Board of Trustees, a salary of \$40 per month during the pleasure of the Board was ordered paid to W. Churchill for services in indexing the library of the Academy. The policy of insurance of the Crocker-Stanford Collection against fire was ordered renewed.

MAY 4, a note on a remarkable meteor observed on April 19 by C. B. Hill was submitted by Professor Davidson, who also read a note on previous displays of meteors. Dr. Harkness submitted a section of wood found at a depth of 1615 feet in an artesian well at White Plains, Nevada. In the Board of Trustees, the prudential committee reported that *Bulletins* I and II of the Academy had been printed and published, and recommended the printing of *Bulletin* III. The Forestry Committee was allowed the use of the Academy Hall for its meetings during the pleasure of the Board. MAY 18, Dr. William P. Gibbons read a paper "On Viviparous Fishes." He also read^{23.9} a letter from Professor Louis Agassiz, written February 27, 1854, on the same subject. JUNE 1, a paper was read by Professor Davidson on the "Transit of Jupiter's IV Satellite," giving results of observations by C. Burckhalter of Oakland.

Dr. Behr spoke on the subject of the *Phylloxera* and the Hessian fly. Capt. Churchill read a note concerning "A Small Magnetic Island in the Feejee Group." JUNE 15, Charles Goodall was elected a life member, and Arthur Brown, Gerritt L. Lansing, Edmond Carey, Edgar J. Bowen, and Thomas H. Caswell, resident members. Edward L. Greene read a "Sketch of the Botany of Guadalupe Island." Professor Davidson communicated the observations of himself, C. B. Hill and C. Burckhalter on the Dark Transit of Jupiter's IV Satellite on June 7. JULY 6, a report by C. D. Gibbes was read, giving an account of a deposit of fossil bones found on Putah Creek in Yolo County. A paper entitled "Notes on Mount Pit" by Arthur B. Emmons was read. In the Board of Trustees, it was ordered that the expenses of C. D. Gibbes on his trip to Putah Creek in the interests of the Academy should be paid out of the Crocker Scientific Investigation Fund. JULY 20, Josiah Keep read "Notes Concerning the Shells of Monterey Bay." A discussion ensued in reference to the influence of the ocean currents on the fauna of the sea coast. In the Board of Trustees, the City and County personal property tax against the Academy, amounting to \$35.71 was ordered paid.

AUGUST 3, A. W. Rose, Jr. was elected a life member, and H. C. Nash, a resident member. Edward L. Greene read "Observations on Cedros Island." In the Board of Trustees, it was resolved that the prudential committee should inquire into the current disbursements of the Academy and report as to what retrenchment could be made. AUGUST 17, Mrs. Mary K. Curran read "Botanical Notes of a Trip to Southern California." Resolutions of respect to the memory of Charles Wolcott Brooks, secretary of the Board of Trustees, who had died on August 16, were adopted. In the Board of Trustees, William M. Noyes was appointed secretary *pro tem* in place of C. W. Brooks, deceased. AUGUST 29, at a joint meeting of the Trustees and Council, it was resolved to apply to the Lick Trustees for a loan of \$5,000 to defray expenses and publish *Proceedings* of the Academy.

SEPTEMBER 7, Clark W. Crocker, Thomas L. Casey, and Howard R. Johnson were elected resident members. Professor Davidson read a paper on "Volcanic Activity in the United States." Dr. Harkness described the result of volcanic activity supposed to have occurred in 1851 at Louisa Lake in Sierra County. Professor Davidson spoke of the question of a quarantine station in the Bay of San Francisco and suggested a point south of Hunter's Point on the west side of the Bay and at the edge of deep water. In the Board of Trustees, a resolution was adopted to borrow \$5,000 from the Lick Trustees and give the note of the Academy therefor with interest at the rate of 5 per cent per annum. SEPTEMBER 21, a paper by J. G. Cooper was read by title^{23 10} "On Fossil and Subfossil Land Shells of the United States, with Notes on Living

^{23.9} The handwritten minutes for May 18th, 1885, inscribed in the *Minute Books* for Dec. 1880-Dec. 1890, p. 167, state, "He [Dr. W. P. Gibbons] also *presented* [italics ours {Eds.}] to the Academy a letter from Prof. Agassiz . . ." Hittell interprets this to mean "read a letter;" we suspect that Gibbons actually gave the Academy the letter that he had received from Agassiz years earlier when the matter of priority for the discovery of viviparity in perch fishes first surfaced (see p. 28 and index). This letter, and the one received earlier from Spencer Fullerton Baird (see also p. 28) were decisive in the decision to initiate a formal publication, the *Proceedings of the California Academy of Natural Sciences*, the first part of which appeared in September of 1854.

^{23 10} The reading of papers by title as a means of informing members of papers that had been submitted for publication or had been recently published in an Academy publication seems to have been initiated at this meeting. Beginning in 1894, the reading of papers by title was reserved for the December meetings.

Species.” Professor Davidson described the position of the new star in the nebula of Andromeda. OCTOBER 5, Professor Davidson presented a note on “The New Star in Andromeda.” Dr. Harkness called attention to an edible fungus, *Bolitus*, found in abundance at Berkeley in Alameda County and neighboring localities. He also described and illustrated with the microscope a new fungus affecting oak trees near Menlo Park in San Mateo County. OCTOBER 19, Charles Burckhalter was elected a resident member. Dr. Harkness read a paper on “Edible Fungi of California.” Dr. Behr spoke of the cultivation of semi-tropical fruits in California, speaking particularly of the fig and the means by which it was propagated.



Charles Burckhalter, ca. 1875
 Courtesy of Dr. Carter Roberts (USGS)
 and the Chabot Observatory Archives

NOVEMBER 2, among the donations was a piece of driftwood from Cape Lisburne on the northwest coast of Alaska, 200 miles north of Behring’s Strait. Professor Davidson gave the authority of H. D. Wolff, who was stationed at Cape Lisburne, that for a whole year there was a current past the Cape towards the north and northeast. It was supposed that the driftwood had come through Behring’s Strait in a branch of the Kuro Sina. W. Churchill exhibited a chart of the world on a new plan and described the manner of sailing on great circles. Mrs. Curran read “Botanical Notes,” and Dr. Harkness read “Notes on the Fungi of the Pacific Coast.” In the Board of Trustees, authority was given the Council to contract with Cunningham, Curtis & Selch for binding 200 quarto volumes and 300 octavo volumes more or less at 89 cents for quartos and 64- $\frac{1}{2}$ cents for octavos, the whole amount not to exceed \$500. NOVEMBER 16, Nathaniel Keith was elected a resident member. Lieutenant Thomas L. Casey read the introduction to a paper on “New Species and Genera of California

Coleoptera.” Professor Davidson read a letter from Stedman Forney of the Geodetic Survey on a petrified whale found near the head-waters of Cañada Diablo [Devils Canyon] on Big Creek, about 18 miles [closer to 23 miles {Eds.}] south of Point Sur in Monterey County, at an altitude of 3,300 feet above sea level and 3 miles distant from the ocean. The remains measured 32 feet in length and the bones, particularly of the vertebra and head were in a perfect state of preservation. Professor Davidson also spoke of observations on, and read a paper on Saturn. In the Board of Trustees, permission was given to the Ladies Silk Culture Society of California to hold their day meetings in the Academy Hall.

DECEMBER 7, a paper by C. Burckhalter was read, entitled “Observations on Nova Andromeda on December 5, 1885.” In the Board of Trustees, a communication from Miss C. J. Flood, in reference to a party wall between her lot and the Academy lot on Market Street, was referred to a special committee consisting of Messrs. Gray, Harrison and McDonald. DECEMBER 21, Professor Davidson read a paper on “Comparison of the Temperature of the Air and Water near the Golden Gate and their Relations to the Periods of Fog.” A communication was read from the secretary of the Elizabeth Thompson Science Fund, calling attention to the existence of a fund at Stamford, Connecticut, “for the establishment of scientific research in its broadest sense.” The nominating committee reported a ticket for officers of 1886. In the Board of Trustees, the president reported having borrowed \$2,500 from the Lick Trustees on December 11, and given the note of the Academy for the amount with interest at the rate of 5- $\frac{1}{2}$ per cent per annum. W. Churchill was engaged one month longer for indexing the library.

Chapter XXIV: Years 1886-1887

1886

The Academy met in annual session on JANUARY 4, 1886. Professor Edward S. Holden, Edward S. Clark, and Lucius H. Foote were elected resident members. A paper by Thomas L. Casey on "Revision of the California Species of *Lithocaris* and Allied Genera," was read by title. Professor Davidson read notes on "The Earthquake of December 30, 1885" and "Occultation of the Companion of M Geminorum by Saturn on January 9." The recording secretary reported a total membership of 313, 22 having been added during the year. The various officers presented by the nominating committee, consisted of the names of the officers of the previous year renominated; but an antagonism had for some time been growing between Professor Davidson and Dr. Harkness, which to a considerable extent involved their friends. It manifested itself at this election by running of an opposition ticket on which Justin P. Moore and John T. Evans were nominated for first and second vice-presidents instead of Dr. Harkness and Dr. Behr. The result was the election, as declared, of Professor George Davidson for president; Justin P. Moore, first vice-president; John T. Evans, second vice-president; S. B. Christy, corresponding secretary; C. G. Yale, recording secretary; Elisha Brooks, treasurer; C. Troyer, librarian; W. G. W. Harford, director of the museum; George E. Gray, Thomas P. Madden, Charles F. Crocker, Ralph C. Harrison, Louis Gerstle, Robert W. Simpson and James M. McDonald, trustees. In the Board of Trustees, E. L. Greene was ordered paid \$200 out of the Crocker Scientific Investigation fund for services rendered. It appeared from the annual report that the receipts for 1885, including the balance on hand and the \$2,500 borrowed from the Lick Trustees had been \$8,444.42, of which \$7,534.74 had been disbursed, leaving on hand a balance of \$904.68. In addition to this there was an unexpended balance of \$351.02 in the Crocker Scientific Investigation Fund. In reference to the loan from the Lick Trustees, the Board declared that the money was borrowed "in deference to the Council and must not be then as a precedent by their successors. The policy and precedents of the Board heretofore have been, "pay as you go," and that system should be rigidly adhered to for all time." The proposition of Miss Cora J. Flood to build a party wall, partly on the condition that the Academy would repay to her half the cost when it should have use for the wall.

JANUARY 18, among the donations were specimens of nummulitic limestone and syenite from temples of Lower Egypt. Dr. Harkness, in connection with them, spoke

of the geologic features of the Nile Valley and the method of construction of the pyramids, which he had assured himself were of natural rock. Dr. Behr read a paper "On the so-called Carnivorous Plants." In the Board of Trustees, William M. Noyes resigned as secretary *pro tem*. George E. Gray was elected president; Thomas P. Madden, president *pro tem*, and William Churchill appointed secretary. The bonds of the treasurer, librarian, and director of the museum were fixed at \$1,000 each. The formal party-wall agreement with Miss Flood was presented, approved, and ordered executed.

FEBRUARY 1, a paper from Dr. Willis E. Everette of Vancouver, Washington, was read, describing the flora, fauna and Insectivora of the Yukon River in Alaska and British North America. A report from the Council announced the appointment of J. T. Evans, J. P. Moore, C. G. Yale and E. L. Greene as publication committee and the following curators: E. L. Greene and Mary K. Curran, botany; H. H. Behr and E. S. Clark, entomology; Josiah Keep, conchology; A. W. Jackson, Jr. and C. D. Gibbes, mineralogy; Melville Attwood, geology; A. B. Stout, ethnology and paleontology; J. J. Rivers, ichthyology, radiates and reptiles; E. F. Lorquin, ornithology. Professor Davidson read a paper upon an observation of Saturn on January 25, in which he verified his previous determinations of the Encke division and saw the inner edge of the B ring projected on the body of the planet. Dr. Harkness called attention to what he claimed to be errors in the descriptions of fungi in the paper by Dr. W. E. Everette, read at the previous meeting, on the flora and fauna of the Yukon River. He said the descriptions were incorrect and misleading. Dr. Behr asked to be excused from serving as curator of entomology while the Academy occupied the building it was then in, as he was removing his own collection to preserve it from damage. In the Board of Trustees, payments were ordered to be made, out of the Crocker Scientific Investigation Fund of \$30 per month to C. D. Gibbes; of \$40 per month to Mrs. Curran and Dr. Kellogg respectively, and \$1 per day to a person employed to poison the herbarium. FEBRUARY 15, Dr. Stout inquired as to what was being done by the building committee. Professor Davidson as president stated that the whole matter rested with the Board of Trustees, and that it was deemed best to await the settlement of the Lick Trust. He then made remarks upon the occultation of the Hyades, observed on February 12. Charles Troyer called attention to the use of benzole in killing insects for cabinet specimens, and said it appeared to be more rapid and effective than either cyanide of potassium or chloroform. Mr. Harford reported that the herbarium had been completely protected against insects by being thoroughly poisoned. Professor Davidson spoke of a slight protuberance on Saturn just south of the planet's equatorial belt. He announced the publication of *Bulletin IV* of the Academy.

MARCH 1, Dr. Behr described the grain pest, *Collandra granaria*, and exhibited specimens of it found in wheat lying in a San Francisco warehouse. MARCH 15, Carlton H. Clark, William Churchill, Miss M. S. Haggin, George A. Johnson, and J. W. Anderson were elected resident members. Professor Davidson read papers on "The Annular Solar Eclipse of March 5, 1886" and "the Secular Variation of the

Magnetic Declination at San Francisco." Lieutenant John C. Cantwell read a paper on the "Exploration of the Koowak River, Alaska." APRIL 5, John W. Twigg was elected a resident member. Professor Joseph LeConte read a paper "On the Post-Tertiary Elevation of the Sierra Nevada, as Shown by the River Beds." In the Board of Trustees, fire insurance was ordered taken out for \$12,000 on the museum collections and library of the Academy; and a bill of Spaulding & Co., amounting to \$627.10 for printing *Bulletin IV* was ordered paid. APRIL 19, Professor Davidson read a "Note on Transits of the II and III Satellites of Jupiter, Davidson Observatory, March 20, 1886." MAY 3, Professor Davidson read a paper "On Early Voyages of Discovery and Exploration of the Northwest Coast of North America." MAY 17, among the donations was a specimen of the dressed hair of a chief's head, supposed to be from the Solomon Islands. Capt. W. Churchill gave an account of the manner of dressing the hair in the South Pacific Islands, and expressed an opinion that the hair in question came from the New Hebrides rather than from the Solomon Islands. Dr. Behr read a paper "On Acapulco." Professor E. S. Holden presented publications of the Washburn Observatory, and described the system adopted in making star maps. JUNE 7, among the donations were a bow, arrows and spears from the New Hebrides Islands, presented by R. W. Simpson. W. Churchill described them and the method of using them in the South Seas. In the Board of Trustees, \$1,030 were ordered paid for binding books. JUNE 21, E. L. Greene read a paper for Mrs. Curran entitled "a Botanical Excursion in Marin County." Dr. Harkness spoke of the "Animal and Vegetable Life Found in the Waters of Mono Lake," and exhibited various specimens of them. Professor Holden spoke of the progress of the Lick Observatory, and particularly with reference to the construction of the great dome and mounting of the telescope. In the Board of Trustees, the secretary was directed to prepare as many books as could be bound for \$50, and to see that the necessary corrections should be made in certain of the books already accepted from the binders.

JULY 6, at a meeting of the Trustees, 30 volumes of quartos and 36 octavos were ordered bound; and *Bulletin V* of the Academy ordered published at a cost not to exceed \$300. For the lack of a quorum of members, no meetings of the Academy were held in July.

AUGUST 2, Lieut. Glassford of the U.S. Signal Service read a paper on "Storm Types of the Pacific Coast." AUGUST 16, Lieutenant W. A. Glassford, B. H. Pendleton, Miss Gertrude Stanford, and S. E. Dutton were elected resident members. Dr. Behr spoke about "The Arian Races." In the Board of Trustees, James M. McDonald made an address on what he called, "Continuing in the Book-Binding Business," and, as a result, it was resolved that not more than \$100 should for the present be expended in binding. SEPTEMBER 6, Professor Joseph LeConte lectured "On the General Causes of Earthquakes with Special Reference to the Recent One at Charleston, South Carolina." In the Board of Trustees, the prudential committee, consisting of J. M. McDonald, C. F. Crocker and L. Gerstle, presented a report on the condition of the collections of the Academy and of the Academy building. They said that the Crocker-Stanford Collection was in general in reasonably good condition as stored

in the building; but that the perishable portions of it were exposed to dampness and mould. They quoted Mr. Lorquin, curator of birds and mammals, as saying about the same thing in reference to the Mrs. E. B. Crocker Collection and advising that it should be removed to a place where it could be kept perfectly dry. As to the Academy building, the old First Congregational Church, it had been built in 1853 of brick made with salt water, which had been so poorly burned and were so soft that they absorbed moisture like a sponge and did not dry out from one rainy season to another. The site of the building was a steep hillside rising rapidly as it ran back to the west – the grade of California Street, its northern boundary line, being 75 feet in the block of 412-1/2 feet. A deep excavation had therefore been necessary for the foundation of the structure, and into this excavation the water from the hill continually seeped, keeping the foundation walls constantly soaked. In the meanwhile, the metal roof had rusted and rotted away; and a new roof was necessary, or other quarters, before it rained again. The report continued in the following language: “Considering that this Academy has occupied this building since A.D. 1874 to this year of Grace 1886, and had paid to the proprietors about \$20,000 in rents, it discourages the hope that adequate attention and expenditure will be bestowed to properly and decently secure and protect this Academy and its valuable collection.” And in conclusion it said: “Part of the duty imposed on this committee was ‘to place the blame where it belongs,’ we therefore report that the blame should rightfully be placed on the Academy at large, and not upon the Board of Trustees.” SEPTEMBER 20, Professor George C. Comstock read a paper on “The Provisional Value of the Latitude of the Lick Observatory.” A paper by Professor George C. Becker “On the Washoe Rocks” was also read.

OCTOBER 4, Dr. Harkness called attention to a fungus, rare in this State, which he exhibited. He also exhibited under the microscope the larvae of the caddice fly, attached to leaves in a peculiar manner. Capt. W. Churchill made remarks “On Correspondence Recently Noted Between Melanesia and the Northwest Coast of North America.” Professor Davidson also spoke of correspondence in the matter of labrets worn by some natives of the Northwest Coast of America and by natives of the South Pacific Islands. He then described the remarkable submarine valleys in the ocean bed off Point Delgado and Cape Mendocino. Justin P. Moore tendered his resignation of the office of first vice-president, which was accepted. A communication was received from R. Ellsworth Call, professor of zoology in the University of Missouri,²⁴¹ commending the recent publications of the Academy. In the Board of Trustees, \$350 were authorized to be expended for printing *Bulletin* VII. OCTOBER 18, two neuropterous insects were presented by Dr. Behr, the same which appear at the beginning of the rainy season and at certain periods before rains. Their natural history was discussed by Messrs. Behr, Holden, Evans, Wm. P. Gibbons, and Mrs. Curran. A paper on “North American Coleoptera” by J. T. Evans was read by title. Professor Davidson read a paper entitled “The Land Falls of Cabrillo and Farrelo, 1542-1543”; another on “The Determination of the Standard Geodetic Data for the

²⁴¹ As recorded in the *Minute Books* for Dec. 1880-Dec. 1890 (p. 205), but at the time Missouri State University. Call also published on Quaternary geology and stratigraphy, and invertebrate paleontology.

Computation of Geographical Position on the Pacific Coast"; and one, by title, on "Early Spanish Voyages on the Coast of California." W. A. Goodyear read a paper on "Earthquakes in Salvador." Dr. Harkness exhibited under the microscope two new species of fungi described by himself, a new *Ustilago* and a *Pestalozzia*. The Council reported the appointment of Thomas Price as first vice-president in place of J. P. Moore, resigned. NOVEMBER 1, Dr. Behr read a paper on "Prehistoric Inscriptions on Easter Island." In the Board of Trustees, it appeared that a new arrangement had been made with the owners of the Academy building to repair the same and make it fit for occupation; and a new lease of it had been executed as of date of October 1, 1886. An expenditure of \$270 additional was authorized for the printing and publication of *Bulletin* VI. NOVEMBER 15, Professor Holden read a paper on "The Distribution of the Stars in the Northern and Southern Skies." William Ashburner described a visit to the establishment of Alvan Clarke and an examination of the Lick telescope glass, through which he looked at various stars. Professor Davidson read a note "On the Occultation of Aldebaran, observed by Davidson, Hill and Burckhalter, November 12, 1886." In the Board of Trustees, a purchase of books from Dr. Stout was authorized to the extent of \$50.

DECEMBER 6, among the donations was an axe, made of jade and used by the natives of Alaska in making their canoes, presented by William Clarke. Professor Davidson spoke of it as a very fine specimen and described the method adopted by the indians in fashioning it. S. B. Christy read a paper on "Rustless Iron," being a description of the Bowers-Barff process of working iron. Professor Davidson stated that on November 14 and 15 he had watched for "November Meteors," but saw none. In the Board of Trustees, an additional loan of \$2,500 from the Lick Trustees was authorized and the giving of the Academy's note, drawing interest at 5- $\frac{1}{2}$ per cent per annum, therefor. DECEMBER 20, a communication was received from C. Burckhalter, giving observations at the Chabot Observatory in Oakland of the new star that had appeared last year in the nebula of Andromeda. The president announced the death of Dr. Isaac Lea, the eminent conchologist of Philadelphia, Pennsylvania and an honorary member of the Academy. Messrs. Harford and Behr were appointed a committee to prepare appropriate resolutions of respect to his memory. The matter of choosing officers to conduct the approaching election came up, and the strain between what were commonly known as the Davidson party on the one side and the Harkness party on the other side, which had shown itself at the last election, again manifested itself. Each party nominated candidates and a spirited contest took place even as to officers of election. It was very plain that there was going to be what may be called a bitter contest as to who should be officers of the Academy for 1887. When the nominating committee, which had been appointed by the incumbent officers, reported a ticket for 1887, they renominated the old officers and, in view of an evident desire on the part of many members for a change of administration, thought proper in their report to say:

Should there even be a radical difference of opinion as to the future governing policy of the Academy, we would, while cheerfully conceding the honest zeal and good-will of all our fellow workers, respectfully suggest that the present officers, tried and true

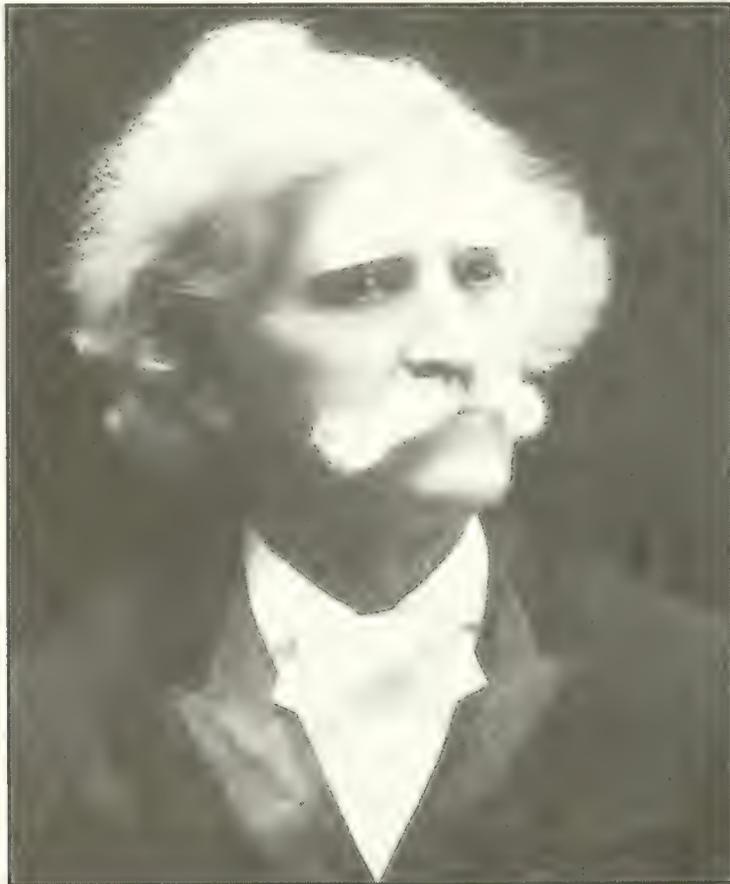
as well as ripe in experience, are the most suitable to carry out the purposes of our organization, more especially at this time in view of the now proximate distribution of the Lick estate.

Within one year at furthest this expectation is likely to be realized; and legal questions, some of a grave and intricate character, will come up for definite settlement; and, in this connection, it is well to bear in mind how many promising inheritances have been seriously impaired or even entirely wrecked by post-obits and anticipations of income.

'Make haste slowly' applies as well to scientific effort as to ordinary commercial transactions, and we should ask on all hands a kind, patient and generous criticism of affairs in which no personal interests are at stake, but only a friendly rivalry in unselfish devotion to the advancement of science.

1887

The annual election of 1887, held JANUARY 3, was a hotly contested one. The regular ticket, presented by the nominating committee, and consisting of the names of the old officers and known as the Davidson ticket, was opposed by a ticket of nearly all new names known as the Harkness ticket. The result was the election of the opposition ticket and the choice of the following officers for 1887: Dr. Harvey W. Harkness, president; H. H. Behr, first vice-president; George Hewston, second vice-president; H. Ferrer, corresponding secretary; C. G. Yale, recording secretary; John Dolbeer, treasurer; C. Troyer, librarian; J. G. Cooper, director of the museum;



Harvey Willson Harkness

Courtesy California Academy of Sciences Special Collections

Charles F. Crocker, Thomas P. Madden, James M. McDonald, E. L. G. Steele, S. W. Holladay, D. E. Hayes, and E. J. Molera, trustees. At the annual meeting, held on the evening of the same day, the old officers presented their reports on the condition of the Academy and its departments and the progress made during the past year. The new officers were declared elected. JANUARY 17, Dr. C. Max Richter, Charles H. Hinton, N. W. Spaulding, and William G. Badger were elected resident members. Dr. Harkness, the new president, delivered an inaugural address. The secretary called attention to the fact that Elisha Brooks, the retiring treasurer, had served the Academy in that office for nineteen consecutive years, gratuitously collecting and disbursing funds without mistakes or errors, and suggested that a vote of thanks of the Academy should be tendered him; and on motion such thanks were presented. Edward L. Greene read a paper on "Botanical Exploration on the Island of Santa Cruz." Dr. Behr read a paper "On Certain Changes in the Flora and Fauna of California, Which Have Taken Place Since 1850." In the Board of Trustees, the annual report of the Old Board, a majority of which had been displaced at the recent election, gave strong expression against the supposed policy of the new regime, characterizing it as "discounting the future and cashing expectations" and pronouncing it "ill-advised and productive of loss and of positive danger." In reference to the financial condition of the Academy, it said that the receipts during 1886, including \$5,000 borrowed money and amount on hand at the beginning of the year, had been \$10,806.56, and the disbursements \$8,912.60, leaving a balance of \$1,893.96 in the general fund. In the special Crocker Scientific Investigation Fund, the receipts, including balance on hand, had been \$1551.02, and the disbursements \$990, leaving a balance of \$561.02, which added to the general fund balance made a total of \$2,454.98 cash on hand. The only outstanding bills were the notes to the Lick Trustees for \$5,000, a bill for binding books, and a bill for printing papers of the Academy. In the matter of organizing the new Board, the presidency was offered to Charles F. Crocker; but he declined; and it seems that Thomas P. Madden was elected president and E. L. G. Steele president *pro tem*. The bond of the treasurer was fixed at \$2,000, and those of the librarian and director of the museum at \$1,000 each.

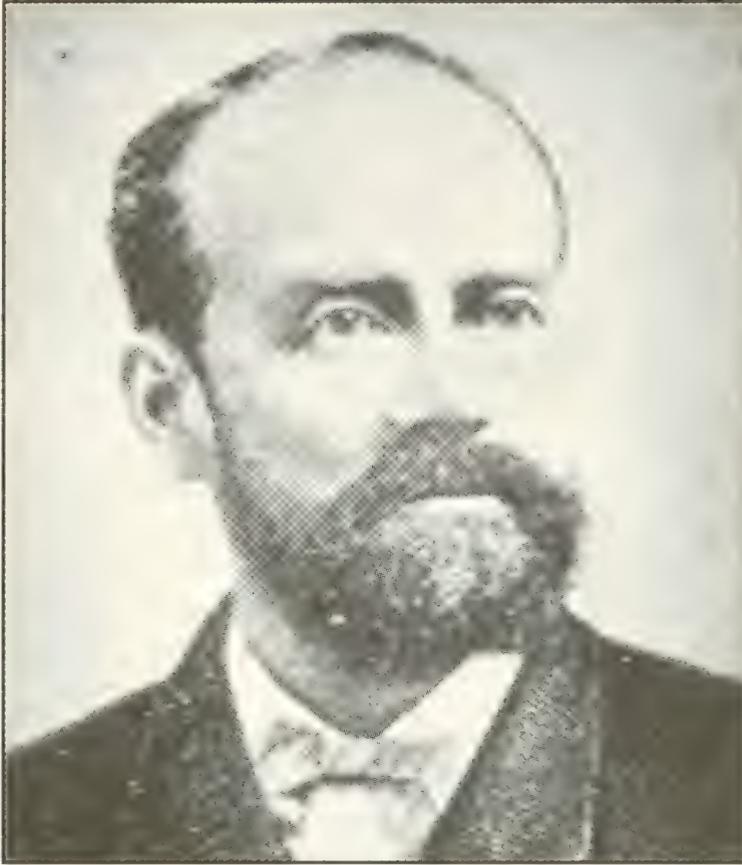
FEBRUARY 7, a letter was received from Professor Davidson in reference to a fossil elephant tusk, presented some two years before by Captain James McKenna, which had been left at the Merchants' Exchange since then, to the effect that it had been recently delivered to the Academy. Dr. C. M. Richter read a paper "On Ocean Currents and their Influence on the Climate of California," and Dr. Harkness a paper "On a New Species of Fungus." Dr. Behr read an obituary notice of Dr. Isaac Lea of Philadelphia, the first honorary member of the Academy, elected in July, 1853. The Council announced the appointment of H. W. Harkness, E. L. Greene, C. G. Yale, George Hewston, and J. G. Cooper as publication committee, and the following curators: Mary K. Curran and E. L. Greene, botany; David Wooster, ethnology and osteology; E. F. Lorquin, mammals and birds; Rosa Smith and H. F. Lorquin, fishes, reptiles and radiates; E. S. Clark and John Hewston Jr., geology and palaeontology; Melville Attwood and C. D. Gibbes, mineralogy. The Council also reported that it

had adopted a resolution that papers to be read before the Academy should be submitted to the president on the Thursday preceding the meeting, and that papers read should be handed to the secretary to be submitted to the publication committee. In the Board of Trustees, it was resolved that a box for the keeping of important documents should be rented of the Safe Deposit Company at a cost of \$15 per year. Frank H. Vaslit and C. D. Haines were employed for such services as might be required of them by the Council and Trustees at a salary of \$40 per month each. Thomas P. Madden resigned as a member of the Board and George C. Perkins was elected in his place. FEBRUARY 21, Walter E. Bryant was elected a resident member. Dr. Behr read a paper "On the Power of Adaptation of Insects." Dr. Harkness spoke of the fungoid growths affecting sycamore trees. He said that every season, when the leaves attained the size of a quarter of a dollar, they were apt to become blighted, sometimes being fresh and green in the evening and next morning withered. He had observed the same thing in the East and had been told by Professor Gray that the sycamore trees of Massachusetts had been affected in the same manner for thirty years. He further said that he had made careful observations and determined the cause to be a minute fungus, which he had named *Glaesporium platonii*. In former years, the sycamore had been well-shaped trees; but now they were generally scrawny and unsightly, with few straight limbs. This he attributed to the fungus. Dr. C. M. Richter read a supplement to his previous paper "On Ocean Currents" and answered certain criticisms upon the statements in that paper made by Professor Davidson, as published by the newspaper reports of a meeting of the Geographical Society, of which he was president. A discussion followed in which an unidentified non-member said that he



Frank S. Vaslit

California Academy of Sciences Special Collections



George C. Perkins
California Academy of Sciences Special Collections



Walter E. Bryant
California Academy of Sciences Special Collections

had lived in the vicinity of Behring's Straits for some six years making observations for the Smithsonian Institution, and that he could corroborate Professor Davidson's views on the subject of the currents. In the Board of Trustees, an organization was effected by the election of E. L. G. Steele as president, and S. W. Holladay as president *pro tem*.

MARCH 7, Dr. Frederick V. Hopkins was elected a resident member. A paper by Mary K. Curran on "The Lichens of this Vicinity" was read and a collection of lichens exhibited in connection with the paper. Dr. C. C. Parry read a paper "On the Pacific Coast Alders." In the Board of Trustees, the subject of a new building on the Academy's Market Street lot was discussed by S. W. Holladay and others. MARCH 21, Professor F. L. Clarke lectured on recent eruptions of Mauna Loa and Kilauea on the Island of Hawaii, exhibiting photographs of the localities taken before, during, and after the eruptions. Three papers were read by title: one "On the West Coast Pulmonata, Fossil and Living" by J. C. Cooper, one on "Occultation of Stars by the Dark Limb of the Moon" by George Davidson, and one, a "Continuation of Catalogue of Pacific Coast Fungi," by H. W. Harkness. Dr. Harkness also addressed the Academy on the "Geology of Egypt." Charles G. Yale presented his resignation as recording secretary, which was accepted. Charles Troyer presented his resignation as librarian, which was not accepted. APRIL 4, the death on March 31 of Dr. Albert Kellogg, the last surviving charter member of the Academy, was announced. Out of respect for Dr. Kellogg, the meeting adjourned. In the Board of Trustees, Professor Davidson represented the destitute condition of C. D. Gibbes, and on motion of C. F. Crocker, the sum of \$40 was ordered to be paid to him at once out of the Crocker Scientific Investigation Fund. It was also ordered that \$40 due to Dr. Kellogg should be paid to his representative, W. G. W. Harford. APRIL 18, Dr. Carl von Hoffman was elected a resident member. Professor F. L. Clarke lectured again on volcanic eruptions in the Island of Hawaii, and he stated that the map used in illustration of his remarks was the first of a series made by him by order of King Kalikana. Dr. Hewston read a paper on the "Formation, Life, and Uses of Sponges." Dr. Behr read a memorial paper on Dr. Kellogg, from which it appeared that the deceased was born in Connecticut in 1813; that he had traveled much in his younger years in the Southern and Western States for the benefit of his health, which was infirm, and that it was in the course of those travels that he became interested in botany. He came to California in 1849; settled first at Sacramento, and in a few years afterwards moved to San Francisco, where he had always since lived. He was one of the proposers and founders of the Academy and the last survivor of the original seven. His guileless simplicity and honesty, continued the memorial,

as well as his enthusiasm for science made him beloved by all; and in all the relations of life his conduct was beyond praise. Those who knew him in early days remember well his filial devotion to his aged mother; and all who had the pleasure to be in daily intercourse with him praise, with one, his kindness, his patience, and his forbearance.

Resolutions of respect to his memory were adopted and spread upon the minutes. The death of Dr. Frederick H. Jenssen was also announced and Dr. Behr presented a memorial notice of him. In the Board of Trustees, insurance of the Academy's

property for another year was ordered. A sum of \$40 per month during the pleasure of the Board was ordered paid to Walter E. Bryant for ornithological work. Frank H. Vaslit was appointed secretary of the Board without increase of the salary of \$40 per month, previously allowed him. MAY 2, Curry W. Tjader was elected a resident member. For the first time, biweekly reports on new donations to the library were recorded in the minutes as follows: Publications received, 175; from correspondents, 140; by donation, 29; by purchase, 6.^{24.2} E. L. Greene read a continuation of a previous paper "On the Botany of Santa Cruz Island." Dr. Hewston read a paper on "Glass Sponges," illustrated by drawings on the screen. He also announced the death of William Ashburner and presented resolutions of respect to his memory, which were adopted. The Council announced the election of William F. Smith as recording secretary of the Academy in place of C. G. Yale, resigned. In the Board of Trustees, the Council announced the adoption of a resolution that its members deemed it expedient that steps should be taken "for the improvement of our lot on Market Street by building for the use of the Academy and for the purposes of revenue." MAY 16, Walter E. Bryant read a paper "On the Birds of California," illustrated by plates thrown on the screen. Adley H. Cummins^{24.3} read a paper on the "Evolution of Figures," illustrated by many plates of letters and numerals. Dr. Behr described parasitic worms infesting the sticklebacks in Lake Merced. The president announced the death of William O. Ayres, one of the early members of the Academy and noted as an ichthyologist. On motion, Dr. William P. Gibbons, and Dr. Stout were appointed a committee to draw proper resolutions of respect to his memory. JUNE 6, Adley H. Cummins^{24.3} and Samuel C. Passavant were elected resident members.^{24.4} Dr. Harkness read a paper on "Vinous Fungus," illustrated by plates drawn by Dr. Gustav Eisen and thrown on the screen. On motion of Dr. George Hewston, a resolution was adopted calling for a special executive meeting of the members of the Academy "for

^{24.2} For those interested in tracing the growth of an institutional library as a partial reflection of the influence of the institution among its peers and the scientific community, details of biweekly library accessions, and thus library growth, for the period for the period 1887 to 1894 were published in the *Academy Proceedings*, reports on the regular biweekly meetings (see *Proc. Calif. Acad. Sci.* ser. 2, vol. 3 *et seq.*).

The impact of the residue of the James Lick endowment not otherwise committed to the new Academy building following settlement of the estate in 1887 and of the Amariah Pierce bequest (*q.v.*) in 1895 for the purchase of books, is readily apparent in the increase in funds available for library purchases: 1887 – 2303 total item accessions: 56 by purchase, 1632 from "correspondents" (including exchanges), unrecorded balance, incidental donations; 1888 – 2348: 57, 1970; 1889 – 1898: 252, 1598; 1890 – 2603: 371, 2057; 1891 – 1986: 782, 1719; 1892 – 3732: 1876, 1720; 1893 – 2937: 977, 1860; 1894 – 1841: 274, 1411.

^{24.3} On this date, recorded in the *Minute Books* (Dec. 1880-Dec. 1890, p. 233) as Adley D. Cummins, then Adley J. Cummins (p. 234, June 6), Adley D. Cummins (p. 240, July 18), Adley H. Cummins (p. 243, Sept. 5; 299, Aug. 5, 1889, *et seq.*), but Adley H. Cummings (memorial on death, see *Proc. Calif. Acad. Sci.*, 1890-92, ser. 2, vol. 3, p. 353).

^{24.4} With respect to the election of new members at this meeting, the following wryly humorous item appeared in the *Daily Alta California* on June 7, the day after the Academy's meeting. Local newspapers frequently sent reporters to cover the meetings, and their stories were published usually a day or two later. From the report as filed: Following the reading of a paper on fungi, Dr. Harkness resumed his chair [as president]. "Without wasting any time the announcement was made that at an executive meeting of the Board it was decided to make a radical change in the method of electing new members. The old way was to appoint tellers to carry round the ballot-box and then to transport it to the President. The new way was to place the instrument of torture on the small desk in front of the speaker's chair and to compel each member to pass in solemn march before the throne. When directly in front of the President the member must bow and carry his right hand in the direction of the ballot-box. Upon receiving an approving nod from the President and two winks from the Secretary the member could grasp a ball and gently deposit it. (*footnote continued next page*)

the purpose of considering the propriety of authorizing the Board of Trustees to borrow money from the Lick Trust for the purpose of the erection of a building for the Academy and the improvement of the Market Street property.” The committee on the death of Dr. William O. Ayres presented a series of resolutions, which were adopted. They spoke of Dr. Ayres as “a scholar, possessing analytic powers of mind in an eminent degree.” They characterized his scientific work as “a compendium of original research, which was received as authority by kindred institutions and has stood to this day the test of rigid criticism.” They also spoke of the man himself and the “high social virtues which adorned his character.”

JUNE 16, the Academy met in special executive session for the purpose of considering the advisability of building on the Market Street lot. Dr. George Hewston, Frederick Gutzkow and John R. Scupham were appointed a committee to draw up resolutions expressive of the sense of the Academy of the subject. They presented for adoption three short resolutions: First, that the Market Street property should be improved as soon as possible; Second, that the Trustees be requested to borrow the money necessary to accomplish that object from the Lick Trust; and, Third, that a committee of seven be appointed as a committee of conference with the Board of Trustees to consider ways and means to accomplish the desired object. As soon as these resolutions were reported, Dr. Stout made a motion to adjourn, which was lost. He then made a motion to strike out the first two resolutions, which was declared lost. A division being called for, nine voted in favor of the motion and thirty-two against it. The resolutions were then adopted; and a committee of seven, in accordance with the third resolution, appointed, consisting of O. C. Pratt, A. S. Hallidie, George T. Marye, Jr., N. W. Spaulding, A. K. P. Harmon, Jacob Z. Davis, and William S. Chapman. JUNE 20, Hans C. Behr and L. M. F. Wanzer were elected resident members. The library reported 63 new publications, 51 from correspondents, 10 by donation, and two by purchase. A paper by Dr. Gustav Eisen was read “On *Sutroa*, a Genus of Oligochaetae.” Dr. C. C. Parry read a paper on California manzanita, *Arctostaphylos*. Walter E. Bryant read a paper on the “Nest and Eggs of the Evening Grosbeak, *Coccothraustes vespertina*.” JULY 18, Hasbrouck Davis and George G. Blanchard were elected resident members.^{24 5} Dr. Hewston read a paper by Mary K.

^{24.4} (continued) “The first name to be subjected to this ordeal was George J. [sic; A] Specht, whose application for resident membership was approved by Messrs. E. J. Molera and Hermann Schussler. The long line was formed and the box passed to the Chair by Mr. Troyon [sic; Troyer], one of the paid officials. Mr. Specht was rejected.

“The next candidate for trial by white and black ball practice was Adley H. Cummins, whose command of living and dead lingos is practically unlimited. This gentleman had the good luck to be nominated by a lady and as the sex ran the society’s election last year, he was accepted.

“The third candidate was Captain George Ainsworth, who is good enough to be one of the Regents of the State University, but who was rejected without ceremony. The last applicant who knocked at the doors of the Academy was S. D. [sic; C] Passavant. He slipped in, and this order of business was over.

“The following names were then submitted: Daniel Sutter [but Suter in the *Minute Books*, p. 234], Hasbrook [sic; Hasbrouck] Davis, George T. [sic; G] Blanchard and Frank H. Vaslitt [sic; Vaslit] [also listed in the *Minute Books* among the new nominees was Bernard Bienenfeld, whom our reporter seems to have overlooked]. Their turn will come at the next meeting. They were all well recommended, but the fatal blackballs may be waiting to consign them to outer darkness, where there is wailing and gnashing of molars rejected.”

^{24.5} For some unstated reasons, the nomination of Frank H. Vaslit, destined to become one of the most active members of the Academy during the last decade of the century, was rejected. Vaslit was subsequently elected to resident membership on Feb. 17, 1890 and honorary life member on Jan. 6, 1896.. He served as secretary to the Board of Trustees, and did field work in Baja California with Dr. Gustav Eisen in 1894.

Curran on "A Botanical Trip in Siskiyou County." W. E. Bryant read a paper "On a New Subspecies of Petrel from Guadalupe Island."

AUGUST 1, Dr. B. B. Brewer was elected a resident member. Professor F. L. Clarke read a paper "The Bavispe Earthquake," illustrated with diagrams. A paper by Walter E. Bryant was read on "Unusual Nesting Sites." It was at this meeting that Theodore H. and Mrs. Hittell^{24,6} were nominated for Academy membership. AUGUST 15, James De Fremery was elected a resident member. Dr. Brooks O. Baker read a paper on the "Customs and Religious Observances of the Hawaiians"; Dr. Behr, a paper on "Geographical Distribution of Insects," and Dr. Hewston made remarks on dredging being done in San Francisco Bay. In the Board of Trustees, where there had been no meeting since May 2, S. W. Holladay called attention to the fact that the Society of California Pioneers and Miss Cora J. Flood, in dedicating "Pioneer Court," a private way between their lots and running 40 feet wide from Fourth Street, ran back only 194 feet; and that the one foot, at the rear of the rear of the court and adjoining the side of the Academy's lot, had been built up by the Pioneers with a brick wall one foot thick and ten feet high, so as to exclude the Academy from any use of the court, except such as it might derive from the light and air above the brick wall. The sum of \$400 was appropriated for printing *Bulletin* VIII, and \$150 for printing Part I of Volume II of what were called *Memoirs* of the Academy.

SEPTEMBER 5, Theodore H. Hittell^{24,6} and Robert Simson were elected resident members. Professor Joseph LeConte read a paper entitled "Flora of the Coast Islands of California to Recent Changes in Physical Geography," and Adley H. Cummins, a paper on "Truly Dead Languages." The president announced the death of Professor Spencer F. Baird of the Smithsonian Institution at Washington, and Professor LeConte and Dr. Behr were appointed a committee to draw appropriate resolutions. In the Board of Trustees, plans for an Academy building on the Market Street lot were submitted by Mr. Osborn. SEPTEMBER 19, Professor William Nussbaum read a paper on "Heredity." Professor Joseph LeConte presented resolutions of respect to the memory of Professor Spencer F. Baird, which were adopted and a copy ordered sent to the family. OCTOBER 3, Dr. Behr made remarks on the natural history of the mud-wasp. OCTOBER 17, Dr. Hewston read a paper on "Protozoa," illustrated with drawings on the screen. OCTOBER 28, at a special meeting of the Board of Trustees, it appeared that the Board of Supervisors of the City and County of San Francisco were about to appropriate the lot on First Avenue near Point Lobos Avenue, dedicated and named on the City Map of Outside Lands by the words "Academy of Sciences," to school purposes. On motion of Mr. Hays, a preamble and resolution were adopted, declaring that the lot had been reserved and dedicated as the Academy's lot, and that it had been and was claimed as such by the Academy, and directing the president and prudential committee of the Board to appear before the Supervisors, remonstrate against the diversion of the lot from the uses of the Academy, and take all lawful steps necessary to secure the same for the use of the Academy. The prudential committee

^{24,6} Both Theodore and Mrs. Hittell were nominated together, but only Theodore H. Hittell was elected to membership on Sept. 5. Although not mentioned in the minutes, it was probably realized that Mrs. Hittell was already a member, having been elected nearly 8 years earlier, on Nov. 3, 1879.

was also empowered to procure an abstract of title to the Market Street lot. NOVEMBER 7, Frank H. Cushing delivered a lecture on ethnology and particularly as connected with his life among the Zuni, or Pueblo Indians, in New Mexico. In the Board of Trustees, Mr. Holladay announced that Mrs. A. M. Parrott, the owner of property on Market Street next south of the Academy's lot declined having a party wall between her property and that of the Academy. Mr. Holladay also spoke in reference to the title of the Academy to the First Avenue lot and claimed that the reserving of it and marking it "Academy of Sciences" on the Outside Land Map of the City was a valid reservation and dedication of it to the "California Academy of Sciences." He also reported that the party wall between the Academy and the Pioneers at the rear of their lots had, with the excavation for it, cost the Pioneers nearly \$10,000, one half of which would have to be paid by the Academy when it came to use the wall. Frank H. Vaslit, secretary of the Board, on account of ill health, was granted one month's leave of absence, with salary paid in advance. NOVEMBER 21, Professor E. S. Holden read a paper on "California Earthquakes." NOVEMBER 30, a special meeting was held at which Frank H. Cushing delivered a lecture on the "Discovered Ruins of the City of Los Muertos, Arizona."

DECEMBER 5, a continuation of Walter E. Bryant's paper on "Unusual Nesting Sites" was read by Dr. Hewston. Professor George C. Edwards lectured on "The Problem of Lights," illustrated with drawings on the screen. In the Board of Trustees, \$350 were appropriated for printing Volume I, Second Series, of the *Proceedings* of the Academy, the first publication of its *Proceedings* since 1876. A sum not exceeding \$200 was allowed to defray the expenses of Walter E. Bryant and party to go to Lower



Edward S. Holden
Bancroft Library, University of California, Berkeley

California and collect scientific specimens and matters of scientific interest for the Academy. DECEMBER 19, Walter E. Bryant read a paper on "Birds and Eggs from the Farallones Islands," illustrated on the screen. The nominating committee presented a ticket for officers of 1888. Dr. Stout called up the subject of the appropriation of the First Avenue lot by the Board of Supervisors for school purposes and characterized it as a "confiscation" of the property of the Academy. Mr. Holladay explained the situation and in substance gave notice that the "last say" had not yet been said. In the Board of Trustees, Mr. Holladay offered resolutions, which were adopted, to the effect that the Academy reiterated its previous acceptance of, and thereby specifically accepted, the dedication to it of the First Avenue lot; that no charge should ever be made for admission to the museum of the Academy to be erected on it, and that a copy of the resolution should be sent to the Mayor and Board of Supervisors.

Chapter XXV: Years 1888-1889

1888

JANUARY 3, 1888, the annual election resulted in the choice of the following officers: H. W. Harkness, president; H. H. Behr, first vice-president; George Hewston, second vice-president; Henry Ferrer, corresponding secretary; William F. Smith, recording secretary; I. E. Thayer, treasurer, C. Troyer, librarian; J. G. Cooper, director of the Museum; C. F. Crocker, D. E. Hayes, S. W. Holladay, George C. Perkins, Jacob Z. Davis, E. J. Molera, and E. L. G. Steele, trustees. The annual reports of officers were presented and filed. On nomination of the Council, Professor John LeConte and Professor Joseph LeConte were elected honorary life members. In accordance with the constitution, and to fill up the depleted list, the following were elected honorary members: Professor Alexander Agassiz, Joseph Leidy, S. P. Langley, G. Brown Goode, Francis A. Walker, A. E. Verrill, W. K. Brooks, Mrs. E. B. Crocker, Edward D. Cope, A. S. Packard, C. V. Riley, George H. Horn, Clarence Dutton, Elliot Coues, Charles B. Cory, Alphonse de Candolle, H. B. Medlicott, James Hector, W. G. Farlow, E. T. Cresson, Joseph Lovering, François Crépin, Maurice Chaper, Théodore Lefèvre, E. A. Regel, Henri de Saussure, D. C. Danielssen, G. O. Sars, and E. S. C. Cosson.

In the Board of Trustees, it appeared from the annual report that the secretary of the Lick Trustees gave an estimate that the property coming to the Academy as residuary beneficiary of the Lick estate would amount to about \$350,000. It further appeared that the resolution, adopted at the last meeting of the Board and purporting to be a formal acceptance by the Academy of the supposed dedication of the First Avenue lot, had been transmitted and delivered to the Mayor and Board of Supervisors of San Francisco on December 24, 1887. During the year 1887, no money had been borrowed. The receipts of that year, including the balance left over from 1886, were \$11,103.44 and the expenditures \$9,256.22, leaving a balance of cash in the general fund of \$1,086.20 and in the Crocker Scientific Investigation Fund of \$761.02, or a total of \$1,847.22. The prudential committee reported that the party wall between the Academy's lot and the Flood building had been finished and the Academy's share of the cost would be a little under \$5,000, payable when the Academy would make use of it. A report of Messrs. Holladay and Molera on the First Avenue lot insisted that the Academy's title to it was perfect.

JANUARY 16, Dr. Behr read a paper on "The Names of Colors in Ancient

Languages,” illustrated on the blackboard. In the Board of Trustees, C. F. Crocker was reelected president; S. W. Holladay, president *pro tem*, and Charles Stephens appointed secretary, as well as assistant librarian of the Academy, at a salary of \$40 per month during the pleasure of the Board. E. L. G. Steele offered a resolution that, “in view of the difficulties which have already arisen in regard to the lot on First Avenue, which is owned by this Academy, and to avoid the same in future, and also for the preservation of the museum of the Society and that it may be at once utilized for the public good,” the Board should immediately proceed to the erection of a building on it and borrow the money necessary therefor from the Lick Trustees. After some discussion the consideration of the resolution was postponed until the next meeting. Mr. Molera gave notice that at the same next meeting, he would introduce a resolution to build on the Market Street lot.

FEBRUARY 6, among the donations to the cabinet were 1000 species of plants sent in exchange by honorary member Prof. R. A. Philippi, of Santiago, Chile. Frederick Gutzkow read a paper on “A New Method of Quantitative Determination of Bromine in Sea Water,” with illustrative experiments. Joseph D. Redding offered a preamble and resolution, which were adopted, asking for the establishment by the United States of a National Park in the vicinity of Mount Shasta and so as to include, and protect from pollution, the McCloud River, the natural spawning ground of California salmon.^{25.1} The president announced the death of Professor Asa Gray, the botanist; and Dr. Hewston, Dr. Behr and Mrs. Curran were appointed a committee to draw up appropriate resolutions. In the Board of Trustees, Jacob Z. Davis exhibited plans and drawings for the improvement of the Academy’s Market Street lot. Mr. Molera urged immediate action and introduced a resolution to that effect, and that a conference should be had with the Pioneers and Miss Flood for the purpose of acquiring the use of Pioneer Place for the proposed Academy building. An additional \$10 per month was allowed Charles Stephens, the secretary, making his salary, as secretary and assistant librarian, \$50 per month. FEBRUARY 20, Adley H. Cummins read a paper “On the Races of Man and their Limitations.” Dr. Hewston presented a resolution of respect to the memory of Professor Asa Gray, which was adopted, and also a

^{25.1} The full text of the resolution states: “Whereas the attention of the Government of the United States has been called to the advisability of establishing a National Park in the vicinity of Mount Shasta, Siskiyou County, California for the purpose of preserving the natural beauties, the game and the aspect of the country in their natural condition —

“And whereas the McCloud River has its rise at the base of Mount Shasta and extends some fifty miles in a southerly direction, and empties into the Pitt, which empties into the Sacramento River —

“And whereas the said McCloud River is the natural spawning ground of the Pacific Coast Salmon in California —

“And whereas the said McCloud River will be in time polluted by the incursion of tourists and the establishment of sawmills etc. around its banks —

“Now, therefore be it resolved by the Academy of Sciences of San Francisco: That it is the earnest wish of said Society that there shall be a National Park established around the base of Mount Shasta for the first named purposes, and furthermore, that said National Park shall extend in territory, so as to include the McCloud River, in order to hold the same inviolable forever for the purposes of pisciculture and fish industries of our State: —

“And furthermore that this Society will cause a copy of this resolution to be forwarded to the Congressmen representing California before a bill is introduced or passed establishing said Park.” (*Minute Books*, Dec. 1880-Dec. 1890, pp. 256-257.

For a biographical sketch of sometime musician/attorney Joseph D. Redding, son of Benjamin B. Redding (q.v.), see Renée Renouf, “The Greatest Bohemian of All: Joseph D. Redding.” *The Californians*, 1983, 12(3):11-22.



Joseph Deighn Redding (early 1890s)
Bancroft Library, University of California, Berkeley

memorial. In the memorial it was said that Professor Asa Gray, as a scientist in his department, had few, if any, superiors. He was acknowledged as one of the most thorough botanists living. His industry in his work was unparalleled. He was unflinching in the pursuit of truth. He was not a mere book or closet naturalist, but traveled and investigated the fields and collected, so far as was possible, the plants he described. He was one of the modern scientists who, like Huxley and Tyndall, did not entertain the idea, that, by popularizing his favorite branch of study, he in any wise detracted from the scientific character of his own reputation on the true value of his science. He was deeply impressed with the importance of the botany of the Pacific Coast and made three visits for the purpose of studying it. As a man, he was gentle, kind, cheerful and genial. His birth took place at Paris, Oneida County, New York on November 10, 1810; in 1842 he became professor in natural history in Harvard College, and his connection with that institution continued to the time of his death on January 30, 1888. in his seventy-eighth year.

MARCH 5, Gilbert Palache was elected a life member. W. Lindgren of the U. S. Geological Survey read a paper on the "Topographical Features of Lower California." Melville Attwood made remarks "On Determination of Form and Hardness of Crystals." Ivan Petroff explained a map of Kodiak Island, which he presented to the Academy. In the Board of Trustees, \$150, out of the Crocker Scientific Investigation Fund, were ordered paid Dr. Cooper for work in collecting and classifying fossils. S. W. Holladay announced that the Board of Education, authorized by the Board of Supervisors of San Francisco, were about to build on the First Avenue lot; and, on

motion of Mr. Molera, it was resolved to send a protest to the Board of Education against the erection by them of any structure on the Academy lot or interference in any way with the rights of the Academy. MARCH 19, I. E. Thayer made remarks on the abundance of fish at the Island of Tahiti, a number of which and a few mollusks from there he donated. Dr. Hewston read a paper by Mrs. Curran on "Comparison of Flora of Chile and California." In the Board of Trustees, a report of examination of the safe deposit box showed that it contained the twenty bonds of the Southern Pacific Railroad Company for \$20,000, constituting the Crocker Scientific Investigation Fund; also the various deeds to the Academy, and the lease of the Academy building, dated October 1, 1886 for two years at \$150 per month, with a privilege of 1, 2 or 3 years or fraction of a year more, if requested in writing; also an insurance policy on the museum, collections and library. A committee was appointed to arrange with the Lick Trustees as to loans for building purposes, and another to confer with the Society of California Pioneers in reference to the use of Pioneer Place.

APRIL 2, Professor P. V. Veeder was introduced and delivered a lecture on "The Recent Changes in Japan." The library reported receiving a large number of extremely valuable quarto volumes of the Geological Survey of India^{25.2} as well as 24 decades of *Natural History* from Victoria, Australia. In the Board of Trustees, the committee, appointed to confer with the Pioneers in reference to the use of Pioneer Place, reported that the Pioneers were unwilling to grant the use of it except on condition that the Academy would extend the same through its lot. APRIL 16, Dr. Hewston presented a lamprey, *Ammochaetus cibarius*, found in the Bay of San Francisco, and called attention to the smallness of its size. He said it had been caught in a herring net and went on to observe that the fact of its capture suggested a very good reason for the serious diminution of the yield of fish in the Bay. While the Italians and particularly the Chinese were permitted to use nets, whose meshes were so fine as to catch so small an object, it was idle to charge the scarcity of our fish to the few seals that resorted to Seal Rocks, where they served to diversify and embellish one of our most attractive points of interest. Dr. Harkness exhibited pine branches attacked by a parasite, called *Peridermium Harknessii*. He said it attacked the inner bark and, by the irritation it produced, caused an enormous development and finally exhausted the tree and proved fatal. The so-called digger pines, *Pinus Sabiniana*, seemed to be suffering most severely and thousands of them were dying from its attacks. The death of Dr. Ferdinand F. von Richthofen, an honorary member of the Academy, was announced; and F. Gutzkow gave a sketch of scientific career and presented an appreciative tribute to his memory. The Librarian reported that the Academy had acquired by purchase De Candolle's 23-volume *Prodromus* on plants as well as several valuable works on geology and fossils. In the Board of Trustees, C. F. Crocker, of the committee of conference with the Society of California Pioneers, reported that it was not practicable to make any arrangement for the use of Pioneer Place, and, on motion, it was resolved that it was expedient to proceed immediately to the erection of an Academy building. J. Z. Davis, of the committee to arrange for loans from the

^{25.2} *Palaeontologia Indica*, a grand serial publication started in 1861 to report on the extraordinary fossil discoveries uncovered by Survey geologists and paleontologists. Publication continues to this day (1996).

Lick Trust, reported that the funds needed for building could be obtained from the Lick Trustees; and, on motion, it was resolved that the president should borrow the necessary funds, say \$200,000, for the purposes of building on the Market Street lot on the best possible terms. Trustee S. W. Holladay was appointed attorney for the Board in the matter of the building and he was requested to engage as coadjutors, if he desired, the firm of Mastick, Belcher & Mastick. It was resolved to invite numerous architects to submit plans for the proposed new building, with an understanding that none were to be paid for unless approved and accepted.

APRIL 26, at a special meeting of the Trustees, it was resolved that certain directions in reference to the proposed building should be sent to the architects invited to compete in drawing plans. These were mainly that the building opposite Pioneer Place was to be set back from 4 to 6 feet and to have an open front towards it so as to afford an attractive appearance from Fourth Street. There was to be light secured for the building wherever it was possible to get it. There was to be an assembly room for at least 200 persons; and the building with extras was not to cost over \$200,000. The plans were to be compared, and \$300 paid for the one chosen as first; \$200 for the second, and \$100 for the third; and \$100 might be given for a fourth, presenting desirable points not contained in the others. The plans thus chosen and paid for were to belong to the Academy; the others to be returned. The architect of the plan adopted was to be superintendent of the building; but the Academy reserved the right of modifying any plan, and in such case to select the superintending architect.

MAY 7, Samuel L. Theller and Charles F. Sonne were elected resident members. Professor Joseph LeConte lectured on "The Most Probable View Regarding the Condition of the Interior of the Earth." In the Board of Trustees, it was resolved to send more specific directions to architects in reference to the proposed new building, and asking their plans to be handed in by June 18. A sum of \$200 was appropriated to publish Dr. Gustav Eisen's *Memoir* with illustrations, and \$60 per month allowed Mrs. Curran for her various services, including the editing of the *Proceedings* of the Academy, the additional \$20 to be paid out of the general fund. MAY 21, Dr. Julius Koebig was elected a resident member. A paper by Dr. Gustav Eisen on "Antiquities of Guatemala" was read and illustrated on the screen. Dr. Behr spoke of insect pests, particularly the army worm. JUNE 4, Professor Josiah Keep read a paper on the "Measurement of Frustums of Cones and Cylinders." Professor L. A. Lee described the work performed by the "Albatross" during its voyage through the Straits of Magellan and northward to San Francisco. In the Board of Trustees, S. W. Holladay was requested to defend the Academy's title to the First Avenue lot. An allowance of \$40 per month was authorized for petty expenses of the library. JUNE 18, W. T. Baggett was elected a resident member. The publication of the second bulletin of *Proceedings* of the Academy was announced. Frank H. Cushing addressed the Academy on "Evolution," and also answered many questions asked in reference to his ethnological research in New Mexico and Arizona. In the Board of Trustees, the plans of architects for the new building were opened in the following order; W. F. Smith, 1; J. J. & T. D. Newsom, 2; Percy & Hamilton, 3; Salfield & Kohlberg, 4; J.

M. Curtis, 5. W. Patten asked for further time to complete his plans; but the Board declined to extend the time and returned his plans unopened. The plans retained were inspected and then left with the secretary to be kept strictly private. JULY 2, Dr. Behr read a paper on "Disproportional Multiplication of the *Vanessa Californica*." Special notice was taken of a magnificent set of astronomical drawings by Prof. Trouvelot by an Academy member. JULY 16, Professor Ward described the museum at the Coronado Beach Hotel.

AUGUST 6, a paper prepared by Professor E. S. Holden on "Volcanoes in the Moon" was read by Dr. Hewston. F. Gutzkow described the "Manufacture on this Coast of Magnesia from Sea Water." In the Board of Trustees, Messrs. Davis and Holladay were appointed to act with the president in adjusting the shape of the rears of the Academy's and Pioneers' properties. Messrs. Davis, Molera and Harkness were appointed to consider the plans for the new Academy building. AUGUST 20, the president announced the death of Charles Crocker on August 14th at the Hotel del Monte, in Monterey Co., and made remarks upon his munificence to the Academy and the great interest he had always taken in its welfare. He also announced that the Board of Trustees and the Council, upon hearing of the death of Mr. Crocker, had appointed a committee to draft resolutions expressive of the sense of the Academy at the loss it had sustained, which would be presented to the Academy for adoption. The resolutions, reported by Messrs. Hewston, Holladay, Perkins, Harkness and Ferrer, were then presented and adopted;^{25.3} and the Academy adjourned as a mark of respect to the memory of the deceased.

SEPTEMBER 8, a paper by Professor E. S. Holden "On Earthquakes in California, Oregon, and Washington Territory" was read. In the Board of Trustees, on motion of J. Z. Davis, the five plans for the new Academy building were accepted, and premiums awarded as follows: to John M. Curtis, \$300; William F. Smith, \$200; Percy & Hamilton, \$200; Salfield & Kohlberg, \$100; John J. & Thomas D. Newson, \$100, all the plans to be retained as the property of the Academy. At an adjourned meeting, on SEPTEMBER 11, Mr. Davis recommended J. M. Curtis as supervising architect of the new building; Messrs. Harkness and Molera recommended G. W. Percy. E. L. G. Steele resigned as a Trustee, and Irving M. Scott was elected in his place. It was determined that a supervising architect should then be elected, conditioned upon the Board being able to make satisfactory terms with him. G. W. Percy received four votes and J. M. Curtis two votes; and Percy was declared elected. It was also determined to rent a room near the property for use as a Board room during building operations. SEPTEMBER 17, Adley H. Cummins read a paper on "Comparative Mythology." Dr. Hewston described a species of banana plant, very large and luxuriant but fruitless, growing in his front yard on Sutter near Polk Street in San Francisco. In the Board of Trustees, the employment of G. W. Percy as supervising architect was authorized, limiting his commissions to 2-1/2 per cent of the cost of the work. In an adjourned meeting, on SEPTEMBER 24, J. Z. Davis tendered his resignation as a Trustee; but it was laid on the table. The employment of G. W. Percy as

^{25.3} The resolutions were published in the *San Francisco Bulletin* the next day (Aug. 21)

supervising architect was reported on a commission of 2- $\frac{1}{2}$ per cent on the cost of the building while under his supervision. A Board room in the Flood Building adjoining the Academy lot was hired at \$50 per month; and Trustee Molera was directed to prepare a document defining Mr. Percy's duties and responsibilities as supervising architect.

OCTOBER 1, a paper by Mary K. Curran "On Trees and Shrubs of the Sierra Nevada" was read. This was followed by an address by Dr. R. G. Eccles of New York. In Board of Trustees, a contract was signed with Mr. Percy defining his duties and responsibilities. OCTOBER 15, Dr. J. Koebig read a paper "On Modern Chemistry in Agriculture." Theodore H. Hittell read a paper, entitled "Sutro's New Water Power," in which he described the method of collecting the sea water splashed above high water mark on the rocks at Point Lobos by the ocean surf, and thus filling a reservoir with a considerable head above ocean level. Dr. Harkness spoke of scientific researches at and about Lake Tahoe. In the Board of Trustees, OCTOBER 22, R. D. Clairmont was employed to prepare a financial statement of Academy business and open a series of regular account books. Mr. Molera reported a negotiation having in view the furnishing of rooms in the new building for the Supreme Court of California. The resignation of Jacob Z. Davis as a Trustee presented at a previous meeting was accepted, and John Taylor was elected in his place.

NOVEMBER 5, a paper by T. S. Brandegee "On the Flora of Santa Barbara Islands" was read. In the Board of Trustees, Mr. Molera reported that the consent of Mrs. Abby M. Parrott for a conjoint lightwell between her property and that of the Academy could not be obtained. In the Board of Trustees, NOVEMBER 12, it appeared that the Society of California Pioneers were still not disposed to allow any use of Pioneer Place except on condition of extending it through the Academy's lot. NOVEMBER 19, F. Gutzkow read a paper on "Magnesium Oxychloride or Sorel's White Cement, and the Favorable Conditions for its Manufacture in California." W. R. Bentley read a paper "On the Great Glacier of the Selkirks." In the Board of Trustees, architect Percy, in speaking of material for building, said that sandstone afforded better resistance to fire than granite or marble though not equal to them in tensility under a crushing force. A new attempt was made to come to some agreement with the Pioneers and Miss Flood for the use of Pioneer Place.

DECEMBER 3, among the donations were 121 specimens of birds from L. Belding. Professor Joseph LeConte read a paper on "The Structure of the Great Basin Region," and J. R. Scupham, a paper on "Identification of Coal Seams." Dr. Hewston described the progress of the new building on Market Street, then under way. In the Board of Trustees, it was resolved to offer \$15,000 for the use of Pioneer Place. On DECEMBER 10, the Pioneers had a meeting on the subject, and there seemed a disposition manifested to grant the desired use for \$30,000, when C. O'Connor, Miss Flood's agent, objected to any such use except on condition of extending the Place through the Academy's lot; and the Pioneers thereupon made such extension an indispensable condition of any grant of right of way or use. DECEMBER 17, Theodore H. Hittell read a paper, entitled "Change of Level of the Peninsula of San Francisco," which was

based principally upon the finding of drift logs and bones of large marine animals eighty or more feet below the surface near the top of Mount Parnassus and about 700 feet above present sea level. Dr. William P. Gibbons read a paper "regarding the drawings of the late Dr. Albert Kellogg and his reasons for not leaving them to the Academy while the present administration was in power." After a great many desultory remarks, it was, on motion, resolved that the paper was not in proper tone and should not be received by the Academy. The nominating committee reported further interviews with the Pioneers in reference to the use of Pioneer Place and also a correspondence between the Pioneers and Miss Flood with Mrs. A. M. Parrott, asking an interview with the object of extending Pioneer Place not only through the Academy lot but through her lot also; but Mrs. Parrott replied that she could not entertain any proposition for its extension through her property and that she thought an interview on the subject unnecessary. It was ordered that \$5,000 should be borrowed from the Lick Trust to pay taxes and other current expenses.

1889

Annual meeting, JANUARY 7, 1889. The reports of officers were received and placed on file. As the result of the annual election, the following were declared officers for the year: H. W. Harkness, president; H. H. Behr, first vice-president; George Hewston, second vice-president; Frederick Gutzkow, corresponding secretary; J. R. Scupham, recording secretary; I. E. Thayer, treasurer; C. Troyer, librarian; J. G. Cooper, director of the Museum; C. F. Crocker, D. E. Hayes, S. W. Holladay, E. J. Molera, I. M. Scott, George C. Perkins, and John Taylor, trustees. In the Board of Trustees, the annual report detailed the resolution of the Board in the early part of 1888 to improve the Market Street lot by the erection on it of a building suitable for the uses of the Academy and for stores and rooms from which an income might be derived. It stated the negotiations that had been had with reference to acquiring the use of Pioneer Place, and their failure. The only proposition on which the use would be granted involved the necessity of substantially sacrificing all the rear portion of the Academy's lot, leaving only a depth for its building of 145 feet, which would not be sufficient for the purposes designed. It had been determined not to make the sacrifice, and the plans adopted for building had accordingly been made to cover the whole lot and with a view of reaching the building from the Market Street entrance only. On this plan the work had commenced; the excavation of the lot had been finished; and it was expected that in a year the building would be ready for occupancy. As to the First Avenue lot, the Board of Education, notwithstanding the protests of the Academy, had proceeded to build on it, but this Board still considered the title of the Academy to it perfect and would assert its rights in proper time. A sum of \$5,000 had been borrowed from the Lick Trustees, making the indebtedness to the Lick Trust \$10,000. The new loan was made necessary by increased and unusual expenses in excavating the Market Street lot and paying for plans of building in addition to the

ordinary current expenses of the Academy. In the meanwhile, it had been ascertained from private sources that the amount to be received as residuary beneficiary under the Lick Trust would considerably exceed all previous estimates, although no official information to that effect had as yet been received. It further appeared that the receipts for 1888, including the balance on hand and the \$5,000 borrowed, had been \$14,014.77 and the disbursements \$11,078.71, leaving a balance of \$2,936.06, of which \$2,185.04 belonged to the general fund and \$751.02 to the Crocker Scientific Investigation Fund.

JANUARY 21, the following papers were read by title: "New Species of California Mammals" by Dr. C. Hart Merriam; "Song Notes of Birds" by L. Belding; "Petrographical Notes on Baja California" by Waldemar Lundgren; "Review of Erythrinae" by C. H. and R. S. Eigenmann; "Botanical Notes" by Mary K. Curran; "Report upon a Collection of Birds from Lower California" by Walter E. Bryant. E. J. Molera read a paper "On the Late Total Eclipse of the Sun." In the Board of Trustee, C. F. Crocker was elected president; S. W. Holladay, president *pro tem*, and Charles Stephens appointed secretary. The Council asked and obtained an appropriation of \$700 to send W. E. Bryant and C. D. Haines to Magdalena Bay, Lower California, for three months to collect natural history specimens. It was resolved that the new Academy building should have a front on Pioneer Place, as if it were open, with a view to its use in case the right to use it should be acquired.

FEBRUARY 4, Theodore H. Hittell read a paper, entitled "The Acorn and the Oak," the purpose of which was to call attention to the continual change of inorganic into organic or so-called dead into living matter. In the Board of Trustees, a contract was made with George Goodman to do the concrete foundation work of the new Academy building for \$3,244. James W. Duncan was appointed superintendent of construction at a salary of \$150 per month, to commence when required by the architect. On motion of E. J. Molera, seconded by G. C. Perkins, it was resolved that a suit should be commenced against the City and County of San Francisco and the Board of Education for the First Avenue lot. At a special meeting of the Trustees, held FEBRUARY 11 at the architect's office, it was resolved to build the rear wall of the Academy building, commencing on the Parrott line 30 feet from the extreme southerly end and running parallel to Market Street to the Pioneer building, leaving the rear triangle an open space. Mr. Molera moved that the Academy auditorium be placed next the eastern wall of the new building, which motion was negatived. Mr. Molera also moved that the classical style of architecture be adopted for the front of the building. Such was the direction of Mr. Lick on his first deed; and it was a direction which, if properly carried out, would have secured a handsome front. But Mr. Holladay moved to amend by adopting the "Modern Romanesque style of architecture"; and, on vote, the amendment carried 4 to 1, Mr. Molera voting in the negative. FEBRUARY 18, Dr. Hewston read a paper on "Crinoids or Sea Lillies."

MARCH 4, Townshend S. Brandegee, Waldemar Lindgren, Volney Rattan, James E. Mills, and Lyman Belding²⁵⁴ were elected resident members. Among the donations was a specimen of limonite, presented by F. Gutzkow, from which he suggested a



Townshend Stith Brandegee
 Hunt Institute for Botanical Documentation
 Carnegie-Mellon University

theory of the origin of gold in our placer gravels; also an egg containing specimens of a fungus growth and of the Gordius or "hair snake," presented by Pietro C. Rossi. The president announced the death of Seth Cook and Dr. Jules C. A. de Tavel. A paper by Professor Holden on "California Earthquakes in 1888" was read. Gen. L. H. Foote then presented the regular paper for the evening entitled "Notes on Corea." In the Board of Trustees, it was resolved that S. W. Holladay, assisted with such eminent counsel as he might deem necessary, should report whether the erection of the building as contemplated would jeopardize the title of the Academy to its share of the residue of the Lick estate, and if necessary, that a suit should be commenced against the Lick Trustees to determine the Academy's status in the matter. MARCH 18, Dr. Behr read a paper "On the Names of Colors." In the Board of Trustees, a bill of C. Duisenberg & Co. for 270 barrels of cement, amounting to \$1,039.50, was ordered paid. The secretary thereupon reported that there was not enough cash on hand to cover that and other accounts due at the end of the month; and it was therefore ordered that \$5,000 more be borrowed from the Lick Trust.

APRIL 1, Dr. J. B. Trembly presented "Reports of the Meteorology of Oakland, 1881-1888." F. Gutzkow addressed the Academy on "Water Motors and Water

^{25.4} Incorrectly recorded as Louis Belding in the handwritten minutes (*Minute Books*, Dec. 1880-Dec. 1890, p. 288). The published newspaper account of the meeting contains even more inaccuracies, mentioning as newly elected members Mr. Townsend and S. Brandegee for Townsend S. Brandegee, Voluaz for Volney Rattan, and James E. Miller for James E. Mills; also Lucius S. Foote for Lucius H[arwood] Foote.

Meters." In the Board of Trustees, it was ordered that the Society of California Pioneers should be notified that the northwest wall of their building projected on the Academy's lot and that they be requested to cut off the projection so as to conform to the line. A number of construction bills were ordered paid, and a number of reports made as to construction contracts. Specimens of stone for the front of the building were ordered to be submitted to Professor A. W. Jackson, Jr. and Professor Frederick Hesse of the University of California, for their opinion as to their value for building purposes. At a special meeting on APRIL 8, the Trustees ordered that specimens of Sespe, Niles Ventura, and Ione stone be referred to Professor Jackson to report upon their durability against disintegration by weather, he to receive \$25 for each specimen reported on. It was announced that the projection of the wall of the Pioneer building was being cut away so as to conform to the line. It was ordered that the Board of Supervisors should be asked to allow proposed heavy granite columns on each side of the Market Street entrance of the Academy building to project 1 foot 9 inches on the sidewalk and the bases of the columns 2 feet 1- $\frac{1}{2}$ inches. Judge A. L. Rhodes reported his legal opinion that the Academy's right to one-half the residue of the Lick estate was absolute. Various contracts for building construction were awarded. APRIL 15, F. Gutzkow described some peculiar aluminum deposits; and a discussion followed on the qualities of aluminum. A paper by Professor G. M. Schaeberle on "Bernard's Comet" was read. The president announced the publication of Volume I, Second Series, of the *Proceedings* of the Academy. A resolution of thanks acknowledging the work of Mrs. Mary K. Curran as *Proceedings* editor passed unanimously. In the Board of Trustees, a communication from the Pioneers invited further negotiations in reference to the use of Pioneer Place. A few more construction contract were awarded.

MAY 6, the plans of the Academy building in course of construction were exhibited and explained by Mr. S. W. Holladay. In the Board of Trustees, a list of all the construction contracts, with dates and amounts, was filed as follows: "1888, Nov. 19, Sibley, L. B. - excavating - \$1,100; 1889, Feb. 4, Goodman, Geo. - concrete foundation - \$3294; Ap. 2, McCarthy, Jno. - brick work - \$3,884; Ap. 9, Healy, M. J. \$ Co. - granite work - \$17,200; Ap. 9, Fletcher, W. M. - carpenter work - \$49,772; Ap. 9, Rix & Firth - constructional wrought iron work - \$12,375; Ap. 9, O'Connell & Lewis - cast iron work - \$18,900; Ap. 15, Ransom & Cushing - concrete work - \$14,300; Apr 15, Duffy Bros. - plumbing, gas fitting and drain work - \$15,326," being altogether contracts to the amount of \$169,151. Professor Jackson reported that Sespe freestone was decidedly superior to any of the Ione, Niles or Ventura stone submitted, and he was ordered paid for his opinion and expenses \$187. The treasurer reported \$4,413.07 on hand, and it was ordered that \$10,000 more be borrowed from the Lick Trust. The sum of \$1,064.96 was ordered paid to Spaulding & Co. for printing Volume I, Second Series, of *Proceedings* of the Academy, and Britton & Key, \$100 for maps accompanying same. Frank H. Vaslit's salary was raised to \$50 per month.

In the matter of the use of Pioneer Place, it appeared that in their recent communication the Pioneers had said that the representatives of Miss Flood had changed

their mind in reference to the subject, and that the right of user could then be obtained for \$30,000, and that the Academy had adopted its plans and let its contracts without reference to the use of Pioneer Place, and it was not too late to change them. It also appeared that a wooden building and fence on Mrs. Parrott's lot projected over the Academy's lot, and her agent was disposed to claim the right of maintaining them as they were by prescription; but on second thought, it was agreed that the Academy might make them conform to the line, if it were done without expense to Mrs. Parrott. As to the Academy's interest in the Lick estate and its ability to continue its building, it appeared that the Lick Trustees had applied to the court, in suits commenced against the only specific beneficiaries not yet paid, to be allowed and authorized to pay to the Academy and the Pioneer Society each \$300,000 on the ground that they had on hand in addition to these sums ample funds to meet all the specific gifts. There was some discussion as to the publication of a new volume, entitled "West American Oaks" by Dr. Albert Kellogg. It was edited by Edward L. Greene and contained matter and particularly drawings, which seemed to have been prepared by Dr. Kellogg while in the employ of the Academy and was claimed to belong to the Academy. After Dr. Kellogg's death, Dr. William P. Gibbons, E. L. Greene and a few others seem to have published the book as a work independent of the Academy, and Captain J. M. McDonald furnished the funds for it. Messrs. Molera and Percy were appointed a committee to decide upon the modeling of the embellishments of the new building, and Messrs. Holladay, Perkins and Harkness a committee to arrange for a formal laying of the corner stone.

MAY 20, a large photograph of the moon was presented by the Lick Observatory. Dr. Behr read a paper on "The Duration of Individual Life in Insects." In the Board of Trustees, it appeared that the Board of Supervisors had granted the permission asked, allowing the bases of the granite columns at the entrance of the Academy building on Market Street to project 2 feet 1- $\frac{1}{2}$ inches on the sidewalk. The architect reported that W. B. Farwell had made a bid to furnish stone for the front of the building for \$27,844 and O. E. Brady offered the same for \$19,500; and it was ordered that Brady's bid be accepted. JUNE 3, a paper by H. R. Taylor was read, entitled "Nesting Habits of Some of Our Raptore, with Notes on the California Condor." W. E. Bryant made a report on his recent trip for the Academy to Lower California. In the Board of Trustees, \$10,000 were ordered to be borrowed from the Lick Trust. A sum of \$500 was paid to Judge A. L. Rhodes for his legal opinion on the right of the Academy to one-half the residue of the Lick estate. S. W. Holladay's bill seems to have been the same, but he reduced it one-half, and \$250 was ordered paid him for a similar opinion. The printing of the *Proceedings* of the Academy for the current year was authorized at a cost not to exceed \$1,000. Further construction contracts for the Academy building were awarded to P. Azinar, for painting, \$3,750; Will & Fink, for electric bills, \$475; W. Croman, for tin and galvanized iron roof, \$5,170; Winslow Brothers of Chicago, for ornamental iron work and electrotyping, \$11,200. JUNE 17, W. E. Bryant read "Descriptions of the Nests and Eggs of Some Lower California Birds."

JULY 1, W. E. Bryant read "A Description of Some New Mammals." In the Board of Trustees, in addition to the \$10,000 borrowed from the Lick Trust in June, it was ordered that \$20,000 more be borrowed. Professor Davidson presented a petition, signed by himself and others, asking that the Grand Lodge of Masons should be invited to lay the corner stone of the Academy building. The president stated that the programme had already been made up for the ceremony of laying the corner stone; that it would take place on Friday, July 12, at 2 o'clock P.M. On the afternoon of JULY 12, accordingly, the Trustees, Council and other members of the Academy met at the building in course of construction and the corner stone, containing a copper box filled with appropriate documents and specimens of coins, was laid by H. W. Harkness as president of the Academy. JULY 15, E. J. Molera presented the silver trowel used in laying the corner stone of the new Academy building. T. S. Brandegeer read the paper for the evening, "On Cirio," a tree, and C. Troyer made remarks on Indian inscriptions on the rocks near Soda Springs in Placer County. The Board of Trustees resolved to sign a certificate to continue the existence of the Academy in accordance with recent amendments to the Civil Code of California in reference to such corporations. The Board then adjourned to JULY 17, when S. W. Holladay was directed to prepare a petition to the Superior Court, asking its permission for the Academy to execute a mortgage on its real estate to the Lick Trustees for an amount not exceeding \$350,000. It was ordered that \$1,000 be allowed Holladay on account of services as attorney.

AUGUST 5, F. Gutzkow explained the working of a new water meter. Dr. Harkness presented specimens of *Peronospora viticola* and an undescribed *Cladosporium* from a wild vine, with remarks concerning them. The president announced the death of Adley H. Cummins, and S. W. Holladay and C. Troyer were appointed a committee to draft appropriate resolutions. The Board of Trustees ordered another \$20,000 to be borrowed from the Lick Trust. AUGUST 19, F. Gutzkow addressed the Academy on "Aluminum and its Manufacture." W. E. Bryant read a paper on "*Amblystoma*." Among the donations was a valuable collection of shells by M. Maurice Chaper of Paris, France. In the Board of Trustees, a construction contract was ordered to be made with the California Marble and Building Stone Company for \$25,000 and a mortgage to be executed to the Lick Trustees for a sum not exceeding \$350,000, as allowed by judgment of Court. SEPTEMBER 2, Dr. George Vasey addressed the Academy on "Grasses." In the Board of Trustees, it appeared that a mortgage to the Lick Trustees for \$300,000, to secure all moneys borrowed or to be borrowed from them, had been executed, and the secretary was directed to deliver the same to the Lick Trustees; receive from them a check and certificates of deposit for \$218,969.40, and hand them over to the treasurer. SEPTEMBER 16, F. Gutzkow read a paper "On the Hydrometallurgy of Silver." In the Board of Trustees, the secretary reported that the mortgage business with the Lick Trustees had been completed; and that the Academy had received its four notes for \$80,000, paid interest thereon \$1,030.60, and received in check and certificates of deposit representing cash \$218,969.40, making in all \$300,000, the amount of the mortgage. The president reported that he

had endeavored to place \$150,000 of the amount at interest in some commercial bank, but had found it impossible. He had therefore determined to place it with the Pacific Improvement Company, a corporation connected with the Southern Pacific Railroad Company, and accordingly loaned it on two notes, both dated September 10, 1889, one for \$50,000 drawing interest at the rate of 3 per cent per annum and payable on demand, the other for \$100,000 with 4 per cent per annum interest, payable in six months. The notes were signed by the Pacific Improvement Company by F. S. Doughty, secretary, and indorsed by Leland Stanford, Charles F. Crocker, C. P. Huntington by N. T. Huntington, his attorney in fact, and Mary P. B. Searles by H. J. S. Severance, her attorney in fact. The president's action was approved. Mr. Molera gave notice that he would move to place a bronze statue of James Lick in an appropriate place on the front of the Academy building.

OCTOBER 7, T. S. Brandegee spoke of the flora of Lower California and exhibited photographs of new species of cactus found there. In the Board of Trustees, an addition of \$20 per month was ordered paid to W. E. Bryant, making his salary \$60 per month. J. P. Bowen was appointed watchman of the new building at \$7.50 per week. About \$10,000 of construction bills were ordered paid. OCTOBER 21, the members of the Academy were invited to attend the launching of the U. S. war vessel "San Francisco" at the Union Iron Works. NOVEMBER 4, Francesco Lambertenghi, Consul General for Italy at San Francisco, donated a copy of his work entitled "El Diritto Comune," being a translation into Italian of Judge Oliver Wendell Holmes, Jr.'s work "On the Common Law," and made an address on the progress of Italian Law. T. S. Brandegee read a paper "On the Flora of Baja California." A discussion followed on the nature and uses of Lower California orchilla as a dye. The Trustees awarded a contract for lathing and plastering to Charles Dunlop for \$19,400, the lowest of four bids. NOVEMBER 18, among the donations were two living rattlesnakes by Dr. Behr. A paper by Dr. C. F. Millspaugh was read on Euphorbiacea collected in Lower California. Attention was called to the remarkable character of the collection. In the Board of Trustees, a report was presented that the concrete floors of the new Academy building had been tested and found in first-class condition. DECEMBER 2, Dr. Behr read a paper entitled "The Economy of Nature as Exemplified by Vegetable and Animal Parasites." A collection of 425 specimens of about 200 species of beetles, mostly from the vicinity of Oakland, by F. C. Torrey, was among the donations received. The Trustees ordered \$4,500 to be paid Miss Cora J. Flood for one half the cost of the party wall between the Academy and Flood buildings, which the Academy was not making use of. DECEMBER 16, many donations of plants, insects, reptiles, birds and eggs were received including more than 8000 insects from Lower California and 2000 species of plants, of which 1200 were from Europe and Algeria by E. Cosson.. W. E. Bryant read a paper, entitled "The Lower California Expedition of 1889," illustrated by views on the screen. Dr. Behr read a continuation of his paper on "The Economy of Nature as Exemplified by Vegetable and Animal Parasites." The nominating committee reported a ticket for officers of 1890, being a renomination of the incumbents. Judge Currey presented an opposition ticket, different from

the other by proposing Professor Joseph LeConte for president instead of Dr. Harkness, and E. S. Clark for librarian instead of C. Troyer. He moved that the Academy should print the opposition ticket as well as the regular one. His motion was declared out of order for the reason that the expense of printing the opposition ticket could not be incurred without the consent of the Board of Trustees. He then moved that the Board of Trustees be requested to print both tickets; but on vote his motion was lost.

Chapter XXVI: Year 1890

At the annual meeting of 1890, held JANUARY 6, the usual reports of officers were read, accepted, and placed on file. That of the president of the Board of Trustees showed that the contracts for the new Academy building on Market Street amounted to \$218,346, of which \$117,045 had been paid, leaving a balance due of \$101,301. These did not include contracts for an elevator or illumination. The annual election resulted in the choice of H. W. Harkness, president; H. H. Behr, first vice-president; George Hewston, second vice-president; Frederick Gutzkow, corresponding secretary; John R. Scupham, recording secretary; I. E. Thayer, treasurer; Charles Troyer, librarian; J. G. Cooper, director of the museum; Charles F. Crocker, D. E. Hayes, S. W. Holladay, George C. Perkins, E. J. Molera, Irving M. Scott, and John Taylor, trustees. In the Board of Trustees, it was reported that Miss Flood had been paid \$4,500 for one half the party-wall between her building and the Academy building. It was also reported that a suit had been commenced against the City and County of San Francisco and the Board of Education for the First Avenue lot. JANUARY 20, Dr. Harkness spoke of the damage done to Eastern oysters planted in the Bay of San Francisco by whelks, which had to all appearance been introduced with the young oysters from the East. Dr. Behr spoke of fish found in artesian wells in Algeria, specimens of which had been donated by Maurice Chaper of Paris France. Dr. Gustav Eisen said that similar fish were found in artesian wells in Kern County. Dr. Behr presented specimens of diseased peach tree roots, and Dr. Harkness called attention to a recent report on the root-knot disease published by the U. S. Department of Agriculture, in which it was claimed that the disease was the work of *Anguillula*. In a discussion which followed, this theory was disputed by Messrs. Harkness, Behr, and Eisen, who claimed that the *Anguillula* did not produce the disease but only found in the diseased tissue a suitable nidus for its eggs. The new Board of Trustees organized with C. F. Crocker as president; E. J. Molera, president *pro tem*; and Charles Stephens, secretary.

FEBRUARY 3, the minutes are silent on the evening's events except for the approval of the minutes of the previous meeting and reports on donations to the cabinet and library. At an adjourned meeting of the Trustees, held FEBRUARY 5, it was announced that the Academy required the party-wall between it and the Flood building to be carried up ten feet higher than it had been carried by Miss Flood; and it was proposed that the Academy should build the addition, with Miss Flood's consent and on the understanding that she would refund one half the expense, if she should use the additional wall. The Council asked that Frank H. Vaslit should be employed to do

clerical work under the direction of the president of the Academy, and that his salary should be increased to \$60 per month, commencing February 1, 1890. A sum of \$1,200 was appropriated for publication purposes. Clark P. Stretor was employed as a janitor at \$40 per month in place of C. D. Haines, resigned. Frank H. Vaslit was employed as asked by the Council; and the salary of Charles Stephens, as secretary of the Board, was advanced to \$30 per month. FEBRUARY 17, Frank H. Vaslit and James S. Bunnell were elected resident members. Dr. Behr read a paper on *Amblystoma*, giving a detailed description of the peculiar metamorphosis in this and allied genera. In a discussion which followed, the question arose as to the difference between salmon and trout. Dr. Behr stated that the difference consisted as to one particular in the fact that the salmon leads a marine life in general, but spawns in fresh-water streams, while the trout lives and spawns in fresh-water streams, only exceptionally entering the sea. There was also a difference in the time of the spawning season of the two. This opinion was concurred in by Professor C. H. Townsend of the Fish Commissioner's steamer *Albatross*, who added some observations on the tenacity of life in *Menopoma* an animal related to *Amblystoma*. I. E. Thayer read a paper on modern ship building, calling attention to the transition from iron to steel as a building material and to the increase of oil-tank steamers. Dr. Harkness identified and described different species of fungi in a collection donated to the Academy by Mr. Carl Precht. The president he called attention to the death of Ernest St. C. Cosson of Paris, France, a noted botanist and an honorary member of the Academy, and read a short sketch of his life and labors. On motion, T. S. Brandegee and T. H. Hittell were appointed a committee to prepare a proper memorial notice of the deceased. In the Board of Trustees, Mrs. Rosa Smith Eigenmann was, on recommendation of the Council, employed as a specialist in ichthyology at a salary of \$60 per month.

MARCH 3, a paper by W. J. Raymond, "Notes on Subalpine Mollusca of the Sierra Nevada," was read by title. F. Gutzkow exhibited a specimen of *Cordyceps*; and Drs. Behr and Harkness made remarks upon its life history. Theodore H. Hittell, of the committee appointed for that purpose, presented and read a memorial notice of the noted botanist, Ernest St. C. Cosson of France, in which particular note was taken of his unfinished botanical explorations in Algiers and of his generous donations of publications and Algerian plants to the Academy. In the Board of Trustees, a contract was made with P. H. Jackson & Co. for Hyatt light and illuminating tile work at a cost of \$9,240; and it was ordered that the entrance hall of the Academy building should be paved with encaustic tile. MARCH 17, Dr. Harkness read a paper on "The Nomenclature of Organic Life." He also made remarks on *Rhytisma arbuti*, a fungus infesting the leaves of the madroño, rendering the tree unsightly. A collection of 350 specimens of about 100 species of fish, including many types, was among the donations received. In the Board of Trustees, it was announced that Miss Flood consented to the addition of ten feet in height to the party-wall between her building and the Academy on the terms proposed by the Academy. Morton A. Edwards offered a medallion of the bust of James Lick for \$150; and that sum was ordered paid him for it.

APRIL 7, Carl H. Eigenmann read a paper on "Some Features of the Fresh-Water Fauna of South America." Dr. H. Carrington Bolton gave an account of a visit to a hill of sonorous sand in the Desert of Sinai. Professor Henry A. Ward, who had visited the same hill some thirty years previously, related his experiences during his journey, which was then more difficult, and corroborated Dr. Bolton's report of the form of the hill and the sound produced by the movement of the sand. Professor Ward also described a recent voyage around South America and particularly his trip down the western side of the continent. From latitude 42° South, opposite the Island of Chiloe [Isla Grande de Chiloé, Chile, {Eds.}], there extends along the coast for more than a thousand miles an island passage, navigable for small vessels the entire distance but in places too tortuous and narrow for large ones. He represented the natives of the southwestern coast as a miserable, naked and degraded race and gave some amusing instances of their apparent indifference to cold. APRIL 21, several specimens of *Coprinus* were presented by Carl H. Clark. The largest were over six inches in breadth with a stripe an inch in diameter and sixteen inches in length. They were found growing under brandy casks in the storage cellar of Kohler's Winery near Glen Ellen in Sonoma County. Dr. Harkness made remarks, explaining the place of the plant in classification. C. H. Eigenmann spoke of fishes collected near the mouth of the Sacramento River, and called especial attention to the young of the quinnat salmon, of which a number had been procured; also to the young of the smelt, *Osmerus thaleichthys*, and also to the large number of species of Scopelidae, recently added to the California fauna. Six new species had been found in the neighborhood of San Diego. All these possessed phosphorescent organs. They were all obtained from the stomachs of rock cod in stormy weather. It seemed that during calm weather they did not get within reach of the rock cod, probably on account of their living near the surface of the water. In the Board of Trustees, the secretary reported that the Lick Trustees would not for the present collect interest on the mortgage given them by the Academy. He also reported that \$20,000 had been drawn from the \$50,000 demand note given the Academy by the Pacific Improvement Company. The superintendent reported slowness in several departments of construction work. It was ordered that the corporate title "California Academy of Sciences" should be permanently inscribed on the front of the new Academy building.

MAY 5, Carl H. Eigenmann and Charles Fuchs were elected resident members. In the Board of Trustees, it appeared that the California Marble and Stone Company of California were remiss in sending marble. On motion of E. J. Molera, it was resolved, in deference to the wishes of James Lick, expressed in his deed of gift, and in order to afford a home, encourage and make a nucleus for the advancement of learning, that the Board of Trustees should let out the upper floor of the commercial portion of the Academy building at one-half the commercial schedule price, that might be established for the rent of rooms, to such scientific societies as should be deemed worthy of such favor, including the California Chapter of the American Institute of Architects, the Astronomical Society of the Pacific, the California Camera Club, the Geographical Society of the Pacific, the Historical Society, the Medical Society, the



Carl H. Eigenmann
George Sprague Myers Portrait Collection,
Department of Herpetology, California Academy of Sciences



Carl and Rosa Smith Eigenmann (first woman curator of
fishes in the U.S.), circa 1922 in Santa Cruz, California
George Sprague Myers Portrait Collection,
Department of Herpetology, California Academy of Sciences

Microscopical Society, and the Technical Society of the Pacific. MAY 19, Frederick Gutzkow stated that he had had occasion to examine deposits of so-called pyrolusite of manganese ore, found in various places within the limits of San Francisco. They consisted principally of psilomelane of "hard" ore of manganese, containing a notable quantity of barya and about 57 per cent peroxide of manganese. As the maximum percentage of psilomelane rarely exceeded 60 per cent, while the German pyrolusite assayed up into the nineties, it could readily be understood why shipments made from here to England, about twenty years previously, had to be discontinued. Examinations of specimens from other California localities seemed to show that most, if not all, California deposits of so-called pyrolusite, mentioned in various geological publications, ought properly to be called deposits of psilomelane. C. H. Eigenmann spoke of the development of the membranes in the eggs of fishes. he said that the simplest form of them is a thin membrane traversed by fine canals. This membrane, the "zona radiata," which is present in all fish eggs, is the only covering of those eggs that are lighter than water. Those eggs, that are heavier than water and would otherwise fall to the bottom and in many cases die in the mud, are provided with various contrivances to attach them to foreign substances as soon as deposited. In the herring, this contrivance consists of a membrane overlying the zona, which becomes very viscid when deposited and causes the egg to adhere to any substance with which it comes in contact. In the smelt, an outer membrane exists, which is attached to the zona only around the micropyle. At the time of spawning that membrane is partially stripped off and attaches itself to foreign substances, thus suspending the egg by the micropylar region. In the gobies, a network of threads, similarly attached to the zona, takes the place of the outer membrane in the smelt. In the stickel-backs, a number of mushroom-shaped processes attached to the outer membrane are viscid. There are in many eggs long threads attached to the zona, which twine about sea weeds and other substances and thus suspend the eggs. These threads vary greatly in different eggs. In *Isesthes*, they are massed on one half the zona and form a cushion by which the eggs are attached. In the mud minnow, *Fundulus* the threads, which are numerous, are mere projections of an outer thin membrane. In *Atherinopsis*, they are fewer and have hollow bases into which fit projections of the zona. In the flying fish and gar fish, they fit into pockets of the zona. All the membranes and processes are, so to speak, products of the egg itself; and in those eggs, that are provided with processes, these are usually developed before the zona makes its appearance. In the yellow-perch, a thick covering overlies the zona. This differs from all other structures in fish eggs. It is the product of the granulosa cells, overlying the zona, and is not formed until the latter has almost attained its full thickness. These granulosa cells are modified in the region of the micropyle and one large cell usually acts as a plug to the micropyle in ovarian eggs.

JUNE 2, T. S. Brandegee gave an account of a recent trip to Santa Catalina Island. He described briefly the climatic and topographical features of the Island and its most striking plants. He exhibited a photograph of the Bay of Avalon, which had become a place of summer resort. At the time of his visit there were about 12,000 sheep and

10,000 goats on the island. The goats were not valued but on the contrary were regarded as undesirable on account of their consuming pasture needed for the sheep; and for this reason visitors were allowed to amuse themselves hunting and shooting the goats. In the Board of Trustees, among bills ordered paid was one for \$100 to Marion Wells for modelling. Lieutenant A. W. Grant declined pay for preparing specifications for an electric light plant, and a vote of thanks was tendered him. JUNE 16, Dr. H. Carrington Bolton, who had recently returned from a visit to the Hawaiian Islands, exhibited a quantity of sonorous sand, which he had collected there, and produced from it, in the presence of the Academy, the characteristic sound. Dr. Carl Lumholtz gave an account of his residence for two years among the cannibals of Australia. He said that the aborigines of that country were probably the lowest of the human species. In no respect in advance of the Stone Age, the cannibal instinct was strong within them. Having made himself acquainted with their language, he had lived among them subsisting upon such food as the natives used while moving about from place to place, as was their habit. The narrative was illustrated with numerous pictures.

JULY 7, F. Gutzkow spoke of a diatomaceous earth found in Sonoma County. He said that the mineral, which was found in various places in California, consisted chiefly of silica and water, and was of considerable economic importance. It had been used for building purposes and to some extent as an absorbent for nitroglycerine in the manufacture of powder; but for the latter purpose the California product had unfortunately been found not well fitted. The presence in it of a small quantity of iron prevented its being used for making white glass; but he stated that he had devised a cheap and effective method of eliminating the iron, his method depending upon the volatility of ferric chloride. C. H. Eigenmann exhibited specimens of salmon, salmon-trout, and trout. He said that the individuals of species differ so much, according to the condition, the season, the bottom over which they live, and the sex, that it is sometimes almost impossible for any one, not an ichthyologist, to distinguish between species. This had caused much trouble between the Fish Commissioners and their deputies. Among the specimens exhibited were a large number of Lake Tahoe trout, Mr. Eigenmann having just returned from Tahoe and Donner Lakes and brought with him all the varieties of that species, which were to be procured at that time. He said that much diversity of opinion existed among the Tahoe fishermen as to the number of species of trout found in that region, all seeming to think that there were at least two and many placing the number as high as six, — namely: the big black trout, the red trout, the proggy or pogy, the silver trout, the yellow-belly, and the brook trout. With the possible exception of the first named, which he did not see, he said that all the varieties had been conclusively shown to represent a single species, *Salmo purpuratus henshawi*. In the Board of Trustees, the secretary was directed to draw the \$20,000 balance due on the \$50,000 demand note given the Academy by the Pacific Improvement Company. It was decided to be inexpedient at that time to send a collecting expedition to Alaska as had been under contemplation. A contract made with the United Edison Manufacturing Company for furnishing the Academy build-

ing with electrical apparatus for \$4,500 was approved. JULY 21, G. P. Rixford presented specimens of marble from Inyo County and carbonate of soda from Soda Works at Owen's Lake; and he described the process of the manufacture of the soda.

I. E. Thayer announced the donation of five cases of coral, including 37 species, from the Navigator Islands, by Mr. Thomas C. Johnston. Dr. Bolton called attention to the coming meeting in Indianapolis of the American Association for the Advancement of Science, and explained the aims and objects of the association. In the Board of Trustees, the resolution of May 5 in reference to renting rooms in the Academy building to certain learned societies was amended by rescinding the clause fixing the rates of rent for such societies "at one half of the commercial schedule price that might be established for the rooms of said building."

AUGUST 4, Robert Stevenson, Charles A. Keeler and W. W. Price were elected resident members. Dr. Gustav Eisen gave a description, alarming to lovers of our forests, of the waste and destruction by lumbermen of many of the grandest of the Big Trees, *Sequoia gigantea*, in various localities in the Sierra Nevada, and insisted upon the importance and necessity of immediate action in efforts to protect and preserve them. He recommended a petition of the Academy to the government at Washington. On motion a committee, consisting of William S. Chapman, John R. Scupham and Gustav Eisen, was appointed to formulate the proper action. In the Board of Trustees, the secretary was instructed to draw \$20,000 on the \$100,000 note given by the Pacific Improvement Company to the Academy. The sum of \$1,000 was appropriated for binding about 1000 volumes of foreign journals and \$50 for dust-proof cases for entomological specimens. Rents of rooms on the seventh floor of the Front Building of the Academy were fixed, ranging from \$55 to \$15 per month and amounting in all to \$174, leaving one room unassigned. AUGUST 18, Mrs. Rosa S. Eigenmann read a paper entitled "The Establishment of a Marine Laboratory in California." A paper by Dr. Edward Palmer was read, entitled "Customs of the Coyotero Apaches." Dr. Gustav Eisen read, as a preliminary report of the committee on the preservation of the Big Trees, a memorial to Congress, asking for government action on the subject. In the Board of Trustees, at an adjourned meeting on AUGUST 19, the sum of \$200 was appropriated for a trip of two months by Walter E. Bryant to Lower California for the purpose of collection birds and small mammals for the Academy.

SEPTEMBER 1, Dr. Behr made remarks on the caprification of the fig and read a letter from George Roeding of Fresno, in which that gentleman gave an account of the artificial fertilization of the Smyrna fig on his ranch in Fresno County and the consequent production of perfect seeds and great improvement of the fruit. The pollen of the Capri fig was transferred to the cavity of the Smyrna fig by means of a toothpick. A paper by Frank J. Walker "On the Location and Area of the *Sequoia* Forests" was read; and it was ordered that copies of it and accompanying maps should be transmitted to the U. S. Secretary of the Interior and members of Congress. At the same time the report of the committee on the subject of preserving the Big Trees, consisting principally of the memorial previously prepared, was read and approved,



Charles A. Keeler
Bancroft Library, University of California, Berkeley



William Wightman Price (1896)
George Sprague Myers Portrait File
Department of Herpetology, California Academy of Sciences

and copies ordered to be transmitted with Mr. Walker's paper and maps. S. W. Holladay read a memorial notice of Adley E. Cummins, deceased. Mr. Holladay also read a proposed amendment to the constitution, providing for a class of associate members and restricting the admission of voting members to scientists. The amendment was approved by the Academy and referred to the Council. The librarian reported that among the donations to the library was a complete set of the *Zoological Record*, presented by Mr. Prosper Huerne. The president announced the death of Academy member James Whartenby. In the Board of Trustees, the secretary was instructed to draw \$15,000 on the \$100,000 note held by the Academy against the Pacific Improvement Company. It was ordered that \$1,050 should be expended for elevator apparatus; also that an artesian well be bored for water, and that arrangements should be made for necessary power and gas. SEPTEMBER 15, among the donations was a specimen of wood compressed into the Consolidated Virginia Mine in Nevada, presented by A. K. P. Harmon. A paper by Mr. Theodore H. Hittell on "Indian Pictographs at Soda Springs, Placer County" was read, and photographs exhibited of some of the most striking inscriptions. A discussion ensued on the subject of Indian pictographs, participated in by Messrs. Eisen, Rixford and Troyer. On motion a committee was appointed, consisting of Messrs. Eisen, Rixford, and Hittell, to take steps to interest the public in the preservation of these relics of the past. C. A. Keeler read notes and exhibited a map, showing the limited area as yet occupied on this coast by the English sparrow; and urged its extermination before it should be too late. He thought the best mode of procedure would be to appoint a few men to destroy them in every possible way. The bounty method, he said, had been found expensive and useless. A discussion on the subject ensued in which Drs. Eisen and Hewston participated; and the English Sparrow seemed to have no friend. In the Board of Trustees, \$1,214 were appropriated for bookcases and cases for botanical specimens. It was ordered that wooden floors, instead of concrete, should be provided for the two upper galleries of the new Academy building.

OCTOBER 6, the proposed amendment to the constitution in reference to associate membership, having been reported back from the Council, came up for action. E. J. Molera moved its indefinite postponement, which motion was lost; and the amendment was then passed for submission to vote at the next annual election. In the Board of Trustees, the secretary was instructed to draw \$20,000 on the \$100,000 note to the Academy of the Pacific Improvement Company. The use of the western storeroom of the Academy building was granted to the State Floral Society for three days, commencing November 5, free of rent. OCTOBER 20, C. A. Keeler read a paper "On the Geographical Distribution of Land Birds in California." The president announced the death of Richard S. Floyd, president of the Lick Trustees, and a life member of the Academy; and, on motion, James T. Boyd, Thomas P. Madden and R. C. Harrison were appointed a committee to present appropriate resolution of respect to his memory. The president also announced that this was expected to be the last meeting in the old First Congregational Church building, and that there would be no meeting on the first Monday in November on account of moving to the new building on Market

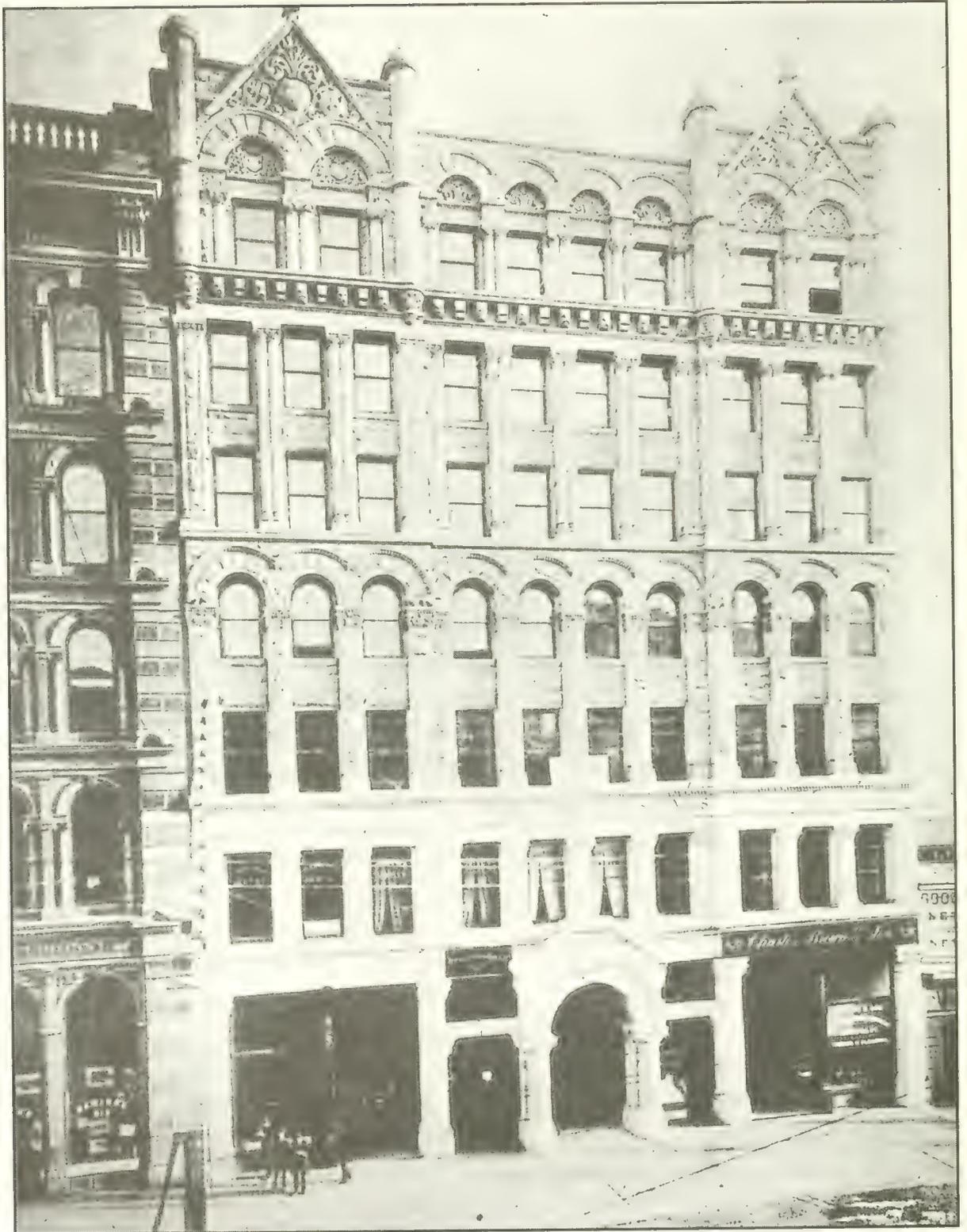
Street. In the Board of Trustees, it appeared that the Front Building of the Academy on Market Street had been insured against fire for one year on a valuation of \$75,000 for a premium of \$500. The Council reported that the curatorship of fishes had been declared vacant from and after November 1. S. W. Holladay reported that the Supreme Court of the State had decided in the case of Floyd N. Rankin, that the sum of \$540,000 donated by James Lick for a School of Mechanic Arts, was not due to that institution until required to purchase a site and erect buildings; and that consequently no interest had accumulated or was accumulating on that sum; so that any interest received by the Lick estate on such as-yet-unused money would go into the residue of the Lick estate to be divided between the Academy and the Pioneer Society as residuary beneficiaries. It was resolved that Mr. Holladay should be paid \$1,000 on account of legal services, on the understanding, however, that he would not accept a fee awarded to him in connection with other attorneys in the case by the court.

On NOVEMBER 3, the Board instructed the secretary to draw \$25,000 on the \$100,000 note, held by the Academy against the Pacific Improvement Company; and it seems that under this and previous orders and drafts, the Pacific Improvement Company paid back to the Academy all the money, amounting to \$150,000, which had been loaned to it, with the interest stipulated in its notes. NOVEMBER 17, on account of delays in getting the new building ready, the Academy met again in the old building. George M. Sternberg was elected a resident member. The committee on the death of Richard S. Floyd presented resolutions of respect to his memory. They spoke of his valuable services to science; his devoted, intelligent, untiring and successful efforts, as president of the Lick Trustees, to carry out the philanthropic wishes of Mr. Lick in the construction of the great telescope and the erection of the Lick Observatory on Mount Hamilton, and also his faithful and intelligent administration of the Lick estate to which the Academy was so largely indebted for its excellent financial condition. The resolutions were adopted and ordered spread upon the minutes. W. B. Bryant described his recent trip in Lower California. In the Board of Trustees, it appeared that a boiler for elevator purposes had been placed in the basement of the new Academy building at a cost of \$717, and the architect reported that the elevator would be ready to run by the middle of December. A brick store-room for the keeping of alcohol was also ordered constructed in the basement. S. W. Holladay was instructed to make arrangements to procure a further loan of \$50,000 from the Lick Trustees on the mortgage already given, which provided for a loan of \$350,000, of which only \$300,000 had so far been borrowed.

DECEMBER 1, Lieutenant John P. Finley of the U. S. Weather Bureau read a paper, also reported on in the local press, on "Cyclonic Development and Precipitation upon the Pacific Coast." He said that California storms came from the Aleutian islands or the regions adjacent to Japan, the great breeding ground of North American tempests. In the Board of Trustees, bills to the amount of \$21,153.56, including a tax bill for the year of \$3,666.56, were audited and ordered paid. A further allowance of \$600 was made for publications. It was ordered that the artesian well previously provided for should be bored in the triangular space at the rear of the Academy building. It was

further ordered, in accordance with arrangements made, that the further sum of \$50,000 should be borrowed of the Lick Trustees pursuant to the permission previously granted by the Court to borrow to the extent of \$350,000. DECEMBER 15, the president announced the death of Dr. Henry Ferrer, a resident member, and Drs. C. M. Richter and E. S. Clark were appointed a committee to draft suitable resolutions. The death of Dr. J. B. Trembly, a resident member, was also announced, and J. R. Scupham and Arthur Brown were appointed a committee on memorial resolutions. The nominating committee, appointed as provided by the constitution, presented a ticket for officers of 1891. W. E. Bryant made remarks upon a kind of fire-sticks used by the Indians of the Cape region of Lower California. He also spoke of the peculiar tendency of the small skunk of that region, called there the "zorrillo,"^{26.1} to be affected with rabies and in that condition to attack man. Forest fires, and cases of their originating spontaneously, were discussed at some length. The president announced that the annual election and annual meeting for 1891 would be held on January 5 in the new building on Market Street, which, though not entirely finished, would then be occupied by the Academy. In the Board of Trustees, monthly salaries, amounting to \$460, with various sundries, were ordered paid. As it appeared that the Academy building was nearly completed and the services of Superintendent Duncan were desired by the Mercantile Library Association on a new library building, an arrangement was authorized for a division of his time and services between the Academy and the new building. It was resolved that Charles D. Gibbes should be paid \$25 per month from the Crocker Scientific Investigation Fund from January 1, 1891, until further order.

^{26.1} Little fox.



The California Academy of Sciences (1891)
Market Street entrance to its "Front" or commercial building. The Museum, the "Rear Building,"
was located immediately behind the Front Building and connected to it via an enclosed bridge.
California Academy of Sciences Special Collections

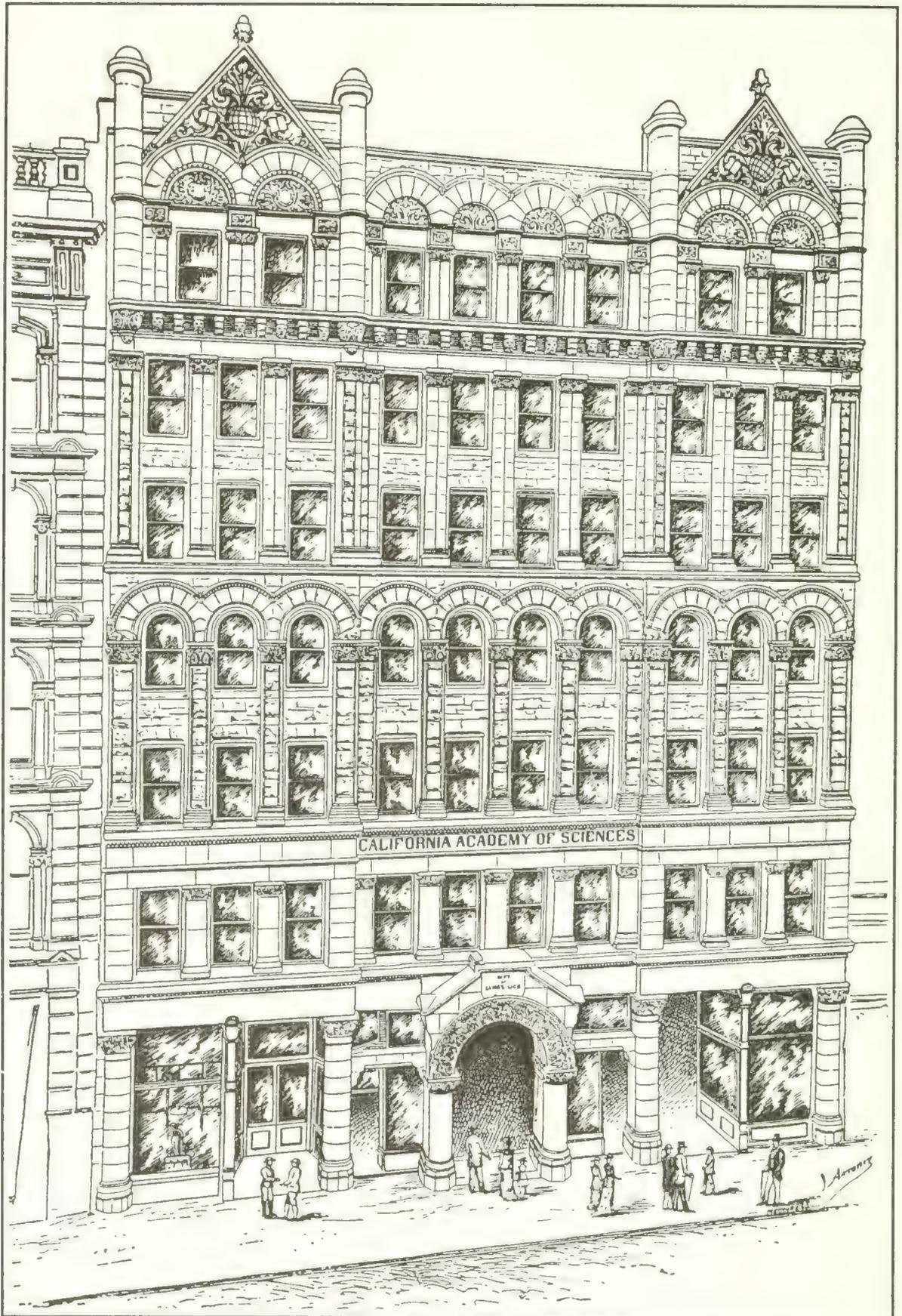
Chapter XXVII: Years 1891-1892

1891

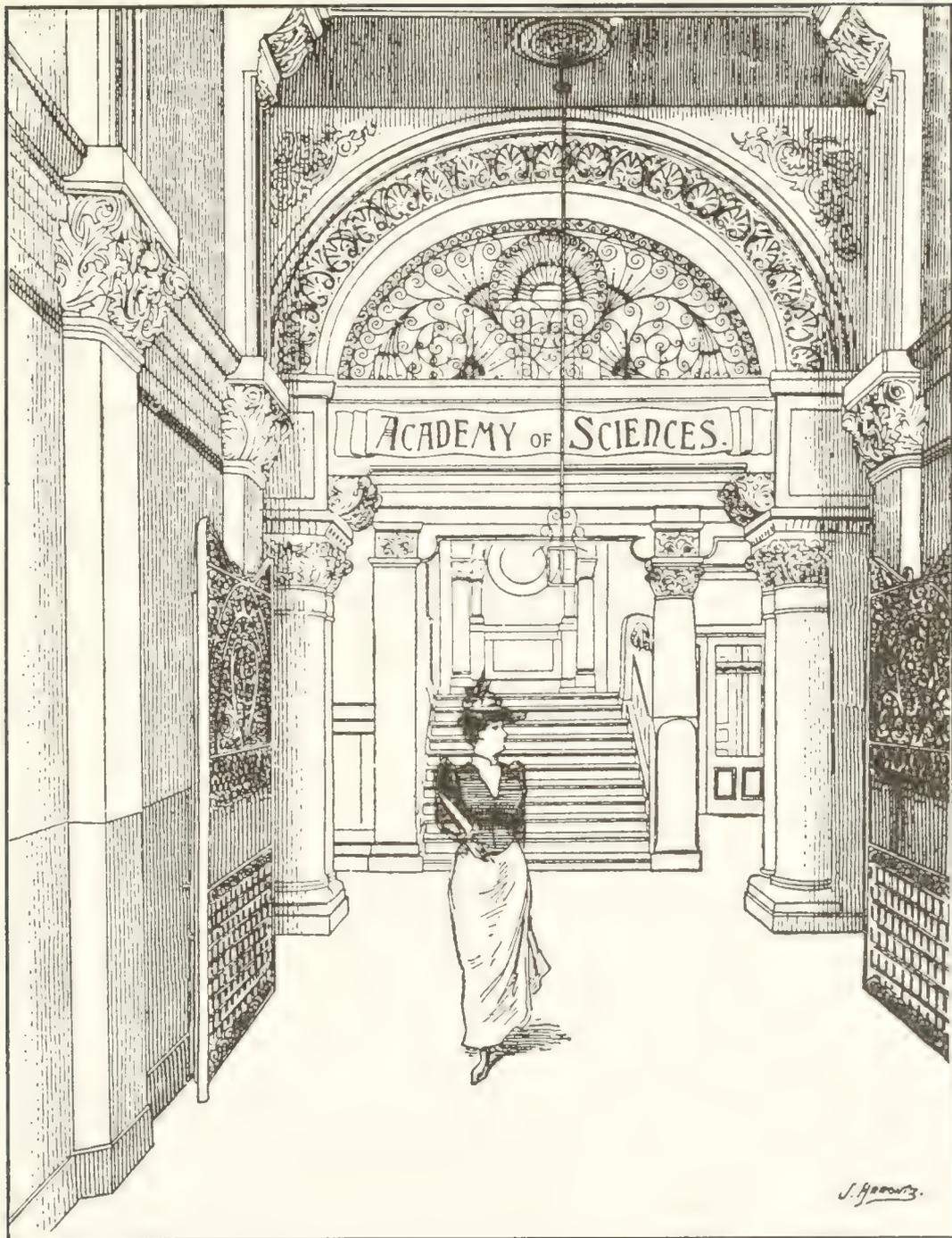
The annual meeting for 1891 took place in the new Academy building on Market Street on JANUARY 5. The usual reports were received and placed on file. the new officers declared elected for the year were: H. W. Harkness, president; H. H. Behr, first vice-president; George Hewston, second vice-president; Frederick Gutzkow, corresponding secretary; John R. Scupham, recording secretary; Lucius H. Foote, treasurer; Carlos Troyer, librarian; J. G. Cooper, director of the museum; Charles F. Crocker, W. C. Burnett, E. J. Molera, John Taylor, D. E. Hayes, George C. Perkins, and Irving M. Scott, trustees. The amendment to the constitution, submitted to vote at the annual election, was declared adopted. It provided that "associate" members might be elected, while enjoying all the other rights and privileges of the Academy, should not be entitled to vote, and that the qualifications for resident and life members should be professional engagement in scientific work or contribution by their labor to the advancement of some branch of science. In the Board of Trustees, bills amounting to \$19,939.95 were ordered paid, except one of \$140.40 presented by the San Francisco Gas Company. It appeared that \$50,000 had been borrowed from the Lick Trustees as ordered; but that a special new mortgage had to be given therefor. It was reported that an artesian well had been completed as directed and that it ran down to a depth of 192 1/2 feet.

From the annual report of the Trustees it appeared^{27.1} that the new building was ready for occupation, but not yet entirely finished. It was described as divided into two parts, separated by an open space 27 feet wide, the two buildings being connected by a covered passage-way on the first and second floors and an iron bridge on the sixth. The front or commercial building was arranged into two large stores and two smaller ones on the first floor on Market Street, the upper floors into sixty office rooms, all intended for rental. The construction was substantial and, though not absolutely fire-proof, was rendered so fire-resisting as possible by the use of metal lathing on all wood partitions or in walls around the stairways and elevator and an inch of mortar between double floors on each story. It was supposed, with its most approved plumbing appliances, independent gas fittings, electric wires for incandescent lighting, and all other conveniences found in modern office-building, to be of

^{27.1} A curious use of the past tense by Hittell inasmuch as he was on the scene at this time and had first-hand knowledge of the status of the construction work.



The California Academy of Sciences, San Francisco, 1891
Artist's sketch of the Market Street Entrance
California Academy of Sciences Special Collections

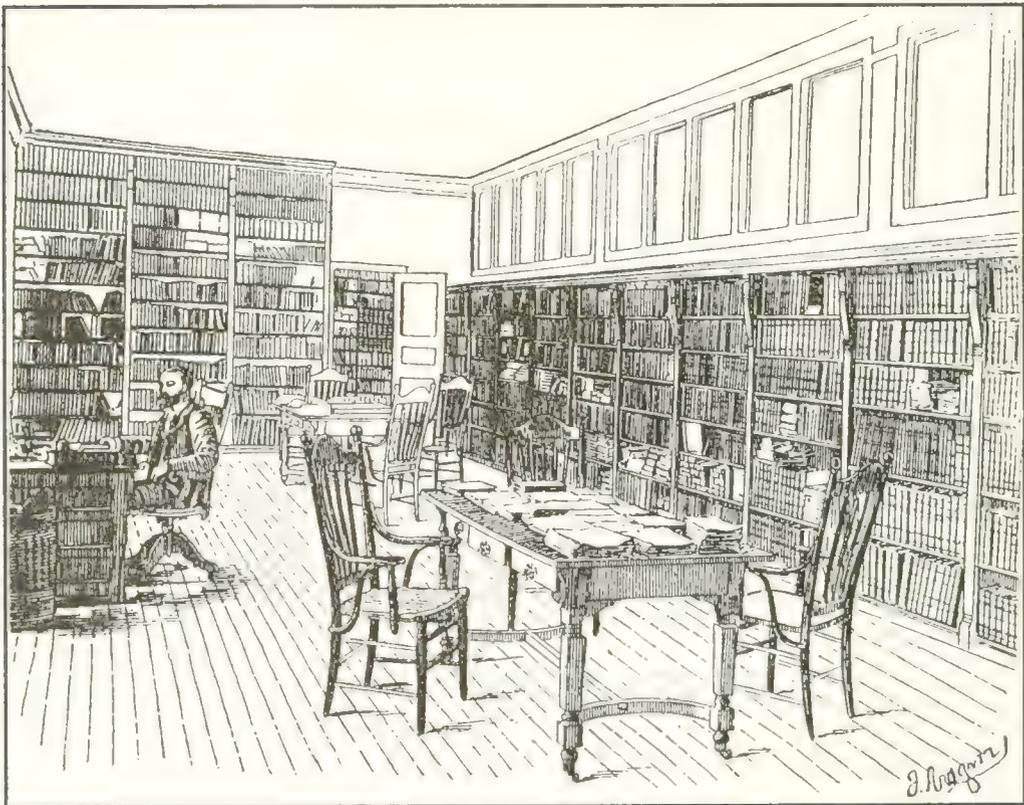


Marble staircase and foyer entrance to the California Academy of Sciences
California Academy of Sciences Special Collections

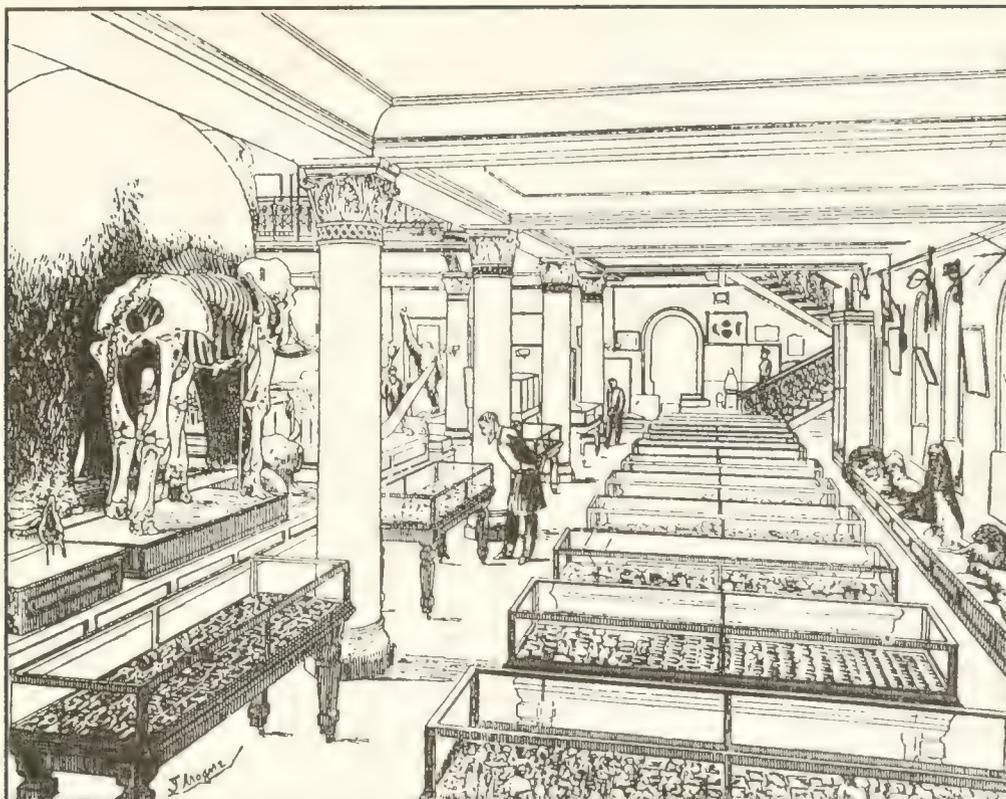
first-class construction. The rear building was devoted entirely to the uses of the Academy and it was considered fire-proof. It was six stories high, one less than the front building; and the entrance to it from Market Street was by a wide hall in the center of the front or ground floor of the front building. Its walls were of unusual thickness and had hollow vertical spans to prevent dampness. The floors and roof were constructed entirely of concrete and twisted iron rods running through them. All structural iron work was protected from heat by a covering of at least two inches of plaster or concrete. The building was completely lighted by windows on four sides



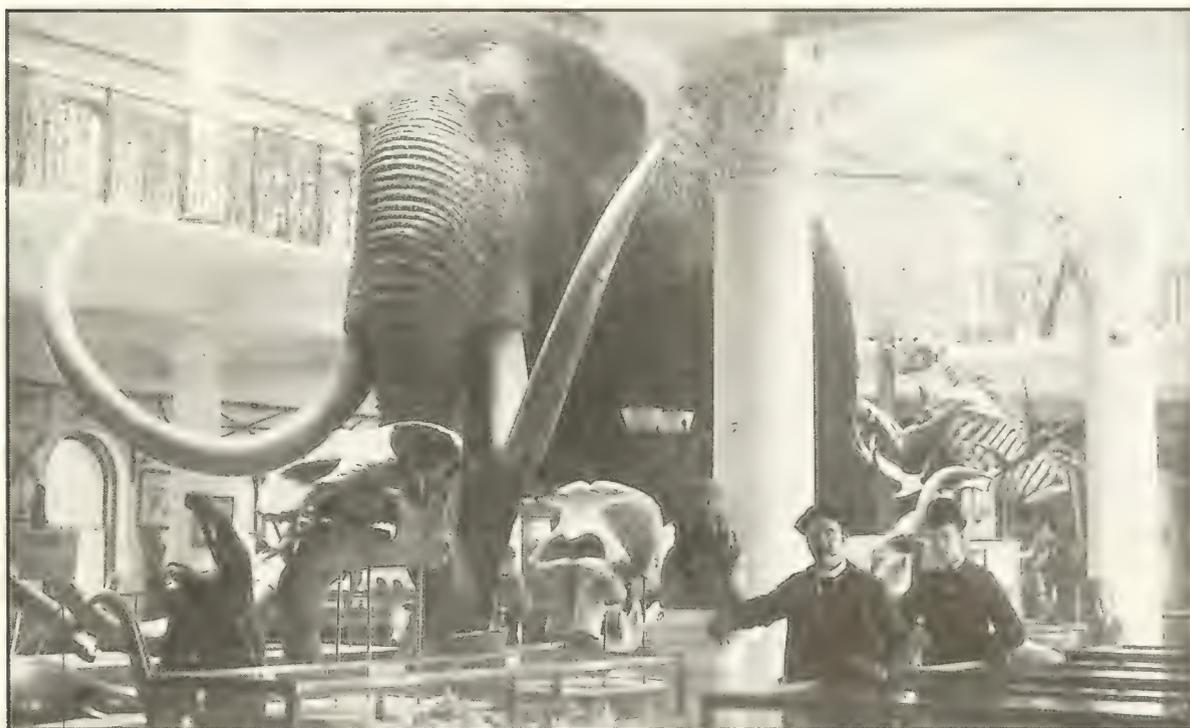
Upper floor devoted to Library, curator's rooms, etc., showing Court
 (see page 474 for post-earthquake photograph of this area)
 California Academy of Sciences Special Collections



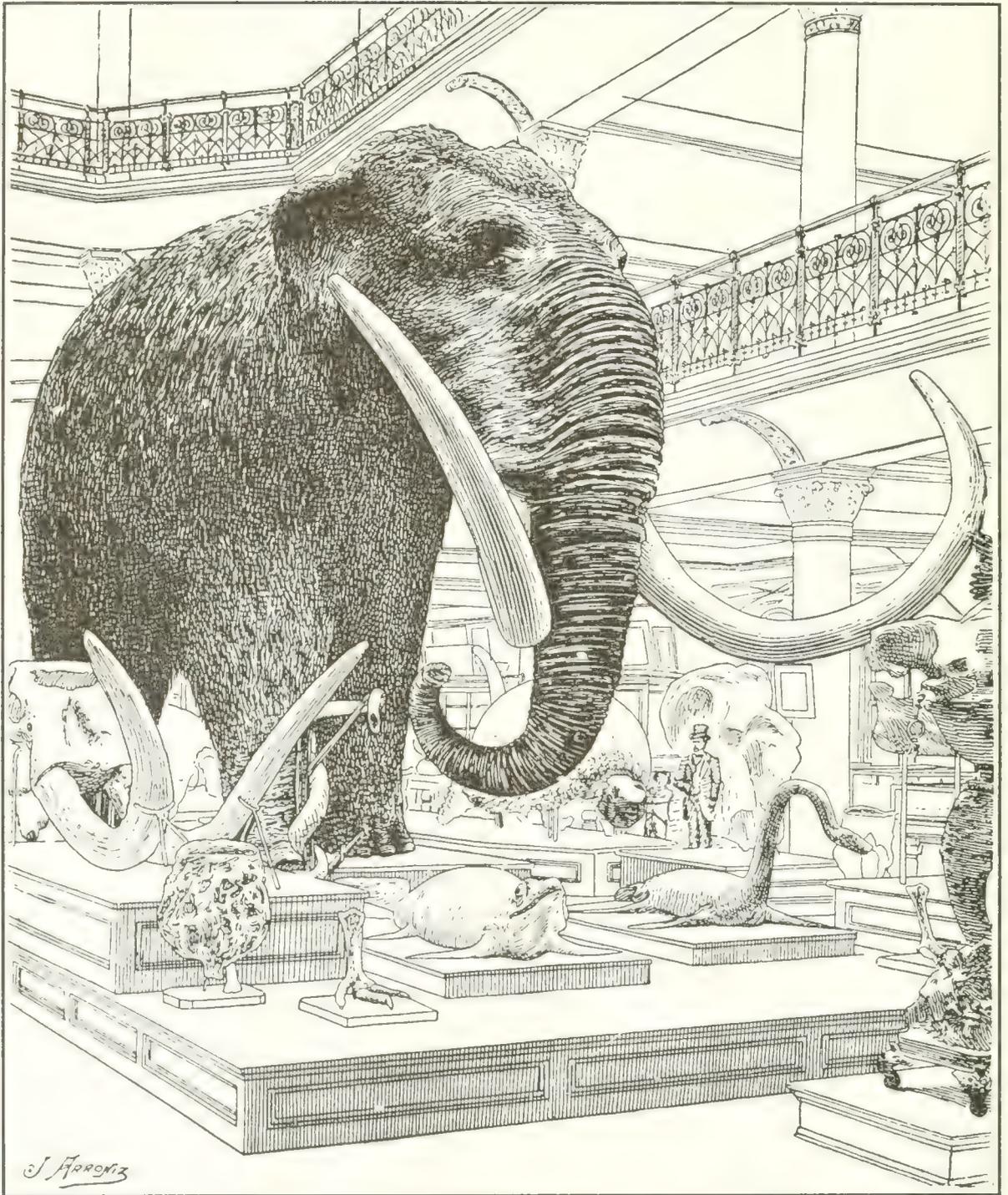
Academy Library
 California Academy of Sciences Special Collections



Lower floor, south side, showing mineral cases
California Academy of Sciences Special Collections



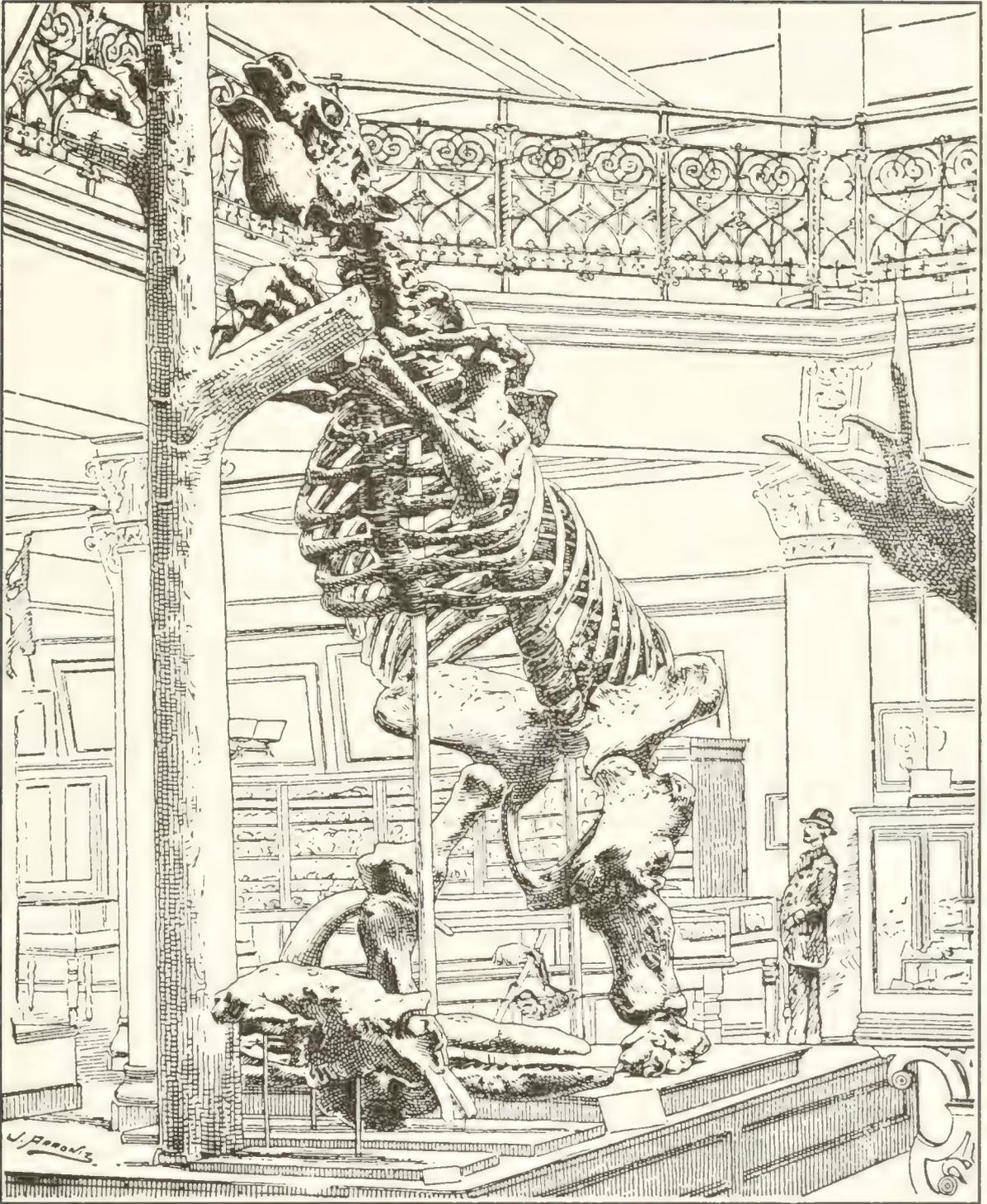
Main exhibit floor (circa 1902), mammoth restoration. Academy employees John Carlson and Edward W. Gifford are the figures in the lower right (Carlson to the left of Gifford)
California Academy of Sciences Special Collections



Public exhibits, mammoth restoration (based on an artist's sketch)
California Academy of Sciences Special Collections

and a very large sky-light and light-well in the center. The basement was intended for heating and ventilating apparatus and storage rooms. The first story contained the lecture-hall, committee rooms and laboratory; the second, third and fourth stories were to be devoted to museum purposes and the exhibition of the Academy's collections of specimens, while the fifth and sixth stories were partitioned off into rooms for scientific work and Library.

The disbursements on account of construction for the building during 1890 had



Public exhibits, *Megatherium* (based on an artist's sketch)
California Academy of Sciences Special Collections

been \$164,291.98 or total to date of \$268,862.29. The moving of the museum and collections had required time and care, but had been successfully accomplished; and the payment of rent by the Academy had ceased. As to future income, it was expected that the front or commercial building would yield a sufficient revenue not only to meet current expenses but also to allow and justify original research and experimental work. The stores and many of the offices and rooms had already been rented at

favorable rates. Upon one of the floors rooms had been offered to scientific societies at moderate rent in accordance with the purposes of Mr. Lick, and some had been taken; and in all respects the affairs of the Academy had been called in and duly received, together with \$5,585.54 interest. It had been deemed proper to insure the front or commercial building against fire; but the rear building would not be insured as it was deemed fire-proof.

JANUARY 19, there was no meeting of the Academy, but the new Board of Trustees met and organized with the election of Charles F. Crocker as president; E. J. Molera, president *pro tem*, and Charles Stephens, secretary. It appeared that there was then an approximate balance of \$30,943.25 cash in the Bank of California to the credit and subject to the draft of the Academy.

FEBRUARY 2, the minutes of the annual meeting were read and some objection was made by W. S. Keyes that they did not state with sufficient distinctness the amendment made to the constitution; but others thought them sufficient and they were approved as read. Dr. C. M. Richter, of the committee on the death of Dr. Henry Ferrer, presented resolutions of respect to his memory, which were adopted. It was noted that he enjoyed a world-wide reputation in his specialty, being a most skillful master in microscopy, as well as a warm promoter of science generally. Charles A. Keeler moved a committee to memorialize the State Legislature to take measures to prevent the spread of the English sparrow; and Messrs. Keeler, Bryant and Scupham were appointed for that purpose. The president announced that, on account of the still unfinished condition of the new lecture hall, there would be no meeting until the first Monday in March. In the Board of Trustees, bills were ordered paid to the amount of \$18,306.75. It was ordered that another loan of from \$50,000 to \$100,000, sufficient to complete and furnish the new building should be negotiated with the Lick Trustees. It was further ordered that 260 opera chairs should be placed in the lecture hall at a cost of \$960, and a letter chute from the upper to the lower floor be placed in the front building. FEBRUARY 16, in the Board of Trustees, W. C. Burnett reported that a new loan for \$100,000 had been negotiated with the Lick Trustees. G. R. Waters was employed as elevator man. W. E. Bryant was allowed \$31.58, extra to the appropriation previously made him for expenses of his trip to Lower California.

MARCH 2, F. C. von Petersdorff was elected a resident member. The secretary read an account of the discovery of precious opals near Moscow in the State of Washington,²⁷⁻² and exhibited specimens presented by Melville Attwood. T. H. Hittell, for and at the request of Dr. Harkness, read a paper, dated the same day, whereby Dr. Harkness formally donated to the Academy his large collection of Fungi, which he had been fifteen years in collecting. It consisted of over 10,000 specimens, identified, numbered, catalogued, and arranged in convenient receptacles. On motion, the donation was accepted and a vote of thanks tendered the donor. The Academy then adjourned to April 6. In the Board of Trustees, bills amounting to \$17,100 were ordered paid. The Council asked that the salaries of Mrs. M. K. Brandegee, W. E. Bryant and F. H. Vaslit be increased to \$80 per month each, to commence March 1,

²⁷⁻² Moscow is in the State of Idaho but it is so close to the Idaho-Washington state line that the specimens could easily have come from the "State of Washington" and still be "from near Moscow."

1891; and it was so ordered. At an adjourned meeting on MARCH 5, Davidson & Leigh, who, after the death of O. Livermore, had been appointed rent-collectors, reported that they had received \$2,379.27 in rents since Livermore's death and that the estate of Livermore was indebted to the Academy in the amount of \$1000.45 for money collected. Trustee Molera reported that a room in the Academy front building had been rented to the Astronomical Society for \$20; one to the Technical Society for \$40, and four to the Camera Club for \$55 per month. W. C. Burnett was instructed to make a claim against the estate of O. Livermore, deceased, for the rents collected by him for the Academy and not paid over. Charles Stephens, secretary of the Board, was appointed agent to look after and manage the Academy buildings and collect the rents; and his salary was advanced to \$80 per month. It was ordered that all leases should be submitted to W. C. Burnett for approval. A formal authorization was made for borrowing, and executing a new note and mortgage to the Lick Trustees for, the \$100,000 last negotiated and arranged for.

APRIL 6, there being no quorum the Academy adjourned. In the Board of Trustees, bills aggregating \$22,686.28 were ordered paid. The elevator-man's salary was fixed at \$50 per month. Arbitrators were appointed to adjust claims for extra work made by W. M. Fletcher, who had been the carpenter of the new buildings. C. F. Crocker was authorized to investigate a claim that the Academy had made a duplicate payment of taxes in 1890 and, if necessary, to employ an attorney to recover the amount improperly paid. APRIL 20, in the Board of Trustees, the secretary reported that he had received \$50,000 on the new loan from the Lick Trustees and deposited it in the Bank of California to the credit of the Academy. C. F. Crocker reported that the taxes overpaid by mistake in 1890 would be paid back. MAY 4, G. P. Rixford read a paper on "Indian Carvings at Swansea, Inyo County" and presented a series of photographs of the carvings. E. J. Molera announced the death of General Carlos Ibañez, Count of Mulhacen, president of the International Geodetic and Statistical Societies and president of the International Board of Weights and Measures, and read a notice of his life and labors. Dr. Carl Lumholtz read a paper on "Recent Explorations in Mexico," giving his experiences and discoveries in the unexplored Sierra Madre country. The president announced the death of Professor John LeConte, a life member, and, on motion, Theodore H. Hittell and Gen. J. F. Houghton were appointed a committee to present a proper memorial. The Academy then adjourned to June 1.

In the Board of Trustees, the secretary reported that he had received \$3,325.75 of refunded taxes. It appeared that these taxes, which were mortgage taxes, had been paid with other taxes by a check from the Academy including them while the Lick Trustees, as mortgagees, had also paid them and were the proper persons under the law to pay them. The amount so refunded and paid back was \$3,625.75, of which \$300 were paid to the attorney employed to collect the money. Dr. H. H. Behr made a written proposition that if he were employed as permanent curator of entomology at a salary of \$80 per month, he would agree to donate his entomological and natural history collection, resign his medical practice and devote his remaining years to his duties as curator of entomology. The acceptance of the proposition was recommended

by the Council; and on motion of Molera, seconded by Perkins, it was accepted, and Dr. Behr appointed curator of entomology at a salary of \$80 per month. MAY 7, at a meeting of the Board of Trustees, the former agreement to arbitrate claims of W. M. Fletcher for extra carpenter work on the Academy buildings was revoked, for the reason that a new arbitration agreement had been entered into and regularly filed in court.

JUNE 1, among the donations were 279 books and pamphlets on geology, zoology, anatomy, and botany, presented by Dr. Gustav Eisen, for which a vote of thanks was tendered him. Lieutenant John P. Finley read a paper on "The Hot Winds of California," illustrated by numerous maps and charts. A paper on "Opals" by Melville Attwood was read; and a number of specimens of opals in the matrix from Mexico, Australia, and Hungary, presented by him to the Academy, were exhibited. Theodore H. Hittell, of the committee on the death of Professor John LeConte, read a memorial of the deceased, speaking of him as one loved for the kindness and geniality of his disposition, revered for the elevation and purity of his character, and eminent for the breadth and depth of his scientific and scholarly attainments. It gave a sketch of his life from his birth in Liberty County, Georgia, on December 4, 1818, to his death at Berkeley, California, on April 29, 1891; of his professorship; of his presidency of the University of California, and of the scientific labor he had done and works he had written. It finally compared him to the ideal scholar, depicted by the German philosopher Fichte, whose work endures and advances the human race in the path of

^{27.3} The following is a transcript of T. H. Hittell's memorial for Professor John LeConte as recorded in the *Minute Books*, Stated Meetings, Jan. 1891-Nov. 1904, pp. 10-12:

"A great and honored member of this Academy has passed away from amongst us — a man loved by all who knew him for the kindness and geniality of his disposition, revered for the elevation and purity of his character and eminent for the breadth and depth of his scientific and scholarly attainments. Professor John LeConte, of the University of California, closed his long and honorable career at Berkeley on April 29, 1891. He was born in Liberty County, Georgia, on December 4, 1818, and was consequently seventy-two years and a few months old at the time of his death. He received a preparatory training under the tuition of the celebrated Alexander H. Stephens, and in 1835 entered Franklyn College, afterwards known as the University of Georgia, where he graduated with high honors in 1838.

"From an early age he manifested a remarkable taste for scientific subjects and in college exhibited a decided preference of those branches of study which were connected with nature and physics. Almost immediately after graduation he proceeded northward, entered the College of Physicians and Surgeons of the University of New York, and received from that institution the degree of M.D. in March, 1841. He then returned to his native state and married a lady of beauty and refinement who survives him as his widow. He commenced the practice of medicine at Savannah, where he remained until August, 1846, when he was elected to the chair of natural philosophy and chemistry in Franklyn College, his alma mater. From that time he abandoned the practice of medicine and devoted himself to the study of the physical sciences. In 1855 he became lecturer on chemistry in the College of Physicians and Surgeons in the University of New York — thus reaching a chair in his second alma mater as he had previously reached a chair in his first.

"In 1856 he accepted a call to fill the professorship of natural and mechanical philosophy in the University of South Carolina and remained there until the spring of 1869, when he was called to the chair of physics in our own University of California. He was almost immediately upon his arrival in this State appointed acting President of the University, and as such initiated the first exercises of that institution. In 1870 after the election of Dr. Durant as President, and for several years thereafter, Dr. LeConte gave himself up exclusively to the duties connected with his professorship; but in 1875, after the resignation of Dr. Gilman, he was again appointed to act as President, and in 1876 was elected to the office of President. He continued to fill the office of President for a year and a half, since which time, and to the time of his death, he occupied the chair of physics.

"Professor LeConte became a member of this Academy on August 3, 1870, and a life member on January 3, 1888. He was also a member of the National Academy of Sciences and of many other scientific societies in this country and in Europe. He wrote many valuable and important papers on scientific subjects connected with the phenomena of the vibrations of sound, on the astronomy of Mars and its satellites, on the famous nebular hypothesis, on the evolution of worlds, and on various other matters whereby glimpses are gained into that world of truth called nature, the knowledge of which is destined to emancipate humanity from the shackles of ignorance and superstition, and all the innumerable ills connected with and involved in those immeasurable evils. (*footnote continued next page*)

civilization and culture.^{27.3} In the Board of Trustees, bills amounting to \$2,623.48 were ordered paid.

JULY 6, the president announced the death of Charles Stephens, secretary of the Board of Trustees, Henry Edwards, and E. J. de Santa Marina. Dr. David Wooster read a paper on "Stone Heaps in Arizona" and Dr. Behr a paper on "A New Remedy for Snake Bite." In the Board of Trustees, \$8,176.40 were ordered paid, including about \$7,000 on building account. JULY 20, at a meeting of the Trustees, Gen. Lucius H. Foote acted as secretary of the Board. AUGUST 3, a paper by Melville Attwood on "Coal and Coke from the Tacoma Colliery, Wilkeson Coal Field, in the State of Washington" was read and specimens presented. Dr. Gustav Eisen read a paper on the "Introduction of *Blastophaga psenes* into California," in which he gave a description of the natural caprification of the fig. In the Board of Trustees, bills to the amount of \$5,040.50 were ordered paid. On motion of Perkins, Gen. Lucius H. Foote was elected secretary in place of Charles Stephens, deceased, his term to be considered as commencing on July 13, 1891. AUGUST 17, at a meeting of the Trustees, it was resolved that \$20 per night should be the rent of the lecture hall.

SEPTEMBER 7, the president announced the death of Dr. George Hewston, second vice-president of the Academy; and Messrs. Hittell, Behr and Scupham were appointed a committee to draft an appropriate memorial. Messrs. Bryant, Vaslit and Harkness were appointed a like committee in reference to the death of Henry Edwards. In the Board of Trustees, bills amounting to \$916.35 were ordered paid. The salary of secretary Foote was fixed at \$80 per month, the same as had been paid Mr. Stephens.

OCTOBER 5, David Starr Jordan, Charles H. Gilbert, Douglas H. Campbell, Edward Ehrhorn, and Joseph Swain were elected resident members. Theodore H. Hittell, of the committee on the death of Dr. George Hewston, read a memorial of the deceased,^{27.4} giving an account of his career from his birth in Philadelphia on

^{27.3} (continued) "About the end of the last century the great German philosopher Fichte wrote a treatise on the subject of The Scholar, in which he represented the vocation of the genuine student of truth as the grandest and sublimest occupation of the human mind. In perusing his book, the reader by degrees becomes almost as enthusiastic as the writer was, and feels in every part of his sensitive system the verity of what the philosopher set forth. The glories of conquest and empire, the pride of kings, presidents and politicians, the glamor of family and wealth all pass away. They are vanities. They are nothing. But what the scholar accomplishes endures and advances the race in the path of civilization and culture. In these days quite as certainly as a hundred years ago there is no greater man than the scholar, and among scholars of California, no one, perhaps, made a nearer approach to the character contemplated by the philosopher than our late honored member, Professor John LeConte."

^{27.4} Memorial prepared by Theodore H. Hittell and Hans Hermann Behr for Dr. George Hewston and spread upon the minutes, October 5, 1891 (*Minute Books*, Stated Meetings, Jan. 1891-Nov. 1904, pp. 17-18.

"Mr. President:

"Your committee appointed at the last meeting to prepare a paper expressive of the sense of the Academy upon the death of Dr. George Hewston, late Life Member and Vice-President, beg leave to submit the following—

"*Death of Dr. George Hewston.* Dr. George Hewston, an honored member of this Academy, who for nearly thirty years was actively engaged in encouraging its objects and promoting its interests, has passed away. He was born in Philadelphia, Pennsylvania, on September 11, 1826, and it was there too that he was reared and received his early education. Naturally studious and interested in scientific objects, he turned his attention to medicine and, after a regular course of study, was graduated M.D. from the University of Pennsylvania. After practicing a few years in his native city, during a part of which time he was Professor of Anatomy in the Philadelphia College of Medicine, he in 1860 came to California, and, being pleased with the country and climate he in 1861 brought out his family and opening an office for the practice of his profession, took up his permanent residence in San Francisco. (footnote continued next page)

September 11, 1826, to his death in San Francisco on September 4, 1891, and of the various labors he had performed and honorable positions he had filled. He was characterized as a fluent speaker and a ready writer of elegant English, a man of pleasing and attractive presence, and earnest student and scholar, a good citizen, an honor to the medical profession, and a devoted friend to science. In the Board of Trustees, the secretary reported the balance of cash on hand at the end of September as \$24,126.57. On recommendation of the Council, it was resolved to purchase the scientific library and collection of Dr. George Hewston, deceased, for \$50. OCTOBER 19, among the donations were 26 volumes on various scientific subjects, presented by B. Frank Leeds of Santa Clara County, for which a vote of thanks was tendered him. Professor C. H. Gilbert read a paper on the "Deep-Sea Work of the U. S. Steamer Albatross." That vessel was engaged in 1888 in making scientific investigations along the coast of Lower California, and Professor Gilbert was one of the corps of investigators. After presenting a short summary of the results of the expedition, Prof. Gilbert spoke at length of the importance of such work, about improvements that have been made in appliances for research, and about his experiences as a diver off the Lower California coast. In the Board of Trustees, it was ordered that the lecture hall should be placed at the disposition of the University of California for lectures to be given by its professors under the auspices of the Academy. W. C. Burnett reported that in the arbitration case in reference to claims for extra carpenter work on the Academy buildings by W. M. Fletcher, the award had been adverse, and that an attempt had been made to vacate and set aside the submission, but had failed. The amount of the award against the Academy seems to have been about \$3,000.

NOVEMBER 2, a communication from Lieutenant John P. Finley was read, conveying the information of his relief from duty as officer in charge of the U. S. Pacific Coast Weather Service, and his departure from California. On motion, it was resolved that the Academy very deeply regretted the departure of Lieutenant Finley from his field of labor in California, of which he was so well fitted, and desired to express its appreciation of the valuable services to science performed by him while in charge of the California Division of the Weather Service. Thanks were also tendered for the many courtesies extended by him to the Academy. Professor O. P. Jenkins delivered a lecture on "Muscles and Nerves and the Modern Appliances Used in Their Investigation." The committee, appointed on the death of Henry Edwards, presented a memorial, from which it appeared that Mr. Edwards was born in Herfordshire,

²⁷⁴ (continued) "His main leaning, outside of his profession was towards zoology and particularly the study of zoophytes, but he also from time to time manifested a lively interest in politics and in 1873 was elected to the Board of Supervisors, and in 1875, upon the death of James Otis, Mayor of the City and County of San Francisco, was chosen to fill his unexpired term, which he did with credit to himself and satisfaction to the public. He also for a number of years occupied the position of Professor of the Theory and Practice of Medicine in the Toland Medical College and afterwards in the Medical Department of the University of California.

"He became a member of the Academy on March 17, 1862, and, on March 1, 1869, a life member and was at the time of his death on September 4, 1891, and had been for several years previously Vice President. He was a fluent speaker and a ready writer of elegant English. Besides numerous written lectures on scientific and literary subjects, he gave frequent oral addresses before this Academy on matters of general interest and was always listened to with attention, appreciation and applause. He was a man of pleasing and attractive presence, and the work he did and the impression he produced upon his contemporaries were those of an earnest student and scholar, a good citizen, an honor to his profession and a devoted friend to science. . . ."



Charles Henry Gilbert (1893)
George Sprague Myers Portrait Collection
Department of Herpetology, California Academy of Sciences



David Starr Jordan (1891)
George Sprague Myers Portrait Collection
Department of Herpetology, California Academy of Sciences

England, on August 27, 1830, and in early life had studied law, but afterwards took to the stage as a profession. He traveled extensively and wrote a book of sketches, which was published under the title of "Mingled Yarns." He was a good actor; but early developed a love for science, particularly entomology, and gathered and possessed one of the largest and finest collections of butterflies in the world. He was an active and valued member of the Academy; was first vice-president for three years previous to his departure for the East in 1877, and wrote many papers on the subject on "Pacific Coast Lepidoptera." In the Board of Trustees, the secretary reported the cash on hand at the end of October to be \$24,590.07. Bills amounting to \$4,593.32 were ordered paid.

DECEMBER 7, among the donations were specimens of slate from El Dorado County, and a paper by Melville Attwood was read, showing its chemical analysis. The specimens were from what was known as the "White Bar Slate Quarry" and were pronounced to be of first class quality. Dr. David Starr Jordan delivered a lecture on the "Salmon and Trout of the Pacific Coast." In the Board of Trustees, the secretary reported the cash on hand at the end of November to be \$18,135.55. Percy & Hamilton, the architects of the Academy buildings, presented a statement, showing that the payments for construction up to November 30, 1891, had amounted to \$344,315.59, and that there was still owing \$13,185, including \$4,000 on the award to W. M. Fletcher. Bills to the amount of \$1,680.78 were ordered paid. DECEMBER 21, the nominating committee presented a ticket for officers of 1892, renominating all of the current officers with the exception of Irving M. Scott, who declined, and Dr. George Hewston, deceased. In the Board of Trustees, bills to the amount of \$2,205.80 were ordered paid. They included a balance of \$1,437.50 to Percy & Hamilton in full for their services as architects.

1892

At the annual meeting of 1892, held JANUARY 4, on recommendation of the Council, Otto Stoll, Sereno Watson, William H. Brewer, George L. Goodale, J. A. Allen, and Dr. Herman Graf zu Solms-Laubach were elected honorary members. Professor William E. Ritter was elected a resident member. The following, on report of the judges and inspectors of the annual election, were declared chosen officers for the year: H. W. Harkness, president; H. H. Behr, first vice-president; J. G. Cooper, second vice-president; Frederick Gutzkow, corresponding secretary; J. R. Scupham, recording secretary; L. H. Foote, treasurer; Charles Troyer, librarian; J. Z. Davis, director of the museum; Charles F. Crocker, W. C. Burnett, D. E. Hayes, E. J. Molera, George C. Perkins, Adolph Sutro, and John Taylor, trustees. In the Board of Trustees, the secretary reported that there had been received during the year 1891, from the Lick Trustees, \$100,000, from dues of members paid, \$1,075.50; interest on the Crocker Scientific Investigation Fund, \$1,200; from rents, \$22,408.81, all which,



William Emerson Ritter
Bancroft Library, University of California, Berkeley



Adolph Heinrich Joseph Sutro, ca. 1880
National Portrait Gallery,
Smithsonian Institution (NPG.85.102)

with a balance on hand at the beginning of the year of \$2,113.72, amounted to \$126,796.03. He reported the cash then on hand as \$16,952.70.

JANUARY 18, the new Board of Trustees organized by the election of C. F. Crocker as president, E. J. Molera, president *pro tem*, and L. H. Foote, secretary. The Council reported that they had "acquired the services of Miss Alice Eastwood for the term of six months, at a salary of \$50 per month to mount the plants in the herbarium." Appropriations were made of \$200 for binding, \$500 for printing, \$800 for purchasing periodicals, and \$500 for purchasing books.

FEBRUARY 1, Charles A. Keeler read a paper on "Heredity in its Relation to the Inheritance of Acquired Characters." The president announced that the museum of the Academy would thereafter be open to the public on Sundays from 10 o'clock a.m. to 4 p.m. In the Board of Trustees, the secretary reported the cash at that time on hand to be \$17,808.95. On motion of Molera, it was ordered that the museum should be kept open to the public on Sundays, and that the janitor should be allowed \$1.50 extra compensation for his attendance each Sunday that it was so kept open. At the request of Dr. Harkness, the sum of \$300 was appropriated to purchase certain Japanese figures and bronzes. FEBRUARY 15, Dr. Gustav Eisen read a paper entitled "The Evolution of the Forms of Trees as Produced by Climate Influences." FEBRUARY 23, at a special meeting of the Board of Trustees, Dr. Harkness recommended an expedition to Lower California and Mexico for scientific work. He said that Townshend S. Brandegee would go at his own expense and without pay; Dr. Gustav Eisen would go without pay, if his expenses were paid; and W. E. Bryant likewise. On motion, the sum of \$1,000, asked for to pay expenses, was appropriated. The sum of \$30 was appropriated for photographs of the museum to be distributed among members of the Academy.

MARCH 7, among the donations was a collection of Greenland plants, presented by John H. Redfield, and a package of specimens of *Sphagna* of the northeastern United States, presented by Edwin Faxon, for which thanks were tendered the donors. C. A. Keeler read a paper, entitled "Is Natural Selection Creative?" Dr. Harkness exhibited specimens of the species of *Cynips*, then abundant in Golden Gate Park, and of the woody galls from which they were emerging; and he made remarks upon their life history. In the Board of Trustees, on motion of Taylor, seconded by Perkins, the salary of secretary Foote was fixed at \$125 per month, commencing January 1, 1892. APRIL 4, Dr. Harkness resumed from last meeting the subject of *Cynips* infesting the oaks of Golden Gate Park and suggested the probability that the one attacking the buds was an alternate generation of the one producing the woody galls. Frederick Gutzkow described a new process for refining silver bullion. Charles A. Keeler made remarks upon the question, "What Constitutes a Species?" The president announced the deaths of recently elected honorary member Sereno Watson and William A. Aldrich, resident member. In the Board of Trustees, J. G. Cooper was appointed curator of palaeontology for three months at a salary of \$80 per month. It was ordered that the judgment of W. M. Fletcher against the Academy should be paid

without further litigation, provided he would throw off the costs. The balance of cash on hand was reported to be \$16,929.28.

APRIL 18, Miss Alice Eastwood and William L. Watts were elected resident members. Dr. H. W. Harkness, T. S. Brandegee and Katharine Brandegee, proprietors of the scientific magazine *Zoe*, offered fifty copies of Volumes I and II, respectively, of that publication to be distributed among the principal scientific societies of the world with which the Academy was in correspondence "in grateful acknowledgment of favors granted to the California Zoological Club and the California Botanical Club." Eadweard Muybridge delivered a lecture on the "Science of Animal Locomotion," illustrated with stereoptican views of instantaneous photographs^{27.5} of animals in motion. MAY 2, Dr. Behr read a paper, entitled "Flight of Insects." Dr. Harkness exhibited gall wasps just hatched from leaf-bud galls of oak trees. As president, he announced the purchase of the skeleton of a whale, which he said would be mounted and placed in the gallery of the museum. In the Board of Trustees, a sum of \$1,000 was appropriated for the purchase of books, and \$200 for the purchase of the skeleton the whale referred to in the Academy meeting.

JUNE 6, among the donations was a specimen of Eastern oyster, spawned and grown in San Francisco Bay near San Loranzo, 9½ inches long and 3½ inches wide. It was said to be seven years old, and was presented by R. Reid. Also donated, a collection of 82 species of Tertiary fossils from Southern California by Dr. S. Bowers. The president announced the deaths of Jacques J. Rey, L. L. Robinson, and Samuel M. Wilson, life members, and Professor E. A. Regel, an honorary member. Dr. Gustav Eisen made a preliminary report upon the recent scientific expedition to Lower California and Mexico. In the Board of Trustees, the Society of California Pioneers was granted permission to attach a terra cotta flue to the rear wall of the Academy building, with a right reserved to revoke the permission at any time. Dr. Harkness reported that the second floor of the museum was completely furnished and open to

^{27.5} Eadweard Muybridge, born 1830. His name first appears in American photographic journals in 1868 in commentaries on his photographic views of Yosemite, made in 1867. His views were exhibited in Europe and brought him international fame. In 1879, at the request of Leland Stanford, Muybridge took a sequence of near-instantaneous photographs of a race horse running that showed clearly and for the first time not only the position of the feet during running, but that at one point, all feet were off the ground, a point of considerable interest to Stanford, who had made a bet sometime earlier to that effect. Muybridge used a device which he called a "zoopraxiscope," a projection lantern with a number of successive photos printed on a circular glass wheel that could be rotated in the projector to give the impression of motion. Although Muybridge was preceded by Henry R. Heyl of Philadelphia in February 5, 1870, Heyl did not have the advantage of the instantaneous successive views presented by Muybridge.

Muybridge's photos led to a change in the way artists depicted horses running. Heretofore, in the gallop, horses were shown with limbs stretched out fore and aft at the moment when they were off the ground as opposed to the actual condition in which they were nearly tucked in, i.e., retracted, beneath the body. In their paintings of the American West, Frederick Remington, Russell, and Scheryvogel incorporated the new information in their action depictions of horses.

For an interesting discussion of Muybridge and the importance of his contributions to photography, see Robert Taft [1938], *Photography and the American Scene: A Social History, 1839-1889*. Dover Publ. Edition, New York, 1964. xii + 546 pp., illus. (Muybridge, see pages 405-418, 509-510 [notes]). Also, William Welling, *Photography in America: The Formative Years, 1839-1900*. Univ. New Mexico Press, Albuquerque, NM, 1978. xi + 431 pp. (see pages 253-256).

^{27.6} The records of donations recorded in the *Minute Books* for the June 20th meeting (*Minute Books*, Stated Meetings, Jan. 1891-Nov. 1904, p. 34) duplicate the donations report presented at the June 6th meeting (*loc. cit.*, p. 33)

the public. Bills amounting to \$7,710.82 were ordered paid. JUNE 20,^{27.6} Dr. Gustav Eisen read a paper on "The Lost Civilization of the Mayas, as indicated by Archaeological Remains in Mexico and Central America," illustrated with stereoptican views.

JULY 18, S. W. Holladay read a paper on "Earthquake Freaks." Charles A. Keeler gave an short account of a recent trip to the Farallon Islands. In the Board of Trustees, it appeared that the cash in bank amounted to \$12,561.25. AUGUST 1, a paper by William W. Price on the "Discovery of a New Grove of *Sequoia gigantea*" was read by Mr. Bryant. A paper by J. G. Cooper on "Land and Water Shells of Lower California – No. 2" was presented by title. A paper by Melville Attwood was read, recommending the exhibition of California iron ores at the World's Columbian Exposition. Dr. Harkness exhibited a living specimen of *Amblystoma* and made remarks concerning its metamorphosis. C. A. Keeler and Professor W. E. Ritter discussed certain points of Romane's theory of natural selection. In the Board of Trustees, an application of the State Agricultural Society for a loan of various articles belonging to the Academy for exhibition at the World's Fair at Chicago was refused on the ground that the Trustees did not feel justified in allowing the removal of the articles. An appropriation of \$1,000 was made, at the request of the Council, for the purchase of books.

SEPTEMBER 5, among the donations were specimens of lignite from Sutro Heights in San Francisco, presented by Melville Attwood. E. W. Jones addressed the Academy on the subject of tin mining and particularly explained the methods of working the ore at the Temescal Mine. C. Fuchs made remarks on the beetle, *Phlaeosinus dentatus*, which was doing great damage to cypress tress. In the Board of Trustees, it appeared that the cash on hand was \$15,575.81. SEPTEMBER 19, among the donations were specimens of *Phragmites communis* covered with honey dew, presented by G. P. Rixford. They came from Owens Lake, where the Indians scrape off the honey dew for sweetening use. It is there known as "Indian sugar." Charles A. Keeler read a paper on "Sexual Selection as a Factor in the Beautiful in Nature."

OCTOBER 3, Anthony W. Vogdes and Oscar T. Barron^{27.7} were elected resident members. Major J. W. Powell, director of the U. S. Geological Survey, delivered a lecture on "The Aboriginal Tribes of North America." In the Board of Trustees, Dr. Gustav Eisen was employed on scientific work for the Academy for a term of five months at a salary of \$80 per month. It was resolved that \$10,000 of the money lying in the Bank of California should be withdrawn and placed on term deposit, drawing interest, in the San Francisco Savings Union and German Savings and Loan Society. OCTOBER 17, among the donations was a collection of ethnological specimens from the South Sea Islands, presented by Thomas C. Johnson, for which thanks were tendered him. An announcement was made of the discovery by H. W. Fairbanks of *Proctus ellipticus*, a trilobite from the Waverly Group in Shasta County, California. Lieutenant John P. Finley of the U. S. Weather Bureau, who had returned to

^{27.7} "Baron" in the *Minute Books* (Jan. 1891-Nov. 1904, p. 40) but "Barron" in the published record of the meeting (*Proc. Calif. Acad. Sci.*, ser. 2, 3:376) and when first elected a resident member, Nov. 3, 1879 (q.v.).

California, lectured on "Phases of Pacific Coast Weather and Violent Local Storms," illustrated with stereoptican views. NOVEMBER 7, among the donations was a collection of ethnological specimens from the Gilbert Islands, presented by John L. Howard. In the Board of Trustees, the balance of cash was reported to be \$16,656.82, of which \$10,000 was on deposit drawing interest, in savings banks. It was ordered that a telephone should be placed in the rear building for the uses of the Academy. NOVEMBER 21, among the donations, a set of lichens of Colorado and another of the Yakima region of Washington, by T. S. Brandegee. H. W. L. Couperus read a paper "On the Possibility of the Cultivation of Coffee within the Limits of the United States." A committee consisting of Dr. Harkness, T. S. Brandegee, and J. R. Scupham, appointed by the Council to represent the Academy in a general committee from the universities and scientific societies to promote the means of procuring a topographical map of the valley areas of California, offered a resolution that, whereas the U. S. Government, through the Director of the Geological Survey, offered to cooperate with the State government in the survey and mapping of the valley areas of California to the extent of superintending the work and defraying one-half the expenses, the Academy heartily endorsed the proposition to obtain from the State Legislature an appropriation to cover the annual expense of \$25,000 for securing such surveys and maps. The consideration of the resolution was deferred until next meeting.

DECEMBER 5, the matter of the resolution offered at last meeting, in reference to surveys and maps of the valley areas of California, came up for action. It was pointed out that Secretary Ireland of the State Mining Bureau felt that the map was unnecessary because that body was presently engaged in perfecting a geological map of the state. The president then asked Mr. Scupham to read the resolution and explain it. The motion was then discussed by Dr. Joseph LeConte, E. J. Molera, Prof. Christy, and Mr. Watts. Dr. LeConte spoke about how the idea for a general topographical map had originated about three years ago within the university and how he had consulted with the Academy and with Stanford University before the U. S. Geological Survey was approached. It seemed that most of the discussion focused on the scale to be adopted, there being a general disposition otherwise to favor the resolution. E. J. Molera moved to amend the resolution by including the whole of California instead of only the valley areas, and that the scale of the maps be not less than six inches to the mile. S. B. Christy moved as a substitute that the scale be not less than one inch to the mile, and that all the State be included. The substitute prevailed and the resolution, as amended, was adopted. It developed during the discussion that William Watson of the State Mining Bureau thought that the State could spend its money more profitably for its own institutions and should not commit itself to spending \$25,000 per year for ten years, but before the vote was taken, it was reported^{27 8} that he had changed his views. In the Board of Trustees, Mrs. M. K. Brandegee declined receiving any further salary as curator of botany and asked that Miss Alice Eastwood be appointed joint curator of botany and be paid a salary of \$80 per month; and it was so ordered. An appropriation of \$40 per month for six months was made for an

^{27 8} At least one San Francisco paper carried a lengthy report on the meeting (see *San Francisco Examiner* for Dec. 6.)



Alice Eastwood wearing a floral hat, with which
she was to be identified for the rest of her life
(from a photo taken by Dr. Gustavus A. Eisen in 1912)
California Academy of Sciences Special Collections

assistant in herbarium work. In connection with the new movement in the Botany Department, it was stated that Mrs. Brandegee would continue to render such services as she could without pay. On motion of Molera, seconded by Sutro, it was resolved "that the zeal and efficiency evinced by Mrs. Brandegee during the years of her labors in the herbarium had been such as to merit our highest commendation." It was ordered that salaries of curators, previously paid out of the Crocker Scientific Investigation Fund, should thereafter be paid out of the general fund. The matter of the controversy with W. M. Fletcher, the carpenter, appeared to be still unsettled and was referred to Messrs. Crocker and Burnett "to settle as best they could." DECEMBER 19, the nominating committee presented a ticket for officers of 1893.

Chapter XXVIII: Years 1893-1894

1893

The annual meeting of 1893 took place on JANUARY 3. The usual annual reports of officers were received and placed on file. From that of the librarian it appeared that the additions during the year 1892 had been from correspondents 1720, by purchase 1876, and by donation 135, making a total of 3732 and showing a considerable growth. On the report of the judges and inspectors of the annual election, the following were declared officers for 1893: H. W. Harkness, president; H. H. Behr, first vice-president, J. G. Cooper, second vice-president; T. S. Brandegee, corresponding secretary; John R. Scupham, recording secretary; Lucius H. Foote, treasurer, Carlos Troyer, librarian, J. Z. Davis, director of the museum; W. C. Burnett, C. F. Crocker, D. E. Hayes, E. J. Molera, George C. Perkins, Adolph Sutro, and John Taylor, trustees. In the Board of Trustees, the secretary reported that the receipts for 1892 had been: from dues of members, \$1,065; from interest on the Crocker Scientific Investigation Fund, \$1,200, from rents of offices and stores, \$30,127.84, making a total of \$32,392.84. The disbursements appear to have been: for ordinary expenses \$10,070.28; salaries, \$8,223.48; construction bills, \$7,922; for the library \$4,432.02, and for the museum, \$2,059.04, making a total of \$32,706.89. Miss Effie A. McIlriach was employed as assistant in the botany department at a salary of \$40 per month. JANUARY 16, W. L. Watts read a paper on "The Geological Economics of the Central Valley of California." FEBRUARY 6, W. L. Watts read a paper on "Natural Gas in San Joaquin Valley." W. S. Chapman called attention to the fact that a bill had been introduced into Congress to contract the limits of the Yosemite Park Reservation and moved the appointment of a committee to prepare resolutions requesting the California delegation in Congress to preserve the present limits. The motion prevailed by unanimous vote and Messrs. W. S. Chapman, Gustav Eisen, T. H. Hittell and James M. McDonald were appointed such committee. Dr. Gustav Eisen read a paper "On the Preservation of Cane in the Sierra Nevada." The new Board of Trustees organized with the election of C. F. Crocker, president, E. J. Molera, president *pro tem*, and Lucius H. Foote, secretary.

MARCH 6, among the donations was a collection of over 400 specimens of Lepidoptera from the Republic of Columbia, collected at an elevation of from 5,000 to 8,000 feet above sea-level presented by D. T. Hughes, to whom thanks were tendered. George H. Ashley read a paper, entitled "An Illustration of the Flexure of



Lucius Harwood Foote
California Academy of Sciences Special Collections

Rock,” in which he described the sagging of a slab of marble, some six feet long, lying for a considerable period in a horizontal position and insufficiently supported except at the ends. Dr. Behr read a paper on the “Relations between Butterflies and Plants.” W. C. Bryant read a paper entitled “Descriptions of New Mammals from Lower California” and exhibited specimens of the animals described. In the Board of Trustees, \$75 were appropriated to purchase a 3,000 mile railroad ticket for the curator of botany. MARCH 20, S. W. Holladay asked the consent of the Board of Trustees to ask for and receive a balance of attorney fees allowed by the court in the action of Floyd vs. Davis. The Board replied that it did not deem any action on its part necessary.

APRIL 3, Professor John C. Branner, Professor J. P. Smith, Marsden Manson, and Professor William R. Dudley were elected resident members, and Dr. O. P. Jenkins was proposed by Dr. D. S. Jordan and H. W. Harkness. W. L. Watts read a paper on “Subterranean Air Currents in the Sacramento Valley” and W. S. Bryant, “Notes on the Food of Birds.” Dr. Gustav Eisen made remarks on a dwarf Chinese Lily and on the dwarfing of plants in general. In the Board of Trustees, Dr. Harkness, as president of the Academy, was authorized to make such purchases, as he thought proper, at a sale of objects of scientific interest at Woodward’s Gardens, to an amount not exceeding \$1,000. The sale was a disposal of remnants of the extensive private collections of Robert B. Woodward, which constituted an important part of the attractions of what were known as “Woodward’s Gardens” on Mission and Fourteenth Streets, which for a number of years and up to the time of the proprietor’s death



John Casper Branner
Smithsonian Institution Archives (95-20508)

was the most pleasant and popular place of resort in San Francisco. He maintained there a menagerie of animals, a large aquarium of marine and freshwater fishes, a gallery of paintings and sculpture, and a museum of objects of curiosity and scientific interest, besides a theater and concert hall, while the grounds themselves, consisting of several blocks of land, which were tastefully laid out and ornamented with rare and beautiful trees, shrubs and flowering plants, formed a sort of botanical garden. After Mr. Woodward's death, the place lost its prestige as a resort and rapidly declined; and finally everything that had made it beautiful and attractive was sold off, and the land, which in the meanwhile had appreciated in value, like former places of somewhat similar though not so elaborate and tasteful character, such as the "Russ Gardens," the "Willows" and the "City Gardens," was divided up into ordinary city lots and built over. The purchases for the Academy from the Woodward Gardens collections have thus a sort of historic association connected with them in addition to their intrinsic value. APRIL 17, the Trustees, on the recommendation of Dr. Harkness, appropriated \$100 for a dissecting microscope for the use of the Academy.

MAY 1, Dr. George H. Horn of Philadelphia was introduced. Walter E. Bryant read a paper on the "Variations of the Bill of the California Jay" and W. L. Watts read "Notes on Quicksilver Deposits in California." A communication from the Smithsonian Institution relating to the Hodgkins' prizes was received and ordered posted in the Library. In the Board of Trustees, the Council seems to have arranged

for the sending out of a new scientific expedition at a cost of some \$400, whereupon the Board thought necessary to remind the Council of the constitutional provision which prohibited the incurring of any indebtedness unless authorized by the Trustees. JUNE 5, the president announced the death of Professor Alphonse de Candolle, an honorary member, and of Charles D. Gibbes and Joseph P. Hale, life members. Dr. Gustav Eisen read a paper entitled "Late Investigations on the Pollinization of the Fig," and W. E. Bryant, a paper on "Some Cases of Albinism in California Animals," with exhibition of specimens. In the Board of Trustees, an appropriation of \$400 was made to send Dr. Gustav Eisen and W. E. Bryant on a scientific expedition into the northern part of the State; but subsequently, on JULY 17, the destination of the expedition was changed to Lower California, which seemed to be a peculiarly interesting field for scientific exploration. At the meeting of the Trustees on the last named day, \$2,000 were appropriated for printing, and \$1,000 for the purchase of books. AUGUST 7, Perham W. Nahl delivered a lecture on "Improvements in Aerial Navigation." Admiral Selwyn of the British Royal Navy was introduced and made remarks on his trip to this coast in H.M.S. Sulphur in 1837.^{28.1} AUGUST 14, at a special meeting, Admiral Selwyn read a paper "On a New Adaptation of the Humid Process of Extracting Metals from their Ores." SEPTEMBER 4, meeting canceled for lack of a quorum. SEPTEMBER 18, in the Board of Trustees, it appeared that the arbitration case of Fletcher vs. the California Academy of Sciences on claims for alleged extra carpenter work on the Academy buildings, in which there had been a judgment against the Academy, had been appealed to the Supreme Court; and W. C. Burnett now announced that the Supreme Court had affirmed the judgment and therefore decided adversely to the Academy as a finality. OCTOBER 2, meeting canceled. Labor Day holiday. OCTOBER 16, the Trustees ordered a fee of \$250 to be paid W. C. Burnett for his services in the Fletcher case.

NOVEMBER 6, the following papers presented for publication were read by title and submitted:^{28.2} "Report on Mexican Hymenoptera, Principally from Lower California," by William L. Fox; "On a Collection of Formicidae from Lower California and Sonora, Mexico," by Theo. Pergande, and "Tunicata of the Pacific Coast of North America. I - *Perophora annexens*, new species" by W. E. Ritter. Theodore H. Hittell read a paper entitled "Oysters in San Francisco Bay." Among the donations to the museum, from M. C. McGregor, 62 specimens of Coleoptera, an addition to the 72

^{28.1} H.M.S. Sulphur, under command of Capt. Edward Belcher, visited central California during the months of October-December. Selwyn's name does not appear in Belcher's narrative of the voyage, but this is not surprising inasmuch as Selwyn at the time could not have been much more than 15 years of age, if that, and likely a novice Midshipman or perhaps cabin steward. In the 1830s, and earlier, rarely were officers below the rank of Lieutenant acknowledged in published lists of ships' company. A review of the lists of officers of the Royal Navy for the years 1840 through 1890 reveals only two officers having the surname Selwyn, Frederick L. A. and Jasper Henry. Both reached the rank of Captain in the late 1850s (Jasper in 1858, Frederick in 1859), and both retired in 1868. However, in 1885 Jasper Henry Selwyn was given flag rank of Admiral, the only Selwyn in the lists to achieve that rank during this period.

^{28.2} The implication here and in the years that follow, as stated in Hittell's original manuscript, is that these papers have been submitted for but not yet published. Usually the handwritten minutes state simply, "The following papers were read by title:—." As a matter of fact, many if not all the papers listed were already published in the Academy's *Proceedings*, and it seems that the intention of reading the titles into the minutes at the near end-of-year meetings was to report on either what had been published during the year or had already been accepted for publication. As an example, the first paper mentioned, "Report on Mexican Hymenoptera . . ." by William J. Fox, was printed on September 14, 1893.

Coleoptera and 41 Hemiptera previously given, plus several batrachians and mammal skins. DECEMBER 4, the following papers were read by title and submitted: "On California Eudrilidae" by Gustav Eisen, and "Revision of *Ceanothus*" by Katharine Brandegee. Dr. Gustav Eisen made a preliminary report on the recent scientific expedition to Lower California. DECEMBER 18, Prof. Andrew C. Lawson was proposed for membership by Prof. Joseph LeConte and T. S. Brandegee. The nominating committee presented a ticket for officers of 1894, consisting in substance of the old officers renominated; but considerable opposition to several of them, and particularly to the president and recording secretary, had manifested itself; and, as an indication of it, an opposition or so-called "reform" ticket was presented, on which the name of the president was left blank, though it was understood that that of Professor George Davidson was to be written in, and the name of Charles G. Yale given for recording secretary. Other proposed changes included Gulian Rixford for recording secretary, T. S. Brandegee, corresponding secretary, Charles A. Keeler, librarian, and Walter E. Bryant, director of the museum.

1894

At the annual meeting of 1894, held JANUARY 2, the usual reports of officers were read and placed on file. From that of the librarian, it appeared that during 1893 the additions to the library were 1860 from correspondents, 977 by purchase, 100 by donation, making a total of 2,937. The president presented a very full report on the condition and progress of the Academy. He said, among other things, that "the progress of the life of the institution had been unbroken, mainly owing to the fact that its officers had ever been in accord." He further said that in his inaugural address as president in 1887 he had used the words, with reference to the peculiar circumstances of the moment, that "The life and usefulness of a scientific society depends upon the activity of its members and its publications." That the members of the Academy had been fully aware of the necessity for constant and unremitting work, the years of labor, which had intervened since then, would bear witness; and it was also manifested in the various departments of scientific work as well as in the volumes of our publications. Increasing interest in the museum had been shown in the marked increase in the number of visitors during the past year. This fact alone was a source of gratification to the members, for it was proven that as a means of education the museum was not only useful but economical. The belief in its importance in the education of the pupils of our public schools had been fully realized in the past; and it should be the duty and the pleasure of members to assist the young in every manner possible in their endeavor to acquire information within the precincts of the Academy. The Trustees at an early day had made provision for the school children and for persons employed in daily labor by granting free access to the museum not only upon week days but upon Sundays and holidays as well. And that the opening of the museum upon holidays had been a success was proven by the fact that a large number

of visitors had taken advantage of the opportunity. It had not been deemed advisable, owing to the extra cost, to keep a record of the number of visitors; but a careful estimate placed the number of visitors as exceeding one hundred thousand the past year.

The address then reviewed the work of the year and specified many of the valuable and interesting donations that had been made. Among the later, note was taken of a dugong received from Mr. B. E. DeLopez; a valuable collection of birds, mammals, and reptiles, and a large Japanese vase from J. Z. Davis; shells from T. H. Hittell; and a collection of rare coins from Mrs. Andrew Kohler. The report took note of the liberality of the trustees in providing funds for the library, which "is becoming more and more important to the Academy, as it is rapidly advancing and as the methods of study are changing and improving. Every provision possible should be made for its growth, as such accumulations are of the greatest importance to all who may be engaged in any department of scientific work." It also spoke about the activities of the curators. It was noted that Dr. Eisen spent two and one-half months in Lower California, which was also visited by Mr. and Mrs. Brandegee; Alice Eastwood, when not in the field, devoted herself to the herbarium and in a study of the genus *Allium*; Dr. Cooper relabeled the entire collection of fossil and living shells; but, Prof. Gilbert, because of duties at Stanford, was unable to devote time to the ichthyology department; and Dr. Behr, though engaged in caring for the entomological collection, had few opportunities to increase its size. On motion, the report was ordered spread upon the minutes.

The report of the judges and inspectors of the annual election showed that the following persons had been elected officers for the year, and they were so declared: H. W. Harkness, president; H. H. Behr, first vice-president; J. G. Cooper, second vice-president; G. E. Moore, corresponding secretary; Charles G. Yale, recording secretary; L. H. Foote, treasurer; Charles Troyer librarian; J. Z. Davis, director of the museum; W. C. Burnett, C. F. Crocker, D. E. Hayes, E. J. Molera, George C. Perkins, Adolph Sutro, and John Taylor, trustees. Proposed for membership, John Van Denburgh, by D. S. Jordan and C. H. Gilbert, and John I. Sabin, by G. P. Rixford and Horace Davis.

JANUARY 15, Charles C. Reidy, Dr. C. J. Sechrist, and Professor Oliver P. Jenkins were elected resident members. Dr. Gustav Eisen delivered a lecture on "Lower California; Its Climate, Scenery, and Resources," illustrated with stereoptican views. The new Board of Trustees organized by the election of C. F. Crocker, president, E. J. Molera, president *pro tem*, and L. H. Foote, secretary. The secretary reported that the receipts for 1893 had been \$28,921.54 and the disbursements \$18,451.52, leaving a balance of \$10,470.02. There was then in the Bank of California \$2,520.92 and in the savings banks \$10,333.79. Dr. Harkness suggested that stereoptican apparatus should be purchased for the Academy; but the Board declined at that time to furnish the price.

FEBRUARY 5, Dr. Behr read a paper on "Dr. Müller's Antidote for Snake Bite"; Miss Alice Eastwood, a paper on "Alpine Flora on Mount Shasta," and W. L. Watts,



Oliver Peebles Jenkins (1928)
George Sprague Myers Portrait Collection
Department of Herpetology, California Academy of Sciences

a paper on "Sulphur Deposits of the Sunset Oil District, Kern County, California." In the Board of Trustees, J. G. Cooper was employed to continue his scientific work for three months at \$80 per month. An appropriation of \$2,000 was made for printing. FEBRUARY 19, Dr. B. W. Evermann of the U. S. Fish Commission delivered a lecture on "Fur Seal Investigations of the U. S. Fish Commission Steamer Albatross in 1892," illustrated with stereoptican views, for which thanks were tendered him. Wm. Ritter and Joseph LeConte proposed Frank W. Bancroft for membership; Prof. J. H. Sanger was proposed by Dr. Behr and Dr. C. von Hoffman. MARCH 5, Dr. Gustav Retzius of Sweden presented a copy of his work in two large volumes finely illustrated, entitled "Das Gehörorgan der Wirbelthiere." A special vote of thanks was tendered him for the donation. Messrs. Chapman and Eisen of the committee on the National Park Reservations presented a report, stating that the only band of buffaloes and the only colony of beavers in the Yellowstone Park had been wantonly destroyed and almost annihilated by hunters and sportsmen; expressing the opinion that this wholesale destruction of game was due to insufficient guard, incapable management and lack of genuine interest in the preservation of the game by those employed by the government for that purpose. They earnestly recommended, in the form of a resolution, the propriety of placing the Yellowstone and all other National Parks under the care, control and management of the military department of the U. S. Government, subject to such rules and regulations as might from time to time be deemed advisable and be issued by the Secretary of War, to the end that the game yet remaining upon such reservations might be protected and preserved. The report further recommended, in the form of a resolution, that such new and valuable birds and mammals as might

be found suitable and adapted to the respective regions should be introduced from other countries into the National Parks and given such necessary protection as would enable them to multiply for useful and valuable purposes in the future. The report was accepted, the resolutions approved and adopted, and copies of them ordered to be transmitted to the senators and representatives of the Pacific Coast in Congress. A paper on "Metalliferous Deposits" by Melville Attwood was read. MARCH 19, L. F. Reichling, Frank W. Bancroft, Professor Andrew C. Lawson, John I. Sabin, Joseph W. Hobson, and James Spiers were elected resident members. Dr. David Starr Jordan delivered a lecture "On the Geographical Distribution of Fishes."

APRIL 2, among the donations to the museum, 138 species of marine invertebrates from the Smithsonian Institution. Professor W. E. Ritter read a paper on "The Third Eye of Vertebrates and Some Light on its Significance." In the Board of Trustees, the treasurer was directed to repay to the Lick Trustees \$2,000 borrowed of them for temporary purposes on September 21, 1893. APRIL 16, the following papers presented for publications were read by title and submitted: "Second Report on Lower California Hymenoptera" by William J. Fox; "Some Parasitic Hymenoptera from Lower California" by William H. Ashmead; "Land and Fresh-Water Mollusca of Lower California" by J. G. Cooper. Hermann^{28.3} Schussler, engineer of the Spring Valley Water Company, delivered a lecture on "Our Water Supply," for which thanks were tendered him. MAY 7, the following papers were read by title and submitted: "Description of a New Ribbon Fish from San Francisco" by David S. Jordan and Charles H. Gilbert; "Description of a Little Known Agonoid Fish" by Frank Cramer; "On Some Pliocene Fresh Water Fossils of California," by J. G. Cooper; "Description of a New Wood-Rat from the Coast Range of Central California" by W. W. Price, and "Formicidae of Lower California" by Theo. Pergande. Professor O. P. Jenkins read a paper on "The Origin of the Senses."

MAY 17, at a special meeting, Professor E. E. Barnard, of the Lick Observatory, delivered a lecture on "Comets and Meteors," illustrated with stereoptican views. MAY 18, the Council appointed Leverett M. Loomis, ornithologist. JUNE 4, Miss Eastwood reported receiving nearly 700 plants for the herbarium during the month of May, including 194 from the Geological Survey of Canada, 300 from the Agricultural College of New Mexico, and 65 from the Royal Herbarium at Munich, Germany. Charles A. Keeler read a paper entitled "The Beautiful in Nature as Interpreted by Science." JUNE 11, at a meeting of the Board of Trustees, John Van Denburgh was employed to do original scientific work at a salary of \$60 per month. JUNE 18, among the donations was a set of photographs of Siamese scenery and people, presented by Frederic Mayer, for which thanks were tendered. Messrs. Chapman and Eisen, of the Committee on Forest Reservations, presented a report to the effect that, whereas an effort was being made in Congress to reduce the government reservations, particularly those of in the Sierra Nevada near to and south of Yosemite and San Bernardino, which reductions and encroachments would be a trespass upon or spoliation of an inheritance, which should be every legitimate means be preserved by this generation

^{28.3} Various spelled Herman and Hermann.

for those who are to come after us; and whereas there was ample supply of timber and grazing lands for all present demands without encroaching on the reservations therefore no reduction or encroachment should be allowed or permitted. It had been conclusively shown that the terrible droughts, floods and famines in southern Russia were directly caused by the great destruction of forests, permitted by the unthinking generations of the past. It had also been well demonstrated that the droughts and failures of crops in a large area of France were due to the change of climate, caused by the destruction of forests since the revolution of 1789; and it was well known that the Republic had within the last twenty years expended \$30,000,000 in endeavoring to restore the forests in regions most needing them, and that \$800,000,000 more would yet be required to reforest the country sufficiently to protect it from devastation by droughts and floods caused by destroying the trees and vegetation from the water-sheds during the past ninety years. In view of the plain facts it was earnestly recommended

that no reduction of our new limited reservations be permitted, and that many other reservations should be judiciously selected at an early day, that the next century may not justly reflect upon us, as is now the case in many parts of Europe; and even in our own country the same bitter murmurings might be heard reaching back to a more or less thoughtless ancestry.

The report was received and approved and a resolution adopted^{28.4} that copies of it should be printed and speedily forwarded to the heads of departments at Washington

^{28.4} The complete text of the Forest Reservations resolution, from the *Minute Books* (Jan. 1891-Nov. 1904, pp. 83-84) (also published in the *Academy Proceedings*, 1894, ser. 2, vol. 4, pp. 635-636) states,

"Whereas: it has come to the knowledge of the California Academy of Sciences that efforts are being made in Congress to reduce the government reservations, particularly that so recently established in the Sierra Nevada mountains near to and south of the Yosemite and San Bernardino —

"Therefore the Academy respectfully and most earnestly protests against such reductions and encroachments, it being a trespass or spoliation of an inheritance which should by every legitimate means be preserved by this generation for those who are to come after us.

"We respectfully ask that no encroachments be allowed for the good reason that we have a most ample supply of timber and grazing lands for all present demands, without encroachments, and, if we owe any duty to the coming generations, it surely is that we protect for and leave to them a reasonable portion of those vast timber regions which Nature has so abundantly enriched us with. We ask this protection for the reservations so wisely granted by a thoughtful and generous government, inasmuch as that we have sufficient forest for all our demands, independent of the present reserves.

"Our population is now sparse and small but with our vast plains of fertile and unoccupied lands, and our unequalled climate, we must in all reason expect our population in the not distant future to double and even triple many times over, and when that condition shall be found to exist, then will be seen and appreciated the foresight and wisdom of our government in reaching out its protecting arm to save for those conditions at least a small portion of our great supply of lumber. Under proper control and management, our reservations may be utilized for grazing purposes, without detriment, and possibly to some advantage, but under no circumstances should any encroachment upon the timber be permitted.

"The time will come when no man will be allowed to fell a tree without planting another to take its place, as is now the case in many countries. It has been conclusively proven that the terrible droughts, floods, and famines in southern Russia are directly caused by the great destruction of timber, permitted by the unthinking generations of the past.

"It is also a well-established fact that the droughts and failures of crops in a large area of France are due to the change in climate caused by the destruction of forests since the revolution in the last century. It is further known that the French Republic has, within the last 20 years, expended \$30,000,000 in endeavoring to renew the forests in the most needed parts of the country; and that it has been estimated that \$800,000,000 are yet required to reforest the country sufficiently to protect it from devastation by droughts and floods, caused by destroying the timber from the watersheds during the past 90 years.

"Therefore we earnestly recommend that no reduction of our now limited reservations be permitted and that many other reserves be judiciously selected at an early day, that the next century may not justly reflect upon us, as is now the case in many parts of Europe, and even in our own country, the same bitter murmuring may be heard, reaching back to a more or less thoughtless ancestry.

"Therefore be it resolved that these resolutions be printed and copies speedily forwarded to our Senators and Representatives in Congress and to the heads of the Land Department."

(Signed) Wm. S. Chapman/Gustav Eisen.



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and our senators and representatives in Congress. Robert Stevenson read a paper "On the Theory of Gravitation."

JULY 2, in the Board of Trustees, a sum of \$106.15 was appropriated to S. W. Holladay to pay costs in litigation in which the Academy was involved. Leverett M. Loomis, who had been appointed ornithologist by the Council on May 18, was allowed a salary of \$80 per month for scientific work commencing in June; and \$76 were appropriated for expenses incurred by him in connection with ornithological work previously done at Monterey. The sum of \$1,000 was appropriated for another scientific expedition to Lower California and Mexico. Notice having been received from the Electric Company that overhead service of electricity had been or was about to be changed to underground service, and that the necessary changes to fit up the Academy would involve a cost of \$1,000, a contract was made for new service at that price, on the understanding that the company would take the old motors belonging to the Academy and allow \$375 for them. The regular meetings originally scheduled for JULY 2 and 16 were canceled. AUGUST 6, among the donations to the museum, 315 mammals from Mr. J. Z. Davis. The following papers were read by title and submitted; "The Coleoptera of Baja California" by George H. Horn; "Description of Three New Lizards from California and Lower California, with a Note on *Phrynosoma blainvillii*" by John Van Denburgh, and "On the Various Stages of Development of *Spermatobium*, with Notes on Some Other Parasitic Sporozoa" by

Gustav Eisen. W. S. Manning read a paper entitled "What Can Science Suggest as to Man's Ideal Diet?" AUGUST 20, no meeting held.

SEPTEMBER 3, donations to the museum included 334 mounted birds, mostly foreign, 204 bird eggs, and 3 nests from J. Z. Davis. John Van Denburgh read a paper "On Reptiles of the Cape Region." W. L. Watts spoke of "The Gas-and-Oil Bearing Formations of the Central Valley of California and the Neighboring Foothills." In the Board of Trustees, the sum of \$200 was appropriated to enable John Van Denburgh to make collections of reptiles in the Mohave Desert. A communication was received from the Society of California Pioneers, asking the Academy to join with it in making a monthly contribution, of \$25 per month each, for the support of J. W. Lick, a nephew of James Lick, who was in needy circumstances. The matter was referred to the president to make inquiries. SEPTEMBER 17, the regular biweekly meeting of the Academy was not held, but in the Board of Trustees, on the report of the president that J. W. Lick was needy and could not support himself, an allowance of \$25 per month was made towards his support, to be paid during the pleasure of the Board. OCTOBER 1, the president announced the death of Dr. David Wooster, a resident member. The death of Professor Hermann L. F. Helmholtz of Berlin, an honorary member, was also announced. Leverett M. Loomis read papers on "The Migration of Birds" and "The Song Season of Three Carolina Birds." OCTOBER 15, Theodore H. Hittell read a paper on "The Shell Mounds of Alameda County," particularly referring to one that was being cut through in the City of Alameda and a curious stone-tube, used by Indian medicine-men, found in it. S. A. Shehadi read a paper on the "Bedouin Arabs of Western Asia." NOVEMBER 5, Professor Charles H. Gilbert lectured on "Recent Explorations of the U. S. Fish Commission in the Northwest." The herbarium reported receiving a collection of 425 Texas plants purchased by the Botanical Club and presented to the Academy, and 48 plants from Washington, donated by the Young Naturalists Society of Seattle. In the Board of Trustees, the Council recommended the purchase of Walter E. Bryant's ornithological collections for a sum not exceeding \$3,000 and an appropriation of \$87 to defray expenses of Miss Alice Eastwood in traveling and collecting for the Academy. NOVEMBER 19, in the Board of Trustees, the purchase of W. S. Bryant's collections was authorized at the rate of one dollar for each perfect specimen; but not more than \$500 to be expended in the next month and \$400 per month thereafter until paid. J. G. Cooper was employed to continue scientific work in the conchological department for three months, devoting to it one-half his time, for \$40 per month.

DECEMBER 3, the president announced that in a few months the Lick Trust would be closed and the Academy as one of the residuary beneficiaries would receive upwards of \$500,000, of which sum, however, it owed to the Trust \$400,000 for money advanced to construct the new Academy buildings. He said that as soon as the Lick School of Mechanical Arts should be opened, which was expected to take place in the following January, the balance of the money due the Academy from the Lick Trust would be paid. Irving M. Scott addressed the Academy on the subject of "Ourselves; or the Condition of California as compared with Older States." A paper

by J. G. Cooper was read by title and submitted, entitled "Catalogue of Marine Shells, collected chiefly on the Eastern Shore of Lower California for the California Academy of Sciences during 1891-2." In the Board of Trustees, the sum of \$87 was appropriated to Miss Alice Eastwood for expenditures in botanical trips, and \$250 to Leverett M. Loomis for collecting migrating birds off Monterey.

DECEMBER 17, W. S. Chapman and Gustav Eisen of the committee on forest reservations made a report to the effect that whereas among bills and amendments to bills pending before Congress and purporting to be for the protection of forest reservations, there were various propositions to eliminate from the reservations all lands which were claimed by their supporters to be more valuable for agriculture than for forest purposes, the California Academy of Sciences strenuously opposed any reduction whatever of any forest reservation in the United States and particularly in California, for the reasons that there was no timber land in any forest reservation in California that was more valuable for agriculture than for timber, water sheds and recreation grounds for the people at large, although unscrupulous speculators would find no difficulty in finding people who would be willing to testify to the contrary. The forest reservations and national public parks, so wisely set apart, were not too large but should be extended; and any infringement on them would be greatly detrimental to the agricultural interest, which depended upon them as water sheds for irrigation purposes. The real agricultural lands of California were those which were irrigated, and their water supply depended upon the preservation of the forests to protect the snow in the mountains. With the denudation of these mountains of their forests, the water supply for irrigation would be diminished and the vast plains below become proportionally barren. There were millions of acres of agricultural lands in the plains and foothills not included in reservations or parks, which were not yet, and would not be for a very long time, settled upon and cultivated. They were much more valuable for agriculture than any lands in any reserve but could never be properly irrigated except with the water which the forest reservations were intended to preserve. Until those agricultural lands should be utilized and overcrowded, no infringement upon the forest reservations, upon which they must depend for their water, should be permitted. What few and small patches of cultivable lands and meadows may exist in the forest reservations and parks are absolutely necessary for the purpose of furnishing food and pasture for the horses and teams of the traveling public visiting the wonderful forests and mountain scenery of the reservations and parks.

The report proceeded to declare that whereas Congressman Bowers of California was quoted as having termed the creation of the reservations a "looting of the public domain" by the government; and asserted that in February, 1893, thirty townships of land in Kern County had been thus looted, or turned into a forest reservation; that on those townships there were at that time 300 legal voters, that 5000 tons of hay were raised there last year, and 7000 acres were under irrigation; that there were on them six public school houses, four churches, that 10,000 cattle and over 1,000 horses, owned by the settlers, were grazing on those sections; that the assessed valuation of

the improvements made by the settlers there were over \$400,000; that many of the settlers had been there for from ten to twenty years; that large areas of the reservations were fine natural farming lands; that therefore the making of the reservations was an inexcusable outrage; that those townships should be restored to the public domain, and that the history of other reservations in California was similar, the California Academy of Science declared that all these statements were greatly exaggerated and based upon erroneous information; that surely there were no churches, no school houses and no settlements upon those reservations, save alone by such persons as were manufacturing lumber or desiring to do so. Such complaints of being deprived of their rights came undoubtedly from the same class of people who raided the timber lands of Maine, Michigan, Wisconsin and Minnesota, and finally fixed their gaze upon the splendid sugar pines of our mountains as well as upon the immense sequoias and the incomparable redwoods of the Coast. The report recommended that all the members of Congress and all who had taken an interest in the reservation movement, and especially the Hon. Owen A. Wells of Wisconsin, should be supplied with printed copies of the document. On vote, the report was accepted and its recommendations in the form of resolutions unanimously approved and adopted.^{28.5}

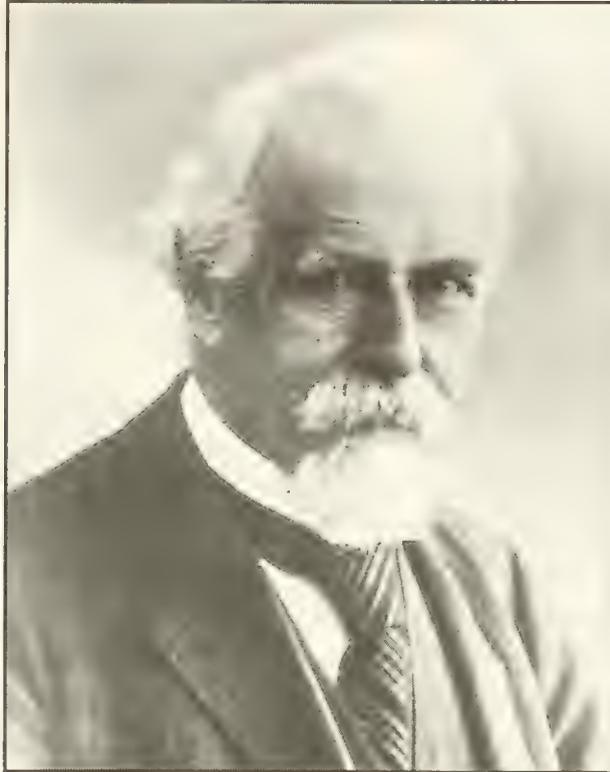
Dr. Gustav Eisen made a preliminary report on the scientific expedition recently sent by the Academy to Lower California and Mexico. The nominating committee presented a ticket for officers of 1895.

^{28.5} The complete text of this resolution does not appear in the handwritten *Minute Books* but was published in the *Academy Proceedings*, 1894, ser. 2, 4:638-640.

Chapter XXIX: Year 1895

At the annual meeting, held JANUARY 7, among the usual reports of officers read and placed in file, that of the librarian showed the additions to the Library during 1894 to have been: from correspondents, 1948; by purchase, 361; by donation, 126; by exchange, 8; in all 2,443. At the annual election an opposition ticket, chiefly directed against Dr. Harkness as president, naming Adolph Sutro for the office and offering other names for some of the subordinate offices, was run against the regular ticket; but it failed; and the following were declared elected officers for the year: H. W. Harkness, president; H. H. Behr, first vice-president; J. G. Cooper, second vice-president; George A. Moore, corresponding secretary; G. P. Rixford, recording secretary; L. H. Foote, treasurer; Charles Troyer, librarian; J. Z. Davis, director of the museum; W. C. Burnett, C. F. Crocker, D. E. Hayes, E. J. Molera, George C. Perkins, W. S. Chapman, and John Taylor, trustees. JANUARY 21, Dr. Eisen read a communication from Owen A. Wells, member of Congress from Wisconsin, referring to the action of the Academy on the bill entitled "Preservation of Forest Reservations" and requesting authority to print and distribute 300 copies for use in the Senate in opposition to the bill, also to correct his name in the minutes of the Academy. John Van Denburgh read a paper on "Poisonous Reptiles of California," which was followed by a discussion on the subject by various members of the Academy.

JANUARY 22, the new Board of Trustees organized by the elected of C. F. Crocker, president, E. J. Molera, president *pro tem*, and L. H. Foote, secretary. The secretary reported the receipts during 1894 to have been: from members' dues, \$936; from Crocker Scientific Investigation Fund, \$1,200; from rents, \$24,284.15; from a bequest by Amariah Pierce, \$4,750, which sums, in addition to \$2,520.93 on hand at the beginning of the year, made a total of \$33,691.08. The disbursements amounted to \$26,746.05, of which \$14,272.80 were for "expenses," \$9,262 for salaries, and the balance apparently for taxes. There was on hand in cash, at the beginning of 1895, the sum of \$6,945.03 and on deposit in the savings banks \$11,120. It was resolved that the Lick Trustees should be authorized to accept a renewal of note and mortgage, held by them against William Banning for \$98,348.25 on Santa Catalina Island in Los Angeles County and certain lands in Orange County, at 7 per cent interest per annum for a term of years; and that, if said note and mortgage on final settlement of the Lick Trust, should come to the Academy, it would accept the same as a part of its distribution share of the Lick estate. Consent was also given to the expenditure of \$1,000 by the Lick Trustees for putting up four bronze medallions of James Lick at institutions founded by his benefactions. The sum of \$4,750, received from the



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bequest of Amariah Pierce, was ordered to be expended for books under the direction of the library committee; and \$300 were appropriated to purchase J. G. Cooper's private collection of land shells. The salaries of Leverett M. Loomis and John Van Denburgh were increased to \$80 per month each from and after February 1. As it appeared that the Lick Trustees were about to close up the business of the Lick Trust and it was proposed in final settlement to transfer some of the securities, including a note and mortgage against the estate of James G. Fair, deceased, to the residuary distributees, W. S. Chapman was appointed a committee of one to confer with the executors of the Fair estate with a view to an increased rate of interest. The sum of \$100 was appropriated to pay W. C. Burnett for legal services.

FEBRUARY 4, Leverett M. Loomis read a paper on "Birds of the Ocean off Monterey in Midwinter." Miss Alice Eastwood exhibited foliage and cones of a redwood tree from the head of Redwood Cañon in Marin County and made remarks about their peculiarities, there being a resemblance in some respects to those of the Sequoias of the Sierra Nevada. S. W. Holladay announced that a bequest of \$5,000 had been made to the Academy for the purchase of books by Amariah Pierce, deceased. He stated that Mr. Pierce had been induced to make the bequest chiefly by the representations of Dr. Harkness and on motion the thanks of the Academy were voted to Dr. Harkness for his instrumentality in obtaining the donation, which as previously shown, netted the Academy \$4,750. Dr. Harkness thereupon gave a sketch of the life of Mr. Pierce, relating how he had become a life member of the Academy and the circumstances attending the provision of his will in its favor. In the Board of

Trustees, an appropriation of \$160 was made to employ Charles Fuchs for four months at a salary of \$40 per month to arrange the collection of Coleoptera. A communication was received from the Council, stating that certain facts had come to their knowledge which might materially modify the contract made with Walter E. Bryant in regard to the purchase of his ornithological collection. He had already been paid two installments on the contract, amounting to \$900. Messrs. Hayes and Chapman were directed to investigate the facts and report, it being understood that Mr. Bryant was to be present at the meeting of the committee. The salary of A. C. Fisher, janitor of the front or commercial building of the Academy, was raised to \$75 per month from February 1. W. S. Chapman, to whom had been referred to matter of the interest paid by the executors of the Fair estate on moneys of the Lick estate in their hands, reported that the executors of the Fair estate declined to pay any larger rate of interest and would prefer to pay up the principal. Before the adjournment of the Board, a further sum of \$400, being the third installment, was ordered paid to W. E. Bryant in accordance with the terms of the contract with him. FEBRUARY 18, Samuel J. Holmes read a paper on "The Crustacea of the Pacific Coast." In the Board of Trustees, a communication was received from the Society of California Pioneers, embodying a resolution that a Biographical Sketch of the Life of James Lick and a History of his Bequests, properly illustrated, should be prepared and published at the expenses of the residuary beneficiaries as a memorial. The matter was referred to E. J. Molera with power to act.

MARCH 4, Professor R. H. Freund, George O. Mitchell, Frederick A. Woodworth, Samuel J. Holmes, and Dr. John Hornung were elected resident members. The herbarium reported the addition of 2574 plants, the largest a collection of 1479, Pringle's Mexican plants, by purchase, and by donation, 354 plants from Mexico by the U. S. Department of Agriculture, and 300 Canadian plants from the Canadian Geological Survey. Professor H. P. Johnson read a paper on the "Structure and Life History of the Infusoria, as illustrated by the Genus *Stentor*." In the Board of Trustees, Mr. Molera reported that Willard D. Farwell had been employed to undertake a "Biographical Sketch of the Life of James Lick"; and the use of a room in the Academy building for the literary work had been granted. The fourth installment of \$400, on the contract with W. E. Bryant for his ornithological collection, was ordered paid. MARCH 18, H. W. Fairbanks read a paper, entitled "An Ascent of Mount Whitney in May," illustrated with stereoptican views.

APRIL 1, Professor R. H. Freund read a paper on "Blood: Its Microscopic Characters and Their Importance," illustrated under the microscope. In the Board of Trustees, the committee on the Walter E. Bryant collection of birds reported that they had made a careful examination and found 371 of the birds defective and therefore utterly useless to the Academy; but that 2,791 were in good condition; and it was thereupon ordered that only such birds as were in good condition should be paid for. E. J. Molera was authorized to purchase such furniture as might be necessary for the room occupied by the persons having charge of the "Biographical Sketch of James Lick." The sum of \$100 was appropriated to Anna L. Brown for making drawings to

accompany publications of the Academy, and \$400 as fifth installment on the contract with W. E. Bryant.

APRIL 15, W. S. Chapman and Gustav Eisen, of the committee on public reservations, presented a report to the effect that, whereas it was rumored that the U. S. Government intended to construct a road by filling in a part of Mountain Lake in the Presidio Reservation at San Francisco; that this road would cross the Lake at a place where it is thirty feet deep, would be many hundreds of feet long and would sadly disfigure that beautiful sheet of water, and undoubtedly lead to its final destruction by its subsequent filling in and by increased growth of tules and other weeds; that Mountain Lake, which had an area of fourteen acres more or less, was one of the prettiest landmarks on the San Francisco peninsula, and its shores could with little expenses be converted into a beautiful park; that a portion of the southerly part of the Lake was already in a public park of the City and County of San Francisco, known as "Mountain Lake Park," which in a few years would doubtless be tastefully improved by the City and County; that the Lake water was pure and good; that it seemed almost incredible that while we were spending \$500,000 in creating a Lake in Golden Gate Park, any one could conceive the idea of destroying so beautiful a Lake, situated close by, only for the purpose of securing a straight road from the Marine Hospital to a public street; that a road around the Lake would cost many times less, would be more durable and more beautiful, and would serve every purpose, as going around so small a lake would take but a few minutes more time than crossing it by the proposed road; that as a matter of fact in order to reach the nearest street it was not necessary to cross the lake at all, as a short cut already existing through a small sand bank, if somewhat widened and a little filling done, would give immediate access to one of the city highways; that to destroy Mountain Lake, and particularly where there could really be no necessity to do so, would be a great wrong; that it would be far better to dredge out its shallow, weedy portion and stock it with fish, plant trees around its margin, and make it "a thing of beauty," which would be "a joy forever," than to destroy it by making a highway across it; that to put a grade, eighty feet wide on top, crossing the Lake as was proposed, would require a filling-in of at least one hundred and sixty feet wide at the bottom and, besides, its weight would squeeze the mud from the bottom and, in fact, ruin the Lake as such, and it would be as well to fill it up at once; that it would be as sane to undertake to destroy the Farallones or any other small island in the Pacific, so that a ship might pass directly over it, as to grade across this beautiful lake for a direct road to the city when no one could be to any extent accommodated by such change; that it would, in fact, be a wrong, a great wrong, one that would be regretted for all future time; and that the most proper thing to do would be, instead of destroying or injuring Mountain Lake, to improve it, beautify it, and make its ever-flowing springs useful by stocking it with fish. The committee therefore recommended that the Academy should strongly oppose the proposed filling in of any part of Mountain Lake and request the authorities of the War and Interior Departments of the Government at Washington to preserve it intact in order that it might sometime in the future be beautified and utilized. It

accordingly proposed a resolution to that effect and also a resolution that copies of the report and resolution should be forwarded to the Secretaries of War and the Interior, to the senators and representatives in Congress, and to the Board of Supervisors of the City and County of San Francisco. After a full discussion and expression of opinion, the report was accepted and approved and the resolutions unanimously adopted.

MAY 6, among the donations to the museum, 51 Japanese birds from William F. Nolte, 90 species of fish from Mazatlan, Mexico, by D. S. Jordan, and a collection of curios from the Holy Land by Mrs. Fannie V. Hubbard. D. S. Richardson delivered an illustrated lecture, entitled "Mexico: An Hour Below the Border." In the Board of Trustees, the sixth installment, \$400, was appropriated to W. E. Bryant for his collection of birds, and \$73 to Anna L. Brown for drawings. MAY 20, Dr. Gustav Eisen lectured on "The Expedition to Tepic, Mexico in 1894" and presented stereoptican illustrations. The department of conchology reported receiving, by donation or exchange, 190 species of living and fossil shells, of which at least 49 of the recent shells were new to the collection. JUNE 3, Dr. Harkness exhibited and described specimens of a fungus found on Madroño trees in Mill Valley, Marin County. In the Board of Trustees, \$1,000 were appropriated for printing, and \$200 for museum cases. Dr. Harkness was authorized to purchase W. W. Price's collection of birds, consisting of 2,500 more or less, at twenty cents a specimen, for all in good condition, to be paid for in installments of \$100 per month. S. W. Holladay reported that the lawsuit brought by the Academy against the City and County of San Francisco and the Board of Education for the lot of land on First Avenue had been decided in the Supreme Court of the State adversely to the Academy. He proposed to move for a re-hearing of the case and would charge no attorney's fee for the motion, unless successful, if the Academy would pay the costs of the hearing proceedings. He was authorized to make the motion. A final payment of \$291 was ordered to be made to Walter E. Bryant for his collection of birds.

JULY 1, Dr. Harkness called attention to the summary dismissal of Professor George Davidson from his position at the head of the U. S. Coast and Geodetic Survey on the Pacific. W. S. Chapman moved the appointment of a committee to present suitable resolutions on the subject. The motion was carried; and Messrs. Chapman, Eisen and Rixford were appointed such committee. Edward S. Jones described the "Preparation of Calcium Carbide," and gave an exhibition of the acetylene gas derived from it. Dr. Gustav Eisen delivered a lecture on "Lower California and Sonora," illustrated with stereoptican views. Among the donations were 48 birds from California and Arizona by W. W. Price. In the Board of Trustees, the Academy was authorized to receive and accept an assignment of the William Banning note and mortgage on Santa Catalina Island and certain lands in Orange County for the balance of the residuary interest of the Academy in the Lick Trust; to execute to the Lick Trustees the necessary receipts, releases and other papers for final settlement and closing up of the Lick Trust, and to pay the Society of California Pioneers or receive from it any surplus that might be found due on final distribution and division. Charles

Fuchs was employed on entomological work for three months longer at \$40 per month. J. H. Lick was ordered paid his allowance of \$25 per month; Anna L. Brown \$99.18 for drawings, and W. N. Price \$100 as first installment for his collection of birds. JULY 15, in the Board of Trustees, Charles F. Crocker, president, reported that there had been a final settlement between the Academy and the Lick Trustees and the Society of California Pioneers. He stated that the amount found due the Academy and Pioneers, being the balance of assets of the Lick estate, after otherwise settling up the Lick Trust, was \$1,209,308.16, of which the Academy was entitled to one half or \$604,654.08. It had already received from, and was indebted to, the Lick Trustees \$513,558.31, so that there was a balance still due the Academy of \$91,095.77. He further stated that, by virtue of the authority given him by the Board, he had arranged a division of the assets remaining in the hands of the Lick Trustees and had accepted for the Academy the Banning note and mortgage on Santa Catalina Island and lands in Orange County for \$98,348.46 with interest of \$879.57 due on same up to July 11, 1895, making a total of \$99,228.13; and that he had paid the excess of \$8,132.36 over the Academy's share, to the Pioneer Society with \$4,964.80 withdrawn from the German Savings and Loan Society Bank and \$3,167.56 withdrawn from the Bank of California. His action was approved and ratified. The secretary was instructed to procure plans and estimates for outside doors to the entrance of the Academy building on Market Street.

AUGUST 5, George O. Mitchell read a paper on "Our Modern Conceptions of Matter and Force." Announcement was made of the discovery of a fossil, *Venericardia*, on Alcatraz Island in San Francisco Bay by Captain A. W. Vodges, which, with the earlier discovery of *Inoceramus* by Major Elliott, disproved the commonly accepted idea that the San Francisco sandstones were pre-Cretaceous and indicated that these sandstones probably belong to the Cretaceous period. Louis A. Robertson read a poem on "Evolution." The committee on the summary removal of Professor George Davidson from his position on the U. S. Coast and Geodetic Survey presented a report with resolutions to the effect that the Academy knew no reason and could not imagine any cause for the removal; that, in the absence of any grounds or even charges, such removal was hasty, ill-advised, condemnable, and a rank injustice to one who had honorably spent his lifetime in the service of the government; that the government be urged to reconsider its action and restore Professor Davidson to his former position, and that the resolutions should be forwarded to President Cleveland, Secretary Carlisle, and the senators and representatives from the Pacific Coast in Congress. The report was received and placed on file.^{29.1}

SEPTEMBER 2, the president announced the death of William C. Belcher, a resident member. Among the additions to the museum were 500 specimens of 48 species of reptiles and batrachians from North Carolina, Arkansas, Texas, and Mississippi purchased from H. H. and C. S. Brimley of Raleigh, North Carolina. Leverett M. Loomis read a paper, entitled "Aerial Voyages," in which he described the flight of

^{29.1} Pasted into the *Minute Books* (Stated Meetings, Jan. 1891-Nov. 1894, p. 107) is a newspaper clipping, otherwise unidentified, which carried the full text of the resolution, and was titled, "Davidson's Removal. Memorial from the California Academy of Sciences to President Cleveland."

migrating sea birds along the coast off Monterey. Amendments to Article III of the constitution in reference to the loaning of Academy moneys, purporting to be proposed by the Board of Trustees, were read, ordered printed, and a copy directed to be sent to each member of the Academy. In the Board of Trustees, the president was authorized to sign a petition for the lighting of Market Street with electricity. the secretary reported the amount of money on hand as \$9,819.80, of which \$4,819.80 was in the Bank of California and \$5,000 in the Savings Union Bank. A communication from William Banning was read, proposing to sell the Orange County lands, on which the Academy held a mortgage, asking a release of those lands, and offering to give a second mortgage for the amount released on Santa Catalina Island. The secretary was instructed to reply to Mr. Banning that the Trustees were not authorized to make loans on real estate outside the limits of San Francisco. An appropriation of \$700 was made for metal frames and doors in the entrance to the Academy building, and of \$54.70 to purchase a collection of butterflies and plants from Professor Jones. W. C. Burnett reported the final settlement of the friendly action of the Lick Trust, and the delivery of the necessary receipts and other papers. Among bills ordered paid was one of \$8090.90 to the Edison Light and Power Company for current for five months, and one of \$77.72 to Anna L. Brown for drawings.

SEPTEMBER 16, among the donations to the herbarium was 400 plants, 216 from Hawaii purchased and presented by the California Botanical Club, most of the others by exchange. Professor W. E. Ritter read a paper on "The Zoological Station at Naples, and What it has done for the Promotion of Biological Science." The Council reported that they had decided to report back the proposed amendments to Article III of the constitution without change. The proposed amendments were then read. The principal alterations proposed by the amendments were to allow the Academy to loan money on note and mortgage on property anywhere within the State of California, instead of only in the City and County of San Francisco; and a further provision that loans might be made on "approved interest-bearing corporation bonds" as well as on United States, State, and City and County bonds. A number, and as it proved a majority, of the members of the Academy, were opposed to loaning the money of the Academy on what were thus termed "approved interest-bearing corporation bonds" for the reason that what at one time be considered approved interest-bearing bonds of some corporations might not be so shortly afterwards, and it would be unwise and unsafe to loan the Academy money on so uncertain a security. The consideration of the matter caused a lengthy and lively discussion; and the result was that the clause objected to was stricken out; and the amendments, with the objectionable clause eliminated, were approved and directed to be submitted to vote at the next annual election. E. J. Molera then proposed a number of amendments to Articles II, III, IV and VI of the constitution, which were ordered printed, laid over for consideration at a subsequent meeting, and a copy directed to be sent to each member. In the Board of Trustees, Mr. Molera was asked to be present in the Academy when his proposed amendments to the constitution should come up for consideration and advocate them.

OCTOBER 7, Henry Hemphill, as he has in the past, donated a collection of 71

shells of 26 species to the museum. Dr. David Starr Jordan delivered a lecture on "The Value of Faunal Studies." The amendments to the constitution proposed by E. J. Molera came up for consideration. The object of them appeared to be to effect some radical changes in regard to membership, which elicited much opposition and a vigorous discussion; and the result was that on motion and vote the whole matter was indefinitely postponed. In the Board of Trustees, among the bills ordered paid was one of \$190 to the Edison Light and Power Company for electricity for September, and one of \$66.03 to Anna L. Brown for drawings. OCTOBER 21, Dr. Behr made "Some Remarks on Extinct Animals and the Causes which led to their Extinction." The herbarium reported the addition of 570 plants, of which 358 were collected by Dr. Palmer at Acapulco, Mexico, and donated by the California Botanical Club. The following papers presented for publication were read by title and submitted:^{29.2} "Notes on a Specimen of *Alepisaurus aesculapius* Bean from the Coast of San Luis Obispo County, California," by Flora Hartley; "Description of a New Jack Rabbit from San Pedro Martir Mountain, Lower California," by John M. Stowell; "A Supplement to the Bibliography of the Palaeozoic Crustacea," by Anthony W. Vogdes; "A Review of the Herpetology of Lower California. Part I – Reptiles," by John Van Denburgh; "On Land and Fresh Water Shells of Lower California, No. 5. On West Mexican Land and Water Mollusca," by J. G. Cooper; "On Heteromorphic Organs of *Sequoia sempervirens*," by Alice Eastwood; "California Water Birds, No. 1," by Leverett M. Loomis; "Coleoptera of Baja California. Supplement I," by George H. Horn; "Third Report on some Mexican Hymenoptera," by William J. Fox; "The Fishes of Sinaloa," by David Starr Jordan; "Some Mexican Neuroptera," by Nathan Banks; "The Species of the Genus *Xantusia*," by John Van Denburgh; "The Neocene Stratigraphy of the Santa Cruz Mountains of California," by George H. Ashley; "Changes in Fauna and Flora of California – On the Power of Adaptation in Insects," by H. H. Behr; "A List of Lichens, Collected by Mr. Robert Reuleaux in the Western Parts of North America," by Dr. Sitzenberger; "Notes on the Habits and Distribution of *Autodax iëcanus*," by John Van Denburgh; "The California Phryganidian (*Phryganidia californica*, Pack.)," by Vernon L. Kellogg and F. J. Jack; "Cranial Characters of the Genus *Sebastodes*," by Frank Cramer; "A Review of the Herpetology of Lower California Part II – Batrachians," by John Van Denburgh; "Description of a New Species of *Gobiesox* from Monterey Bay, California," by Seth Eugene Meek and Charles J. Pierson; "Some Parasitic Hymenoptera from Baja California and Tepic, Mexico," by William H. Ashmead; "Contributions to Western Botany, No. 7," by Marcus E. Jones; "Explorations in the Cape Region of Baja California in 1894," by Gustav Eisen; and "Description of a New Species of *Ranzania* from the Hawaiian Islands," by O. P. Jenkins.

NOVEMBER 4, H. P. Johnson, John C. Merriam, W. A. Setchell, Vernon L. Kellogg, David C. Booth and A. Van Der Naillen were elected resident members. Dr. Gustav Eisen delivered a lecture, entitled "A Glimpse at the Ancient and Modern Civilizations in Guatemala," illustrated with lantern slides. In the Board of Trustees, an

^{29.2} See footnote 28.2.

appropriation of \$500 was made for making an inventory of the books and papers in the library. NOVEMBER 18, a paper by Captain A. W. Vodges was read, entitled "Typical Military Roads, with Illustrations of the French Road System." NOVEMBER 21, at a special meeting of the Board of Trustees, it was resolved that any tax that might be assessed for the fiscal year 1895-6 against the mortgage interest held by the Lick Trustees on property belonging to the estate of James G. Fair, deceased, should be paid by that estate, and that its representatives should be so informed. DECEMBER 2, among the donations was an astronomical atlas, called "Harmonica Macrocosmica," published at Amsterdam in 1708, presented by Carlos Troyer. Professor O. P. Jenkins delivered a lecture on "Glaciers, Past and Present," illustrated with stereoptican views. DECEMBER 16, among the donations were several hundred specimens of birds and a representative series of California birds' eggs, presented by Dr. T. S. Palmer of the Division of Ornithology and Mammalogy of the United States Department of Agriculture, for which a special vote of thanks was tendered him. The nominating committee presented a ticket for officers of 1896. Its chief features were that it was deemed proper to give the presidency to Professor David Starr Jordan, president of Leland Stanford, Jr. University; and apparently as a counterpoise, the first vice-presidency to Professor William E. Ritter of the University of California. It was the start of what was commonly known as the "University Regime of the Academy," which lasted for seven years.

Chapter XXX: Year 1896

At the annual meeting of 1896, held JANUARY 6, on nomination of the Council, George C. Edwards and Frank H. Vaslit were elected honorary life members. Otto von Geldern and Hermann Kower were elected resident members. Important additions to the museum included 396 bird skins and three boxes of nests and eggs, 120 reptiles, and 335 species of recent and fossil mollusks, including donations from Johns Hopkins University, Henry Hemphill, F. L. Button, and W. L. Watts. The usual annual reports of officers were read and placed on file. The annual election^{30.1} resulted in the choice of David Starr Jordan, president; William E. Ritter, first vice-president; H. H. Behr, second vice-president; J. O'B. Gunn, corresponding secretary; G. P. Rixford, recording secretary; Lucius H. Foote, treasurer; Charles A. Keeler, librarian; J. Z. Davis, director of the museum; W. C. Burnett, W. S. Chapman, C. F. Crocker, W. S. Keyes, E. J. Molera, George C. Perkins and G. W. Stewart, trustees. The vote on the amendments to the constitution in reference to the loaning of funds, with the objectionable feature removed, was 41 in favor to 37 against; and they were therefore declared adopted. The whole number of persons voting at the election was 135; thus, nearly half seemed indifferent about the subject of the amendments. From the report of the librarian it appeared that the additions to the library during 1895 had been 1646 from correspondents; 1394 by purchase, and 109 by donation, making a total of 3149. Of these 643 had been purchased with \$3,500 of the money donated by Amariah Pierce, and a list of them was appended. In the Board of Trustees, the secretary reported that the receipts for the year 1895 had been: from members' dues, \$886; from the Crocker Scientific Investigation Fund, \$1,200; from interest in Savings Banks \$386.80; from interest in the Banning mortgage \$1,721.09; from rents \$22,282.75; from returns on expense account \$27.32, all which, with \$6,945.03 cash left over from the year before, make a total of \$34,448.99. The disbursements for the year, including the surplus paid the Pioneers for the Banning mortgage, amounted to \$34,569.47, leaving a debt due the Bank of California on overdrawn account of \$120.48. There was, however, still on deposit in the Savings Union, in favor of the Academy, \$5,000.

JANUARY 20, Leverett M. Loomis read a paper on "Alexander Wilson, The Poet Naturalist, The Father of American Ornithology." The new Board of Trustees organized by the election of Charles F. Crocker, president; William S. Chapman, president *pro tem*; and L. H. Foote, secretary. The bond of the treasurer was fixed at

^{30.1} This election resulted in the first major change in Academy officers in nearly a decade. Among those failing either renomination and/or reelection were W. H. Harkness, Carlos Troyer, James G. Cooper, Charles G. Yale, and George A. Moore among the officers, and John Taylor among the Trustees.



Otto von Geldern
California Academy of Sciences Special Collections

\$5,000 and those of the librarian and director of the museum at \$1,000 each. On motion of Keyes, seconded by Stewart, the matter of procuring such bonds was referred to Messrs. Keyes and Stewart on the understanding that the costs of the bonds were to be paid by the Academy. An appropriation of \$75 was made to purchase Professor Marcus E. Jones' collection of Utah plants, and of \$1,000 for periodicals during 1896. The secretary was instructed to inform J. H. Lick and the Society of California Pioneers that the Academy's allowance of \$25 per month for the support of J. H. Lick would thereafter cease. Among bills ordered paid were \$370.10 to the Edison Light and Power Company for November and December, 1895; \$126.89 to Anna L. Brown for drawings, and \$95.50 to Edna L. Hyatt for drawings.

FEBRUARY 3, Professor Joseph LeConte read a "Memorial of James Dwight Dana, the Great Geologist." The herbarium reported the addition of the 1100 plants purchased from Marcus E. Jones. In the Board of Trustees, on motion of Keyes, seconded by Stewart, the appointment of curators and employees in the scientific departments of the Academy for one year was reconsidered; and the same appointments were approved on condition that the terms of service should be from month to month and to terminate at the option of the trustees. Estimates were directed to be made as to the cost of re-hanging of the front doors of the Academy "to admit of their swinging both in or out, or outwardly." The secretary was instructed to notify the Council that the Trustees would cease auditing bills for telephone service in the library on and after March 1, 1896. The telephone rental paid seems to have been over \$7.50 per month. FEBRUARY 17, Rabbi Jacob Voorsanger and Professor Rufus

L. Green were elected resident members. E. J. Molera delivered a lecture "On the Sources of Information of the History of the Aztecs, and the Latest Discovered Aztec Codex," illustrated with lantern slides. In the Board of Trustees, the Council asked for an appropriation of \$5,000 for printing in 1896; but, as the expenditures of 1895 had exceeded the receipts and it seemed necessary to be more economical, the application was laid on the table. The matter of the further use of the telephone was called up again and referred to the prudential committee.

MARCH 2, a Section of the Academy on Exact and Applied Sciences was formed and recognized, consisting of George Davidson, E. J. Molera, H. H. Behr, Herman Kower, Joseph LeConte, Marsden Manson, Thomas Price, Louis A. Garnett, and Edward S. Holden. Dr. M. J. Rosenau delivered a lecture on "Bacteria and the Dairy," and Dr. Thomas D. Wood, a lecture on "Tuberculosis and the Milk Supply." The herbarium reported receiving 425 specimens collected by C. G. Pringle in Mexico, by purchase, and by donation, 112 specimens from the U. S. Department of Agriculture from Alaska collected by Grederick Funston and 30 specimens of *Acacia* from Baron F. von Mueller. In the Board of Trustees, Frank H. Vaslit was requested to furnish a list of the paying members of the Academy, and the number of members whose dues had been remitted for the year 1896. A communication from Charles J. King, chairman of the Lick Biography Committee of the Society of California Pioneers, invited cooperation of the Academy in pushing forward to completion the Memorial of James Lick. On motion of Keyes, seconded by Chapman, it was resolved that the Academy would "incur no further expense in the matter of preparation and publication of the so-called Lick Memorial," and the secretary was instructed to call for a statement of liability so far incurred, so that the same might be adjusted. A number of bills were ordered paid, including \$203.35 to the Edison Light and Power Company for January; \$16.37 to Anna L. Brown for drawings, and \$1,450 for disbursements by the treasurer. MARCH 16, a resolution was adopted to the effect that the California Academy of Sciences was in full accord with the Sierra Club of California in its opposition to all movements looking towards the reduction of any of the United States Forest Reservations in California and neighboring states; and that a copy of the resolution should be forwarded to Hon. Hoke Smith, Secretary of the Interior at Washington. The president announced, at the request of Professor Joseph LeConte, that steps had been taken to establish a "Huxley Memorial," and that donations towards that purpose would be received. At the recommendation of the Council, a resolution was adopted to the effect that the Academy approved a proposition pending before Congress "to create the office of Director-in-Chief of Scientific Divisions in the National Department of Agriculture, the position to be filled by a person, whose election and tenure of office shall be determined solely by his scientific and business qualifications." Professor Fernando Sanford delivered a lecture on "Cathode Radiation," with illustrations. In the Board of Trustees, the Council, which on the score of economy had been asked to reduce its estimates for the expenses of 1896 at least \$2,500, reported that it would strike off \$1,045 for curators' supplies; Miss Farish's salary of \$480; J. G. Cooper's salary of \$780, and

\$480 from curators' salaries being \$120 from the salary of each curator – making in all reduction of \$2,785. The secretary, L. H. Foote, proffered to accept a reduction of \$25 per month in his salary, which was accepted; and Mr. Molera was requested to communicate with Dr. Behr, who held his curatorship under a sort of contract, and request him to accept \$70 per month, the same sum that was to be paid to other curators.^{30.2}

APRIL 6, M. W. Haskell, A. C. Lawson, F. W. Scaife, W. G. Curtis, W. R. Eckart, C. L. Cory, J. N. LeConte,^{30.3} Julius Callandreau, and E. L. Grossman were elected resident members. Dr. Frank Angell delivered a lecture on "Realities, Illusions, and Hallucinations." APRIL 16, in the Board of Trustees, E. J. Molera reported that Dr. Behr had signified his willingness to accept a salary of \$70 per month. APRIL 20, Charles A. Keeler delivered a lecture on "Natural Selection and Heredity." MAY 4, Professor Bernard Moses read a paper on "The Economic Aspect of Spanish Rule in America." MAY 15, in the Board of Trustees, bills for delinquent taxes, amounting to \$9,239.07, which had been assessed against the Lick Trustees for taxes on the mortgage held by them against the estate of James G. Fair, deceased, were presented and ordered paid. For the purpose of providing the money it was resolved that the president *pro tem* and the secretary should be empowered to borrow of the First National Bank a sum not exceeding \$10,000 at such rate of interest as they might deem expedient. The Council was invited to meet the Trustees for consultation on May 20, evidently on the subject of expenditures and retrenchment. MAY 18, Professor John C. Merriam delivered a lecture on "Human Remains of the Later Geological Periods." MAY 20, the day fixed for a conference between Trustees and Council, there was no quorum present and nothing was done. JUNE 3, in the Board of Trustees, it was reported that the loan of \$10,000 from the First National Bank had been effected at 6 per cent interest per annum. The secretary was instructed to accept \$5 per night for the use of the Academy Hall for Stanford University Extension lectures. Bills for several months were ordered paid, including those of the Edison Light and Power Company for \$593.45; telephone \$25.40; Anna L. Brown \$60.15 for drawings, and F. L. Jacks \$39.20 for drawings.

JULY 1, in the Board of Trustees, the First National Bank was made the depository of the funds of the Academy; and the secretary was instructed to withdraw the money in the Savings Union and deposit it in that bank. A communication was received from the Council on the subject of finances. They said that the expenditures directed by them were the cost of the annual publications; the amount of salaries paid curators; the sums expended for specimens and cases; the sums expended for books, and the costs of collecting and exploring expeditions. In view of the misunderstanding relating to delinquent taxes, which had had to be paid by the Academy, they had cut

^{30.2} The frustrations due to economies imposed on the curators and the collections are clearly evident in a letter written by Alice Eastwood a few months later: " Aug. 27, 1896. My dear Dr. Rose: . . . You can perhaps imagine under what disadvantages I labor; if I tell you that I have no help and I have to do all the poisoning, checking, recording and distributing myself and I have added between 5000 and 10000 plants each year to the herbarium. I hope for better times or I would stop increasing the collection." (Eastwood to Rose, SIArchives, RU 221 {US National Museum, Division of Plants, 1886-1928}, Box 9.)

^{30.3} Joseph Nisbet, son of Joseph and "Bessie" LeConte (*q.v.*).



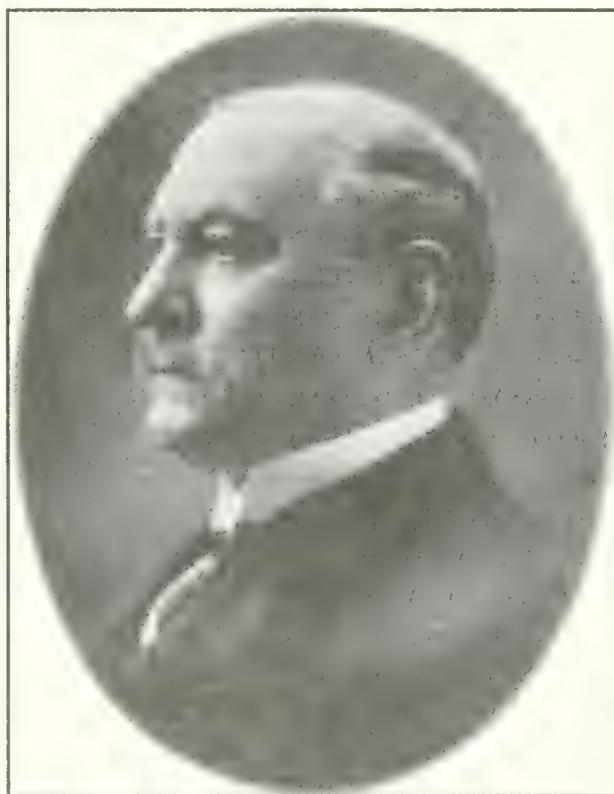
Mellen W. Haskell
Bancroft Library, University of California, Berkeley

off for a year almost all the usual expenses for specimens, books, and expeditions. They had also limited the publication expenses for the year to \$2,000, and those only for articles relating to the Pacific Coast. They suggested that there should be a change in reference to the system of the employment of curators; but it should not be too sudden, as it would work serious inconvenience to those employed and injure the reputation of the Academy. They might, however, arrange to substitute for the salaried curator system a single keeper of the museum at an adequate salary per month and provide for the special study and preservation of specimens by the temporary employment of specialists for such work, their engagement to be limited to the time such work might require. Such new engagement to be limited to the time such work might require. Such new arrangement should not be adopted before 1897; but, if deemed absolutely necessary by the Trustees, the Council might consent that it take effect at such time as the Board might fix. The communication, on motion, was referred to Messrs. Chapman, Keyes and Molera. The salary of Miss Effie A. McIlraich, in view of increased duties devolving upon her, was raised from \$40 to \$50 per month. Appropriations were made of \$48.80 to Anna L. Brown and \$37.50 to F. J. Jack for drawings.

JULY 6, H. W. Fairbanks, Beverly Letcher, C. E. Grunsky, and W. L. Jepson were elected resident members. A letter of congratulations from the Academy to Lord Kelvin on the fiftieth anniversary of his professorship at the University of Glasgow, Scotland, and a reply from the Lord Provost of Glasgow were read. Messrs. A motion of thanks to the Postal Telegraph and Commercial Cable Co. for gratuitously

transmitting the message passed unanimously. Keeler and Ritter, committee on the death of Frank H. Vaslit, a life member, presented resolutions of respect to his memory, which were adopted. They said that Mr. Vaslit had served seven years in the capacity of assistant secretary and librarian, and spoke of him as unusually faithful and efficient and a member of the Academy of sterling personal worth. Professor W. E. Ritter made remarks "On the Geographical Distribution of Batrachians." Miss Alice Eastwood spoke on "Plants." JULY 15, in the Board of Trustees, the Council asked for \$300 to publish Dr. Gustav Eisen's "Plasmocytes of the Blood"; and the matter was referred to Messrs. Chapman and Keyes to raise the money by private subscription, if possible. Messrs. Molera and Keyes were requested to appear before the San Francisco Board of Equalization and secure, if possible, a reduction of the amount levied upon the real estate of the Academy.

AUGUST 3, P. W. Nathan, John Richards, W. M. Pierson, Dr. Luke Robinson, Walter S. Thorne, George W. Dickie, and Irving Stringham were elected resident members. Professor W. E. Ritter spoke of "The Geographical Distribution of Life in California"; John Van Denburgh on "Reptiles," and Charles A. Keeler on "Birds." AUGUST 5, in the Board of Trustees, Messrs. Chapman, Keyes and Molera, to whom had been referred the communication of the Council in reference to a more economical administration of the scientific department of the Academy, reported that they fully coincided with the suggestions of the Council and recommended their adoption. The committee on reduction of tax assessments reported that, on account of the early adjournment of the Board of Equalization, they had been unable to get a hearing. In reply to an inquiry by the Mining Exchange as to the terms on which it could obtain



William Montgomery Pierson
(From W. C. Wolfe, 1901, *Men of California*, p. 94.)

the use of the Academy's hall for a series of lectures on mining subjects, the secretary was instructed to fix the rental at enough to cover the cost of lighting and janitor service – \$7.50 per night. A proposition of the Council to appropriate \$150 for a continuation of Leverett M. Loomis' studies on migration of ocean birds off Monterey was laid on the table. The usual bills for electricity and telephone were ordered paid. SEPTEMBER 2, in the Board of Trustees, a proposition to change the motor machinery of the elevator was referred to Messrs. Crocker and Keyes, with power to devise and act upon a plan to economize the running expenses. Leverett M. Loomis appeared before the Board and explained the objects to be attained by his proposed new expedition to Monterey, whereupon the sum of \$150, asked for, was appropriated. Among the bills ordered paid were \$193.05 for electric current for July; \$7.75 for telephone, and \$58 for drawings by Anna L. Brown.

SEPTEMBER 7, R. M. Hills, E. W. Hilgard and Charles P. Grimwood were elected resident members. Dr. William Pepper, President of the Museum of the University of Pennsylvania, delivered an address on "The Function of the Museum in Modern Communities." The herbarium reported the addition of 828 specimens by exchange and donation. SEPTEMBER 14, at a special meeting, Dr. Bashford Dean of Columbia College, New York, lectured on "Oyster Culture in Europe," illustrated with lantern slides. SEPTEMBER 16, in the Board of Trustees, the secretary was authorized to rent rooms and the Academy hall to the Theosophical Society upon such terms as seemed to him just, and to rent store no. 617 Market Street to W. J. Fitz Maurice for three years at a monthly rent of \$100, payable monthly in advance. SEPTEMBER 21, Professor Andrew C. Lawson delivered an illustrated lecture on "The Evolution of



Eugene Woldemar Hilgard
Smithsonian Institution Archives (N 8893)

Land Forms." OCTOBER 5, Marsden Manson of the Bureau of Highways, Sacramento, read a paper on "The Columbia Lava Plain and its Local Climatic Influence," illustrated with lantern slides. OCTOBER 7, in the Board of Trustees, the secretary was instructed to receive bids for new machinery to run the elevator. OCTOBER 19, John L. Howard was elected a resident member. Leverett M. Loomis read a paper on "The Farallones and Their Inhabitants," illustrated with lantern slides. OCTOBER 26, at a special meeting Prof. G. Wharton James delivered an illustrated lecture on "The Grand Cañon of the Colorado River in Arizona."

NOVEMBER 2, W. J. V. Osterhout and E. W. Maslin were elected resident members. Dr. Harkness presented resolutions of respect to the memory of Jacob Z. Davis, director of the museum recently deceased, pronouncing him not only a disinterested friend and associate but a generous patron of the Academy, ever ready with purse and counsel to assist the workers in the various departments and to add to and establish the museum. The resolutions were adopted and ordered spread upon the minutes. Professor George Davidson read a paper on "The Submerged Valleys on the Pacific Coast," illustrated with lantern slides.

NOVEMBER 4, in the Board of Trustees, at the request of the Council, the salary of Miss Effie McIlriach, as assistant secretary and librarian, was raised to \$70 per month from November 1 until the Board should otherwise determine. The Council informed the Board that they had under consideration a proposition to turn over to the Golden Gate Park Commission the exhibition collections of the Academy upon certain conditions; that they had referred the proposition to W. E. Ritter, J. O'B. Gunn and G. P. Rixford, and asked the Trustees to appoint a like committee to confer upon the subject. The Board replied with a resolution to the effect that they regarded the proposition to thus dispose of the Academy's collection as premature and did not deem it prudent to appoint any committee on the subject. A communication was received from Charles J. King, of the Society of California Pioneers, inclosing a bill for the Academy's proportion of expenses so far incurred in connection with the Lick Biographical Memorial Committee. The bill was for \$187.50. In reply, the president was requested to inform Mr. King that the Academy had determined to incur no further expense for the preparation or publication of the proposed Lick Biography; but that the bill rendered would be allowed and paid, provided it should cover and complete the entire expenditure so far as the Academy was concerned. NOVEMBER 16, G. Wharton James delivered an illustrated lecture on "The Mokis and the Snake Dance at Oraibi." In the Board of Trustees, \$187.80 was ordered paid in full of the Academy's proportion of expenses for the preparation, so far as it had gone, of the James Lick Memorial. A communication was received from Col. A. S. Hubbard, secretary of the California Historical Society, stating that that Society had no resources with which to pay rent and asking that the rent due should be remitted and the rate for the future be reduced. The secretary was instructed to confer with Judge James V. Coffey, president of the Historical Society, upon the subject.

DECEMBER 7, the following papers, presented for publication, were read by title and submitted:³⁰⁴ "California Water Birds, No. II – Vicinity of Monterey in Midwin-

ter,” by Leverett M. Loomis; “New Mallophaga, I, with Special Reference to a Collection Made from Maritime Birds of the Bay of Monterey, California,” by Vernon L. Kellogg; “North American Apterygogenea,” by Harold Schätt; “Notes on Palaeozoic Crustacea, No. 5 – Carboniferous Trilobites from Missouri,” by Anthony W. Vogdes; “Description of a New Schizopod from Lake Merced,” by Samuel J. Holmes; “Notes on Fishes Little Known or New to Science,” by David Starr Jordan; “Notes on Fresh Water Fishes of the Pacific Slope of North America,” by Cloudsley Rutter; “Report on a Collection of Plants from San Juan County, in Southeastern Utah,” by Alice Eastwood; “On Some New Cretaceous^{30.5} (and Eocene?) Mollusca of California,” by J. G. Cooper; a “List of Some Reptiles from Southeastern Arizona, with a Description of a New species of *Cnemidophorus*,” by John Van Denburgh; “Description of a New Lizard (*Eumeces gilberti*) from the Sierra Nevada of California,” by John Van Denburgh; “California Water Birds. No. III – South Farallon Island in July,” by Leverett M. Loomis; “Coleoptera of Baja California,” by George H. Horn; “The OEdemeridae^{30.5} of Boreal America,” by George H. Horn; “Descriptions of New Californian Plants,” by Alice Eastwood; “New Mallophaga, II, from Land Birds, Together with an Account of the Mallophagous Mouth-parts,” by Vernon L. Kellogg; and “A List of Fishes Collected at Port Ludlow, Washington,” by Edwin Chapin Starks. Among the donations reported were 139 water birds from Monterey Bay and the adjacent ocean. F. M. McFarland, assistant professor of histology at Stanford University, delivered a lecture entitled “Experiments in the Hybridization of Echinoderm Larvae,” illustrated with diagrams. DECEMBER 21, on motion of W. S. Chapman, a resolution was adopted to the effect that whereas certain birds in California were threatened with extinction, owing to persistent persecution upon their nesting grounds, immediate action should be taken to secure protection for them; and that, for this purpose, a committee of three should be appointed to report the state of the existing laws of California on the subject and such amendments to them as might be necessary to afford proper protection to song birds and to birds in general during the nesting season. The resolution was adopted, and Messrs. Chapman, Pierson and Keeler were appointed such committee. The nominating committee presented a ticket of officers for 1897. Harold W. Fairbanks read “An Outline of the Geological History of California,” illustrated with lantern slides.

^{30.4} See footnote 28.2.

^{30.5} “Crustaceous” [in error] in the published minutes (*Proc. Calif. Acad. Sci.*, 1897[1896], ser. 2, 7:572; also OEdemeridae in the handwritten minutes (*Minute Books*, Stated Meetings, Jan. 1891–Nov. 1904, p. 142).

Chapter XXXI: Years 1897-1898

1897

The annual meeting of 1897 took place JANUARY 4. The committee on the protection of birds reported amendments to the game laws of the State, prohibiting the killing of, catching of or having in possession, alive or dead, wild birds, except by duly accredited scientific collectors; but the new provisions were not to affect birds already named and protected by the game laws; and it did not protect the "English Sparrow." A further section was designed to protect birds' nests and eggs, except those of the English sparrow. The committee said that their propositions were doubtless not in proper shape as legislative enactments, and recommended a new committee to put them in proper legislative phraseology. The report was accepted and adopted, and the committee instructed to continue and take charge of the matter of procuring the necessary legislation to carry out the purposes expressed. The usual annual reports of officers were read and placed on file.^{31.1} On the report of the judges and inspectors of the annual election, the following were declared officers for the

^{31.1} The complete report of the Committee on Bird Protection states:

"To the President and Members of the Academy of Science

"Your committee [Wm. S. Chapman, Wm. M. Pierson, Charles A. Keeler] heretofore appointed for the purpose of taking into consideration and reporting to this body the form of such legislation as is needed for the protection of wild birds in this state, beg leave to report as follows:

"They have examined the laws of the various states of the Union, and find that in New York and Massachusetts particularly the legislation has been substantially what the Committee deems desirable to have upon the statute books of this State. They recommend therefore that the Legislature be asked by this Academy to pass an amendment to the present 'Game Laws' of the State. Provision substantially in the following form:—

"Section 1.— Wild birds shall not be killed or caught at any time, or possessed after the same are dead. This provision does not affect any birds, the killing of which is prohibited between certain dates, under acts of the Legislature now in force, nor does it protect the 'English Sparrow,' and it does not apply to any person holding a certificate under the provisions of Section 3 of this Act. Whoever shall violate or attempt to violate the provisions of this Section shall be deemed guilty of misdemeanor, and in addition thereto, shall be liable to a penalty of \$25.00 for each bird killed, trapped, or destroyed contrary to the provisions of this Section.

"Section 2.— The eggs of wild birds shall not be offered for sale, or their nests robbed or wilfully or needlessly destroyed unless when necessary to protect buildings or prevent their defacement. This section does not apply to the 'English Sparrow.' Whoever shall violate or attempt to violate the provisions of this Section shall be deemed guilty of misdemeanor, and in addition thereto, shall be liable to a penalty of \$25.00 for each nest robbed or destroyed contrary to the provisions of this Section.

"Section 3.— Certificates may be granted by any university, college, or incorporated society of Natural History in this State through such persons or officers as such society may designate to any properly accredited person, permitting the holder thereof to collect birds, their nests or eggs, for strictly scientific purposes only. In order to obtain such certificate, the applicant for the same must present to the person or persons having the power to grant such certificates, written testimonials from two well known scientific men certifying to the good character and fitness of said applicant to be entrusted with such privilege. Such certificates to be given in force for one year and no longer.

"Section 4.— This Act shall take effect and be in force from and after its passage."

The report was adopted and the committee continued to procure the necessary legislation.

year: Dr. David Starr Jordan, president; William E. Ritter, first vice-president; H. H. Behr, second vice-president; J. O'B. Gunn, corresponding secretary; G. P. Rixford, recording secretary; L. H. Foote, treasurer; George C. Edwards, librarian; Charles A. Keeler, director of the museum; Charles F. Crocker, Lewis Gerstle, E. J. Molera, George C. Perkins, William M. Pierson, Irving M. Scott, and G. W. Stewart, trustees.

A committee of three consisting of Messrs. Holladay, Foote and Pierson, was appointed to suggest measures to relieve the Academy and other similar institutions in California from taxation. W. S. Keyes offered a resolution, which was adopted, directing the new Board of Trustees to inquire into the matter of the loss to the Academy funds of about \$1,039.45, penalty for delinquent taxes of the year 1895, that item being a part of the sum of \$9,239.07, charged against the Lick Trustees and paid by the Academy; and further, that the new Board of Trustees be instructed to endeavor to fix the responsibility for the loss and, if possible, recover the same from the person or persons through whose neglect or oversight the loss occurred. Reports for the past year by the president, librarian, and department curators Alice Eastwood, botany, H. H. Behr, entomology, L. M. Loomis, ornithology, John Van Denburgh, herpetology, and H. W. Harkness, fungi, were read and placed on file.

JANUARY 6, in the Board of Trustees, the secretary presented a financial statement for the year 1896. He stated the receipts to have been: from members' dues, \$1,024; rents, \$20,438; loan from First National Bank, \$10,000; withdrawn from Savings Union, \$5,000; interest on Banning mortgage, \$8,624.57; interest from Savings Union, \$125.60; interest from Crocker Scientific Investigation Fund, \$1,200; contribution from W. S. Keyes, \$150; contribution from J. Z. Davis, \$150 – making a total of \$46,712.17. The disbursements he stated to have been: for interest on loan from First National Bank, \$310.01; library, \$1,982.19; museum, \$166; salaries, \$9,945; delinquent taxes against Lick Trust, \$9,239.07; "expenses," \$17,303.48; overdraft on Bank of California, \$120.48 – making a total of \$39,366.23. There was in cash, in the Bank of California, \$4,164.15, and in the First National Bank, \$3,487.79, or together, \$7,651.94; but at the same time there was an outstanding debt to the First National Bank of \$10,000. In the same connection, the secretary gave a list of the assets of the Academy, estimating their values as follows: Market Street lot, \$198,500; Academy buildings, \$373,098.66; bills receivable (Banning note and mortgage), \$98,348.46; library, \$23,758.90; museum, \$55,760.52; Crocker Scientific Investigation Fund, \$20,000; furniture \$300; cash in bank, \$7,651.94, making a total of \$777,618.48, or less the liability to the First National Bank, \$767,618.48. A communication from the Council requested the Board to assist in procuring relief from taxation.

JANUARY 18, Bryan J. Clinch was elected a resident member. Miss Eastwood reported on additions to the herbarium, including donations of 200 California plants from Mrs. Brandegee and 231 species of rare and new plants from the mountains of Tulare County by Mr. Purpus. Reports on activities for the past year were read by Dr. Eisen, curator of biology, and Charles Fuchs, preparator of entomology. S. W. Holladay offered a resolution to the effect that the annual dues of associate members,

who might be students of any of the universities in this state, should be reduced to \$3 per year; but no action was taken upon the proposition. W. L. Watts of the State Mining Bureau read a paper on "The Petroleum Fields of Southern California," illustrated with stereoptican views. JANUARY 30, the new Board of Trustees organized by the election of Charles F. Crocker, president; Lewis Gerstle, president *pro tem*; and L. H. Foote, secretary. William M. Pierson stated, in reference to the matter of taxation, that he had prepared a resolution that would be submitted to the State Legislature and its adoption urged.

FEBRUARY 1, S. B. Christy read a paper on "The Cyanide Process of Gold Extraction," illustrated with lantern slides. FEBRUARY 3, in the Board of Trustees, an allowance of \$25 per month was made to W. G. W. Harford, to be paid from the Crocker Scientific Investigation Fund during the pleasure of the Board. FEBRUARY 15, Dr. David Starr Jordan delivered a lecture, entitled "Investigations of the Fur Seal Islands in 1896," illustrated with stereoptican views. The herbarium reported the donation of a collection of 210 rare specimens collected in Mexico by C. G. Pringle and purchased for the herbarium by the California Botanical Club for \$20. MARCH 1, John Van Denburgh read a paper, entitled "Is the Bite of the Gila Monster Poisonous?" In the Board of Trustees, Harvey Lindley, who had been selected to value the property covered by the Banning mortgage, reported that he estimated the property, exclusive of the "Hotel Metropole" and lot, at \$250,000. On this showing, it was ordered that the mortgage should be released so far as it covered the Hotel Metropole on Lot 1, Block 5, on Avalon, Santa Catalina Island. The Council was authorized to employ an assistant in the library at \$35 per month, and an assistant in the herbarium at \$15 per month. A recommendation by it to increase the salaries of curators was laid on the table. Among the bills presented was one from the Edison Light and Power Company for \$74.90, a considerably smaller bill than usual, which seems to have been the result of the movement to engage other power. MARCH 15, Professor William E. Ritter, of the University of California, made remarks on "Life of the Sea."

APRIL 5, Dr. E. P. Lewis, of the University of California, lectured on the "Fundamental Principles of Electrical Science," illustrated with experiments. APRIL 12, at a special meeting, Fernando Sanford, of Stanford University, lectured on "Recent Discoveries in Electricity." APRIL 19, E. P. Lewis, J. J. B. Argenti, Cameron Knight, H. B. Torrey, Emil Liess, and Francis X. Simon were elected resident members. Among the donations to the museum were 321 plants from Heller's Idaho collection, presented by the Botanical Club, and 226 specimens of grasses from the U. S. Department of Agriculture. Alexander McAdie, of the U. S. Weather Bureau, addressed the Academy on the subject of "Atmospheric Electricity." APRIL 26, at a special meeting, Frederick A. C. Perrine, of Stanford University, lectured on "The Future Possibilities of Electricity." MAY 3, John Daggett, Superintendent of the Mint, delivered a lecture on "Indian Life in Northern California," illustrated with lantern slides. In the Board of Trustees, an appropriation of \$200 was made to Leverett M. Loomis to continue his study of ocean birds off Monterey, and \$100 for illustrations

of John Van Denburgh's paper on Pacific Coast Reptiles, on condition that he become a life member of the Academy. MAY 17, S. W. Young, of Stanford University, read a paper on "The Chemical Synthesis of Foods." JUNE 7, Frank Angell, professor of psychology at Stanford University, lectured on "The Nature of Mind." In the Board of Trustees, among the bills allowed were \$37.50 to Mary H. Wellman and \$140 to Anna L. Brown for drawings. JUNE 28, at a special meeting, Daniel T. Ames lectured on "The Science of Handwriting as applied to the Detection of Forgery."

JULY 19, the death of Charles F. Crocker, president of the Board of Trustees, was announced; and Irving M. Scott, J. O'B. Gunn and Professor George Davidson were appointed a committee to draw up and present appropriate resolutions. Professor Davidson spoke of the valuable services rendered to the Academy by the deceased, and by his father, Charles Crocker. In the Board of Trustees, on the announcement of Mr. Crocker's death, Messrs. Gerstle and Pierson were appointed to prepare resolution, and Messrs. Molera and Scott to attend the funeral as pall bearers. JULY 26, at a special meeting, George K. French delivered an illustrated lecture on "The Gold Coast Ashanti and Kumassi." AUGUST 2, in the Board of Trustees, the committee on the death of Charles F. Crocker presented resolutions of respect to the memory of the deceased, which were adopted. They expressed appreciation of his prudent counsel, his uniform courtesy and kindness, and his singleness of purpose in the furtherance of the aims of the Academy. William H. Crocker was elected to fill the vacancy caused by his brother's death in the Board. An application of W. G. W. Harford for an increase of salary was laid on the table. AUGUST 16, George M.



William H. Crocker
California Academy of Sciences Special Collections

Stratton, assistant professor of psychology at the State University, lectured on "Some Recent Experiments in Upright Vision."

SEPTEMBER 6, the death of Professor Henry N. Bolander, a life member, at Portland, Oregon on August 20, was announced, and Dr. Behr, Miss. Eastwood and S. W. Holladay were appointed a committee to prepare a suitable memorial. Professor George Davidson delivered a lecture on "The Geology and Resources of Alaska," illustrated with lantern slides. In the Board of Trustees, W. M. Pierson called attention to the fact that the officers of the annual elections from 1891 to 1896 had failed to file certificates of the elections with the County Clerk and, on motion made for that purpose, it was resolved that all acts of all the Boards of Trustees during those years should be expressly ratified and confirmed. SEPTEMBER 20, F. M. McFarland, William H. Crocker, John Van Denburgh, and Edwards Davis were elected resident members. M. W. Haskell, of the University of California, read a paper on "Curvilinear Asymptotes." The Committee on the death of Professor Henry N. Bolander reported a memorial, which was approved and spread upon the minutes.^{31,2} It referred to Professor Bolander's botanical labors in California, commencing in 1863. He was one of the founders of the herbarium of the Academy. In 1870, he published the first work on botany that appeared on this Coast, entitled "A Catalogue of the Plants Growing in the Vicinity of San Francisco." His special subjects of study were grasses, mosses and lichens; and, in reference to them as well as other branches of botany, he contributed largely to the *Proceedings* of the Academy for years. He was also prominent in educational matters and was for several years State Superintendent of Public Schools.

OCTOBER 4, Dr. David Starr Jordan lectured on "The Fur Seal Investigation of 1897." Miss Eastwood reported on additions to the herbarium, including 208 plants from California and 114 from Colorado, both collections made by her. Among the additions to the museum were specimens of mammoth bones and a human skull that had been collected forty years earlier, donated by the Odd Fellows of Coulterville. In the Board of Trustees, William H. Crocker was elected president; and the secretary was instructed to file a certificate of his election as trustee and as president of the

^{31,2} The full text of the memorial reads,

"Professor Henry N. Bolander, who died at Portland, Or., August 20, 1897, was one of the pioneers in Botany in California. He was an enthusiastic botanist, who, by his collections and writings did a great deal to further our knowledge of the flora of the Pacific Coast. Beginning in 1863, for twelve years his efforts were untiring in his beloved work. He made rich and extensive collections, some of which formed part of the State Survey Series upon which the Botany of California in the Geological Survey was based. He was one of the founders of the Herbarium of the Academy, which owes much to his unselfish efforts in its behalf. He corresponded and exchanged plants with botanists in all parts of the world, who held him in high esteem. Through these exchanges the accessions of foreign plants greatly increased in the Herbarium with very little expense to the Academy. His work appears chiefly among the grasses, mosses, and lichens; for these difficult and little-known plants were his especial delight.

"In 1870 he published the first work on botany that had appeared on this coast. It was entitled: 'A Catalogue of the Plants Growing in the Vicinity of San Francisco,' and included the plants from the Coast to Mt. Diablo and 100 miles north and south of San Francisco. Besides this he contributed largely to the *Proceedings* of the Academy and by his work aroused and kept alive an interest in Botany among the people with whom his prominence in educational circles brought him in contact.

"*Bolandra*, a genus of Saxifragaceous plants, was named in his honor, as well as many beautiful species under other genera. He was the author of several species, especially among the grasses.

"Resolved that the Academy express its sense of the great obligation it is under for our late member's unwearied efforts in its behalf during its days of struggle and poverty; and its appreciation of his unselfish devotion to Science.

"[Signed] H. H. Behr, Alice Eastwood, S. W. Holladay."

Board with the County Clerk. E. J. Molera was authorized to prepare and submit a contract for changes in the elevator system. OCTOBER 18, the death of Dr. Luke Robinson, a resident member, was announced. Dr. Gustav Eisen delivered a lecture on "Recent Investigations in the Human Blood," illustrated with large drawings. In the Board of Trustees, the purchase of W. W. Price's collection of 2,050 Sinaloa birds for \$700, of which \$300 were to be paid down and the remainder in monthly installments of \$100, was authorized and ordered. Leverett M. Loomis, as curator of ornithology, stated that A. K. Fisher, of the U. S. Biological Survey, pronounced the Price collection well worth \$2,000; and he added that it would go far "towards completing the Academy's collection of North American birds." W. M. Pierson announced that questions had arisen as to the methods of procedure in the incorporation of the Academy; and, on his motion, a committee was appointed to consider the propriety of re-incorporation. Messrs. Pierson, Molera and Crocker were appointed such committee. E. J. Molera reported that he had examined the subject of running the elevator and thought the offer of the Central Iron Works of Quincy, Illinois, the best. They offered to put in their electrical elevator and keep it in repair free of cost for two years for \$ (_____)^{31.3} and to guarantee cost of current maintenance not to exceed \$40 per month for two years.

NOVEMBER 1, George W. Dickie, manager of the Union Iron Works, read a paper, entitled "Is It Necessary that the United States should be a Great Naval Power?," illustrated with lantern slide pictures of a number of our new war ships built in San Francisco. NOVEMBER 15, Leverett M. Loomis, Joseph Mailliard, A. M. Shields, H. B. Kaeding, John W. Mailliard, and Charles E. Green^{31.4} were elected resident members. The following papers, presented for publication, were read by title and submitted:^{31.5, 31.6} "*Diemictylus torosus*, Esch. – The Life History and Habits of the Pacific Coast Newt," by William E. Ritter; "The Geology of Santa Catalina Island," by William Sydney Tangier Smith; "Plasmocytes; The Survival of the Centrosomes and Archoplasm of the Nucleated Erythrocytes, as Free and Independent Elements in the Blood of *Batrachoseps attenuatus* Esch," by Gustav Eisen; "Scientific Names of Latin and Greek Derivation," by Walter Miller; "A Morphological Study of *Naias* and *Zannichellia*," by Douglas Houghton Campbell; "The Submerged Valleys of the Coast of California, U. S. A., and of Lower California, Mexico," by George Davidson; "A Genus of Maritime Dolichopodidae New to America," by William Morton Wheeler; "The Reptiles of the Pacific Coast and Great Basin," by John Van Denburgh; "The Development of *Glyphioceras* and the Phylogeny of the Glyphioceratiidae," by James Perrin Smith; "Studies in the Herbarium and the Field. I. Report on a Small Collection of Plants from the White Sands of New Mexico; II, On Spurless

^{31.3} We are unable to confirm any of the details because the minutes of the Trustees Meetings for this period do not seem to have survived the 1906 earthquake and fire (see Appendix J).

^{31.4} Greene in the handwritten minutes (*Minute Books*, Stated Meetings, Jan. 1891-Nov. 1904, p. 172).

^{31.5} See footnote 28.2.

^{31.6} In 1897, the Academy partitioned its *Proceedings* publication into sections, began its 3rd series, and published papers in separate volumes, each devoted exclusively to papers in one of several general disciplines, Botany, Mathematics and Physics, or Zoology. This arrangement continued for several years until the 4th series was inaugurated following the earthquake and fire in 1906.



Joseph Mailliard (1902)
California Academy of Sciences Special Collections



John W. Mailliard
California Academy of Sciences Special Collections

Forms of *Aquilegia*; III, Three Undescribed California Plants; IV, The Manzanitas of Mount Tamalpais," by Alice Eastwood; and "A Preliminary Account of the Marine Annelids of the Pacific Coast, with Descriptions of New Species," by Herbert P. Johnson. Miss Alice Eastwood made remarks on "New and Recent Observations on Some California Plants," illustrated with the exhibition of dried specimens. W. J. V. Osterhout, of the University of California, lectured on "Spindle Formation and Chromosome Reductions in Plant Cells," illustrated with diagrams.

DECEMBER 6, President Jordan announced the formation, by Leverett M. Loomis, John W. Mailliard, Joseph Mailliard, A. M. Shields, and H. B. Kaeding, of a "Section of Ornithology" of the Academy. John W. Erwin, U. S. Postoffice inspector, delivered a lecture on "The Postal Service of the United States," illustrated with lantern slides. DECEMBER 20, the deaths of Francis X. Simon and George H. Horn, resident members, were announced. The nominating committee reported a ticket for officers of 1898, in which Professor William E. Ritter, of the University of California, was nominated for president, Professor Charles H. Gilbert, of Stanford University, received the nomination for first vice-president. Professor Ritter spoke on "The Ancestry of Vertebrates," illustrated with drawings.

1898

JANUARY 3, 1899, the annual election was held, and at the annual meeting that evening the various officers presented their reports, which were placed on file. As the result of the election the following persons were declared chosen as officers for the year: William E. Ritter, president; Charles H. Gilbert, first vice-president; H. H. Behr, second vice-president; J. O'B. Gunn, corresponding secretary; G. P. Rixford, recording secretary; L. H. Foote, treasurer; Louis Falkenau, librarian; Charles A. Keeler, director of the museum; William H. Crocker, C. E. Grunsky, James F. Houghton, E. J. Molera, George C. Perkins, William M. Pierson, and G. W. Stewart, trustees. On nomination of the Council, Dr. David Starr Jordan was elected an honorary life member. Dr. Behr and Prof. Haskell moved to amend Article I, Section I of the By-Laws of the Academy to read, "The Stated and Annual Meetings of the Academy shall be held in the Hall of the Academy at the hour of eight o'clock in the evening."^{31.7} JANUARY 17, A. O. Leuschner,^{31.8} of the University of California, delivered a lecture, entitled "Some Recent Developments in Astronomical Photography," illustrated with lantern slides. Among the additions to the herbarium were 300 specimens from the Sequoia gigantea region, 80 specimens constituting the first collection from San Nicholas Island, presented by Mrs. Trask, 180 specimens from Oklahoma, from J. W. Blankinship, in exchange for Academy publications, and 85 species of Mexican plants donated by Mrs. Brandegee. The Board of Trustees, organized with the election of William H. Crocker, president; William M. Pierson,

^{31.7} Although no action seems to have been taken on the motion at this meeting, even that of seconding the motion, it surfaces again on March 21 (*q.v.*), at which time the change was adopted.

^{31.8} Recorded as A. L. Leuschner in the *Minute Books* (Stated Meetings, Jan. 1891-Nov. 1904, p. 178).



Charles E. Grunsky (1902)
California Academy of Sciences Special Collections



James Franklin Houghton
(From W. C. Wolfe, 1901, *Men of California*, p. 398.)

president *pro tem*; and L. H. Foote, secretary. A sum of \$124 was ordered paid to W. W. Price for the purchase of bird skins, on condition that he should pay his delinquent dues and become a life member.

FEBRUARY 7, John C. Merriam, instructor in palaeontology at the University of California, delivered a lecture, entitled "The First Fauna of the Earth." FEBRUARY 14, at a special meeting of the Board of Trustees, Mr. Ridley, superintendent of the Central Light and Power Company, appeared by request and stated that the cost of putting incandescent lights into the auditorium and entrance hall of the Academy would not exceed \$125, whereupon the secretary was instructed to have the work done. FEBRUARY 21, the herbarium reported that Mrs. Trask had donated 162 plants from Santa Catalina Island and that the Anthony Collection of 250 specimens from Lower California, including the types of several new species, was obtained by purchase. Douglas H. Campbell, of Stanford University, lectured on the "Origin of Flowering Plants." MARCH 7, Leverett M. Loomis lectured on "Ocean Life Off Monterey." MARCH 21, Simon H. Seymour was elected a life member and Alfred P. Redington, Arthur L. Bolton, George H. Mendell, Carl Purdy, and J. P. E. Heintz resident members. The by-laws were so amended as to fix the time of annual and stated meetings at the uniform hour of 8 o'clock P.M. instead of making a difference between winter and summer. George K. French, FRGS, delivered a lecture, entitled "The Guanches, the Ancient Inhabitants of the Canary Islands," illustrated with lantern slides.

APRIL 4, Marsden Manson delivered a lecture, entitled "Hasty Notes of a Trip to and from the Seventh International Geological Congress." In the Board of Trustees, W. G. W. Harford's salary was advanced to \$50 per month; and \$33.33 per month were allowed for assistants in the herbarium. G. W. Stewart tendered his resignation as a trustee. The Central Light and Power Company was ordered paid \$110.41 for fixtures and labor in electrical lighting of the lecture hall and entrance of the Academy. APRIL 18, Mrs. Phebe A. Hearst and Thomas W. Mulford were elected life members and Dr. A. C. Hart a resident member. The death of Dr. Arthur B. Stout, a life member, was announced, and Messrs. Behr, Brooks and Holladay were appointed a committee to present a suitable memorial. William A. Setchell, professor of botany at the University of California, delivered an illustrated lecture on "Giant Seaweeds of this Coast." In the Board of Trustees, George W. Dickie was elected a trustee to fill the place of G. W. Stewart, resigned. A bill of \$3,094, being for second installment of State and City and County taxes, was ordered paid.

MAY 2, Dr. Arthur M. Edwards was elected a resident member. In the herbarium, among the collections received were 150 specimens of Pringles 1897 Mexican collection for which the curator paid \$15 and donated to the Academy. Messrs. Behr, Holladay, and Elisha Brooks, of the committee on the death of Dr. Arthur B. Stout, presented a memorial, which was approved and spread upon the minutes. It appeared from it that Dr. Stout died in San Francisco on April 14, 1898. He was one of the early members of the Academy, having become such on May 16, 1853. He was elected treasurer May 23, 1853; a curator of ethnology in 1881. He was the author of

an ethnographical treatise, entitled "Contributions to the History of the Aleutian Islands." He was prominent in the medical profession and especially so in operative surgery. The death of Melville Attwood, a resident member, was announced; and Charles G. Yale and S. B. Christy were appointed to prepare an appropriate memorial. The president spoke of the work of the Academy and the desirability of making its publications more than ever the repository of the results of scientific investigation on the Pacific Coast. He said that to accomplish what was desired, more funds would be necessary; and it was to be hoped that the generous response that a recent appeal to Mr. C. P. Huntington met with would act as a stimulus to other friends of the Academy. Gen. J. F. Houghton offered a resolution to the effect that whereas the publications of the Academy were the most important feature of its work and take rank among the best scientific journals of this country and Europe; and whereas its efforts to print all the papers presented, which were worthy of publication, were constantly hampered by the inadequacy of the funds at its disposal, an appeal had been made to Mr. C. P. Huntington, who without the slightest hesitation had subscribed the sum of \$1,000 towards the publication fund; and that the sincere thanks of the Academy should be tendered to him in appreciation of his generosity. S. W. Holladay spoke at some length on the subject, and the resolution was adopted. Dr. George J. Peirce, of Stanford University, delivered a lecture, entitled "Is there any Fundamental Difference between Plants and Animals?" In the Board of Trustees, on recommendation of the Council, \$3,000 were appropriated for publication in 1893; \$600 for periodicals; \$250 for book-binding; \$400 for purchase of books; \$480 for contingent expenses, and \$625 for curators' supplies. The rent of J. H. A. Folkers for the store No. 815 Market Street was reduced to \$300 per month. W. M. Pierson reported against a claim of Walter E. Bryant for further pay for his collection of birds; and the matter was referred back to Mr. Pierson to make an equitable adjustment.

MAY 16, Professor George Davidson, of the committee on the death of Charles F. Crocker, presented a memorial of the deceased which was approved and ordered spread upon the minutes.^{31.9} It spoke of the goodwill and liberal assistance rendered

^{31.9} Complete text of the memorial for Charles F. Crocker as presented by the committee and recorded in the *Minute Books* (Stated Meetings, Jan. 1891-Nov. 1904, pp. 187-188).

"In the death of our late member, Chas. F. Crocker, the California Academy of Sciences cannot refrain from recalling the good-will and liberal assistance of his father, Charles Crocker. In the largeness of his heart the son was a worthy representative of that munificence [*sic*] which secured to the Academy the sum of \$20,000, given for the purpose of aiding members of the Academy who had devoted their lives to scientific investigation; and which provided one-half the purchase money of the Palaeontological Museum, known as the Crocker-Stanford Collection.

"In his capacity of President of the Board of Trustees, Mr. Chas. F. Crocker conscientiously and continuously gave his earnest attention to the financial condition of the Academy, at a period when it required prudence, forethought, and conservative positiveness to secure all the benefits proposed by James Lick.

"It was under his Presidency of the Board of Trustees that the present building was erected, and the final settlement of the Lick Trustees satisfactorily consummated.

"In all questions of original research and investigation, Mr. Crocker could be relied upon to render the assistance and support that would insure success, as well in matters of other organizations as in the projects of the Academy.

"Mr. Crocker was a thorough Californian, and as his years increased, the breadth of his views was vastly enlarged; so that he looked forward to a fuller and wider scope for the activity of the Academy, especially in those fields of scientific application where the practical results should endure to the material benefit of the people, and particularly to those of his native State.

"In his social life Mr. Crocker was remarkably quiet and unobtrusive; he was sympathetic with meritorious effort, and markedly devoted to his friends. (*footnote continued next page*)

by his father, Charles Crocker, to the Academy and said that in the largeness of his heart the son was a worthy representative of his father's munificence. It also spoke of the great prudence, forethought and conservative positiveness to secure all the benefits proposed by James Lick, which had been manifested by Mr. Crocker as president of the Board of Trustees during the settlement of the Lick Trust and the erection of the new Academy building. Charles G. Yale, of the committee on the death of Melville Attwood, presented a memorial, which was also approved and ordered spread upon the minutes.^{31.10} It stated that Mr. Attwood died at Berkeley on April 23, 1898. He had been a manager of mining properties in Great Britain, Brazil, and the United States. In 1852, on his way to California, he manifested his self-sacrificing disposition by taking the place of the steamship surgeon, who had died of cholera, and attended on those who were ill; for which, at the end of the voyage, he received the heartfelt thanks of officers and passengers publicly expressed. He

31.9 (continued) "He revered the memory of his mother, and was the moving and guiding spirit in organizing the charities which his mother had inaugurated, and those which he knew she had contemplated. Her ideas have been carried into active realization in the quietist manner and without the semblance of ostentation.

"In the sudden death of our member, the Academy mourns a sincere associate; scientific investigation has lost a modest but efficient supporter; and personally we have each and individually lost a friend.

"Officially and personally the members of the Academy beg to offer their fullest sympathy with his family and with his brothers and sister in the loss which so deeply and unspeakably affects them.

"[Signed] George Davidson, J. O'B. Gunn, Irving M. Scott"

31.10 Complete text of the memorial for Melville Attwood as read by the Secretary

"Melville Attwood, who died in Berkeley, April 23, 1898, was long a member of the California Academy of Sciences, and has been a contributor to its Proceedings as well as to those of other scientific organizations in this Country and England. A manager of mining properties in Great Britain, Brazil and the United States, he achieved an honorable distinction, not only as conducting their affairs in a skillful manner, but as inaugurating original improvements tending to their material advancement. The charitable and self-sacrificing spirit which characterized him manifested itself on his advent to this country when, on his voyage to California in 1852, he took the place of the steamship-surgeon who was a victim to cholera, and for the rest of the voyage voluntarily attended those who were ill, receiving at the end of the trip the formal thanks of the Captain and passengers.

"After first going to attend to English interests in Mariposa county [*sic*], he settled in Grass Valley where, in 1863, he built the Gold Hill Mill, and also introduced the blanket system of gold-saving, for which the State Agricultural Society subsequently awarded him a medal. He was also identified with the discovery of the Comstock lode [*sic*], Nevada, as first demonstrating by assay the richness of the ore, said ore having been brought to him at Grass Valley by B. A. Harrison.

"Mr. Attwood was the inventor of several scientific appliances and instruments, as well as metallurgical systems; and was an indefatigable collector of mineral specimens of scientific value.

"A Fellow of the Royal [*sic*] Geological Society of London, a member of the San Francisco Microscopical Society, the State Geological Society of California, and kindred organizations, his contributions to scientific literature were frequent, not only to such societies but to the State Mining Bureau, the magazines, and the technical newspapers.

"Mr. Attwood was proficient in the preparation of rock-sections for microscopical examinations and determinations and his collection of these is the largest and best on this coast. In the use of the batea and miners pan he was also an expert.

"Always affable and obliging, his manners attracted all with whom he came in contact."

"In view of these facts it is recommended that the Academy adopt the following resolutions, copies of which should be sent to his daughter, Mrs. Minnie Holmes, 2154 University Avenue, Berkeley, Calif., and also be spread upon the minutes of this meeting.

"Resolved: That not only the California Academy of Sciences, but other kindred associations of which he was a member suffer a marked loss by the death of Melville Attwood, who during his long life has devoted himself so intelligently to the sciences of mining, mineralogy, and geology.

"Resolved: That as a student, an original investigator to scientific literature in his chosen branches, he distinguished himself by painstaking and careful research, before making public the results attained, and as a result what he has published has not only a scientific but a practical value.

"Resolved: The fact should be noted and commended that Mr. Attwood at his advanced age continued to exhibit daily his devotion to, and great interest in, his chosen scientific pursuits, keeping at work at a period of life when most men seek only rest from all labor.

"Resolved: That these brief memoranda be spread upon the minutes of this Academy, and copies sent to the family of the deceased, to whom our sympathies are extended.

"[Signed] Charles G. Yale, Samuel B. Christy."

devoted his attention to mining in California first in Mariposa County and afterwards in Nevada County, where in 1853 he built the Gold Hill Mill. He introduced the blanket system of gold saving. Afterwards he became identified with the discovery of the Comstock Lode in Nevada and was one of the first to demonstrate its great richness. He invented various scientific appliances and instruments as well as metallurgical systems, and was an indefatigable collector of mineral specimens of scientific value. His connection with the Academy commenced at an early day and he contributed many articles to its *Proceedings*, and many specimens to its cabinets. He was also a member of the Geological Society of London and numerous other scientific bodies in Europe and America. After the reading of the memorials, Dr. David Starr Jordan delivered a lecture, which was illustrated, on "The Evolution of Fishes." JUNE 6, George K. French, FRGS, delivered the first of a series of lectures, which were illustrated, on Liberia, the first lecture being entitled "Colonial Liberia from 1822 to 1848." In the Board of Trustees, W. M. Pierson, on account of intended absence, tendered his resignation as trustee. G. W. Dickie was requested to examine the electric elevator constructed by the Central Iron Works of Quincy, Illinois. The sum of \$2,103.50 was ordered paid for its construction. JUNE 13, at a special meeting, George K. French delivered the second of his series of lectures, entitled "Liberia as a Republic from 1848 to 1895." JUNE 20, George K. French delivered his third and last lecture, entitled "Liberia at the Present Day and Its Future." JULY 18, Charles A. Keeler delivered a lecture, which was illustrated, entitled "A Popular Talk on Birds."

AUGUST 4, D. J. Staples was elected a life member.^{31 11} AUGUST 15, William H. Hammon, of the U. S. Weather Bureau, delivered an illustrated lecture, entitled "The Story of a Rain-Storm, and How It was Foretold." SEPTEMBER 5, Dr. Frank A. Fetter, of Stanford University, lectured on "Social Progress and Race Degeneration." In the Board of Trustees, attorneys Burnett and Burnett reported that the action of Angus, *et al.*, Executors of James G. Fair, deceased, Charles M. Plum, *et al.*, Lick Trustees for \$7,413.94, with interest at the rate of 7 per cent per annum from August 2, 1897, for delinquent taxes on mortgage and penalty, paid by said executors, had been decided by the State Supreme Court adversely to the Lick Trustees and that in accordance with the terms of a bond given by the Academy and the Pioneer Society to the Lick Trustees, it devolved upon them to liquidate the judgment in equal proportions. The secretary was thereupon directed to pay the Academy's proportion amounting to \$3,990.14. The secretary was also directed to settle the claims of Walter E. Bryant by paying him \$100. SEPTEMBER 19, Walter Miller, professor of classical philology at Stanford University, delivered a lecture, entitled "How I Became a Captain in the Greek Army – A Study of Greek Criminal Methods." In the Board of Trustees, the secretary reported that the executors of the James G. Fair estate had been paid by the Academy and Pioneer Society \$7,980.28 and their judgment satisfied of record, and that the claim of Walter E. Bryant had been settled by the payment to him of \$100. OCTOBER 3, Dr. Louis Bazet and William H. Kobbe were elected

^{31 11} We are unable to confirm the election inasmuch as no meeting of the Academy appears to have been held on this date and, as noted earlier, the minutes of the Trustees Meetings for this period do not seem to have survived the 1906 earthquake and fire (see Appendix J).

resident members. Professor Joseph LeConte, of the University of California, lectured on "The Origin of Transverse Mountain Valleys, and Some Glacial Phenomena found in such Valleys of the Sierra Nevada." In the Board of Trustees, it was reported that insurance against fire had been effected on the Academy's front building for \$60,000 and on the personal property in the rear building for \$15,000. OCTOBER 17, W. S. Chapman proposed an amendment to Article VI, Section 1 of the Constitution so as to make the initiation fee for membership to the Academy \$2.50, instead of \$5, and the quarterly dues \$1.50, payable in advance, instead of \$3. The proposed amendment was approved and referred to the Council for further action. Professor W. E. Ritter, of the University of California, delivered a lecture entitled "An Important Lesson in Evolution as Taught by a California Salamander."

NOVEMBER 1, in the Board of Trustees, the sum of \$3,386.25 was ordered paid to the tax collector as and for the first installment of State, City, and County taxes for 1898-9, the entire tax for the year being \$6,682.20. NOVEMBER 7, the proposed amendment to the constitution, reducing the initiation fee to \$2.50 and the quarterly dues to \$1.50, was reported back from the Council, with their approval, and ordered to be submitted to vote at the next annual election. Charles Burckhalter, of the Chabot Observatory in Oakland, delivered a lecture on "The Chabot Observatory Eclipse Expedition to India." The eclipse occurred January 22, 1898, and the lecture was illustrated with views of it. NOVEMBER 21, William A. Setchell, of the University of California, delivered a lecture on "Seaweeds: Their Work and Effects in Nature," illustrated with lantern slides. DECEMBER 5, the following papers, presented for publication, were read by title and submitted:^{31 12} "Description of a Species of Fish (*Mitsukurina owstoni*) from Japan, the Type of a Distinct Family of Lamnoid Sharks," by David Starr Jordan; "On Rational Quadratic Transformations," by M. W. Haskell; "The Quadratic Cremona Transformation," by Leonard E. Dickson; "On Curvilinear Asymptotes," by M. W. Haskell; "Systems of Simple Groups derived from the Orthogonal Group," by Leonard E. Dickson; "Arachnida from Lower California and Other Parts of Mexico," by Nathan Banks; "The Development of *Lytoceras* and *Phylloceras*," by James Perrin Smith; "Studies in the Herbarium and the Field. No. II," by Alice Eastwood; "The Anatomy of *Chelyosoma productum* Stimpson," by Frank W. Bancroft; "The Gordiacea of Certain American Collections, with Particular Reference to the North American Fauna," by Thomas H. Montgomery, Jr.; "Observations on Monogenesis in *Metridium*," by Harry Beal Torrey; "Phycological Memoirs," by De Alton Saunders; and "Some Observations on the Development of the Karyokinetic Spindle in the Pollen-Mother-Cells of *Cobæa scandens*, Cav." by A. A. Lawson. George A. Clark, secretary of the Fur Seal Commission, lectured on "The Fur Seal Islands." DECEMBER 19, the nominating committee presented a ticket for

^{31 12} As previously noted (see footnote 28.2), although Hittell's manuscript text suggest that these papers had been submitted for but not yet published, the handwritten minutes state only that "The following papers were read by title: —." Most of the papers listed here were published in the Academy's *Proceedings* during the latter part of 1897 or during 1898. The reading the titles into the minutes at the penultimate meeting for the year clearly was to report on what had already been published during the year or what was then in press, and not a statement of future intent to accept or reject newly submitted manuscripts.

officers of 1899. Oliver P. Jenkins, professor of physiology at Stanford University, lectured on "The Biology of the Skeleton."

Chapter XXXII: Years 1899-1900

1899

At the annual meeting of 1899, held JANUARY 3, after the usual reports of officers, which were read and placed on file, the judges and inspectors of the annual election reported the following persons chosen officers for the year, and they were so declared: William E. Ritter, president; Charles H. Gilbert, first vice-president; H. H. Behr, second vice-president; J. O'B. Gunn, corresponding secretary; G. P. Rixford, recording secretary; L. H. Foote, treasurer; Louis Falkenau, librarian; Charles A. Keeler, director of the museum; William H. Crocker, George W. Dickie, C. E. Grunsky, James F. Houghton, E. J. Molera, George C. Perkins, and William M. Pierson, trustees. They also reported that the vote in favor of the amendment to Article VI, Section 1, of the constitution reducing the initiation fee to \$2.50 and quarterly dues to \$1.50 was 27 as against 8, and the amendment was thereupon declared duly adopted. JANUARY 16, Professor A. Van Der Naillen, president of the San Francisco School of Engineering, lectured on "Wireless Telegraphy." The new Board of Trustees organized by the election of William H. Crocker, president; William M. Pierson, president *pro tem*; and L. H. Foote, secretary. The secretary was authorized to rent the Academy lecture hall to the University of California for a course of Friday evening "University Extension" lectures by Professor John Fryer commencing March 19 and ending April 21 for \$5 each evening. JANUARY 23, at a special meeting, Professor John Fryer, professor of Oriental Languages and Literature at the University of California, delivered the first of a course of lectures on China, entitled "Confucianism." JANUARY 30, at a special meeting, Professor John Fryer lectured on "Government and Laws of China."

FEBRUARY 6, the death of Edward E. Eyre, a life member, was announced. Professor John Fryer lectured on "Education in China." In the Board of Trustees, appropriations for the year 1899 were made as follows: \$625 for curators' supplies; \$500 for library; \$600 for periodicals; \$480 for contingent expenses; \$500 for museum; \$4,000 for publication; and \$300 for book binding. The sum of \$79.40 was ordered paid to the Central Light and Power Company, and \$16.30 to the Pacific Telephone and Telegraph Company. FEBRUARY 13, at a special meeting, Professor John Fryer lectured on "The Productions and Commerce of China"; on FEBRUARY 20, at the regular stated meeting, he continued with "The Social Life of the Chinese";

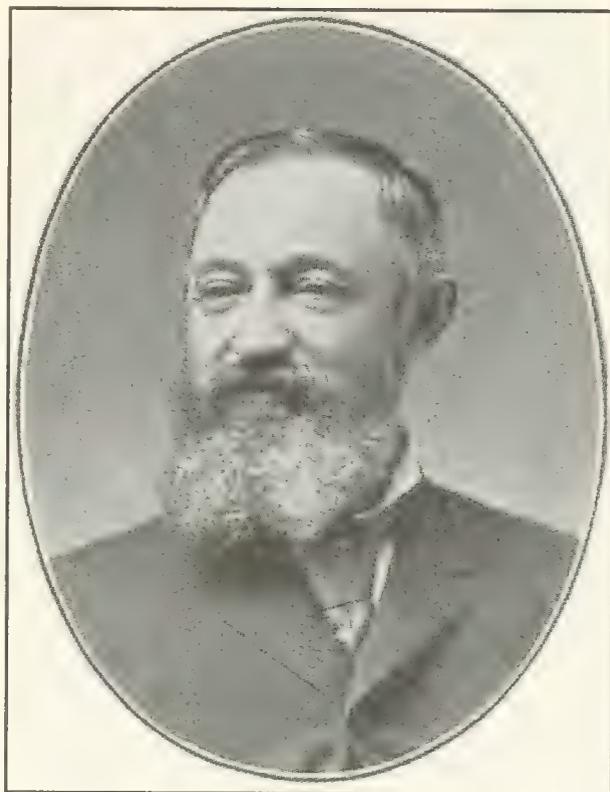
and on FEBRUARY 27, at a special meeting, he concluded the series of six lectures with a talk on "The Outlook for China."

MARCH 6, Charles A. Keeler, director of the Academy museum, lectured on "How to Use a Museum." MARCH 20 Dr. Frank Fetter, of Stanford University, lectured on "Limitations of the Suffrage." APRIL 3, Dr. George Chismore, Dr. Frederick Baker, William Greer Harrison, Dr. John Fryer, Dr. Charles Renz, G. S. Mead, and Henry Ward Turner were elected resident members. Dr. W. L. Jepson, of the University of California, delivered an illustrated lecture on "The Trees of California." In the Board of Trustees, the second installment of taxes, \$3,295.95, was ordered paid. APRIL 17, the secretary reported a donation of 700 specimens of birds, purchased for \$175 and presented to the Academy by William M. Pierson and William H. Crocker. The secretary also read a notice signed by John C. Merriam and James P. Smith signifying the desire of some members to form a Section of Geology. Dr. David Starr Jordan lectured on "The Enchanted Mesa and Acoma," being reminiscences of a trip to New Mexico, illustrated with lantern slides. In the Board of Trustees, Leverett M. Loomis reported the donation of 700 birds by William H. Crocker and William M. Pierson and took occasion to say that the Academy's bird collection was one of the most notable in the United States. MAY 1, C. L. Cory, of the University of California, delivered a lecture on "Electricity at Niagara," illustrated with lantern slides. MAY 15, George K. French, FRGS, read a paper on the "Ethnology and Ethnography of West Africa."

JUNE 19, G. D. Louderback John F. Newsom, R. H. Loughridge,^{32.1} W. C. Blasdale, John H. Means, F. M. Anderson, Charles P. Wilcomb, W. S. T. Smith, and T. E. Slevin were elected resident members. A donation to the Academy by Jonn W. Hendrie, of Savings and Loan Society stock of the value of \$10,000, was announced; and a series of resolutions were adopted thanking Mr. Hendrie for his munificent gift and in accordance with his expressed wish, devoting the interest, to be derived from it, to the publication of papers of the Academy. It was also directed that all papers, for the printing of which it should pay, should bear the inscription, "Printed from the Hendrie Publication Fund." W. L. Watts of the State Mining Bureau, delivered an illustrated lecture on "The Oil Producing Regions of Southern California." JULY 17, A. W. Pack, former assayer of the U. S. Mint, delivered an illustrated lecture on "The Production and Coinage of Gold and Silver." AUGUST 14, at a special meeting, F. H. Newell, chief hydrographer of the U. S. Geological Survey, delivered an illustrated lecture on "The Public Lands and the Water Supply." In the Board of Trustees, by an amendment to the by-laws, the regular meetings of the Board were reduced to one a month, which was to take place on the first Tuesday. AUGUST 21, the deaths of G.

^{32.1} Loughridge [in error] in the *Minute Books* (Stated Meetings, Jan. 1891-Nov. 1904, p. 215).

^{32.2} See Goetzman, William and Susan Kay Sloan. 1982. *Looking Far North. The Harriman Expedition to Alaska, 1899*. Viking Press, New York, for a recently published account of the expedition. Academy staff who participated included William E. Ritter, president of the Academy, and Charles A. Keeler, director of the Academy's museum. Additionally, two members of the scientific party had long, intimate associations with the Academy while resident on the Pacific Coast: William H. Brewer (a member of Whitney's California Geological Survey team in the 1860s; in 1899, with the Sheffield Scientific School, Yale University), and William H. Dall (active in Academy affairs from the mid-1860s; in 1899, paleontologist with the U. S. Geological Survey).



George Chismore

(From W. C. Wolfe, 1901, *Men of California*, p. 199.)

W. Stewart, former trustee, Dr. Mary E. Edmonds, and Captain Charles Goodall were announced. Charles A. Keeler made "General Remarks on the Harriman Expedition,"^{32.2} with Special Reference to the Native Races of Alaska."

SEPTEMBER 18, a "Geological Section" of the Academy was formed, consisting of Professor Joseph LeConte, R. H. Loughridge, John C. Merriam, James Perrin Smith, and Andrew C. Lawson. Among the accessions to the museum, from Baja California, 100 insects, 1300 oligochaeta, 66 lizards, and 405 shells, by Gustav Eisen. Mary Roberts Smith, assistant professor of sociology at Stanford University, lectured on "The Responsibilities of Employers of Domestic Servants." SEPTEMBER 25, at a special meeting, Professor L. L. Dyche, of the University of Kansas, delivered the first of several illustrated lectures on "Life and Conditions in the North Atlantic," his special subject on this occasion being "Danish Greenland." SEPTEMBER 27, at a special meeting, Professor L. L. Dyche delivered a second illustrated lecture on "The Arctic Highlanders and the Problem of the Pole."

OCTOBER 2, Robinson Gibbons donated to the Academy 38 volumes and a number of pamphlets from the library of his deceased father, Dr. William P. Gibbons, a former active and efficient member, who joined the institution in 1853 very soon after its start. The volumes, which were all bound, were on botanical subjects. Thanks were tendered to Mr. Gibbons for the gift. OCTOBER 16, Dr. George J. Peirce, Harold Heath, F. M. McFarland, and Richard C. McGregor were elected resident members. The following papers, presented for publication, were read by title and submitted:^{32.3} "The

^{32.3} See footnotes 28.2 and 31.12.



John Campbell Merriam
George Sprague Myers Portrait Collection
Department of Herpetology, California Academy of Sciences



James Perrin Smith (1930)
George Sprague Myers Portrait Collection
Department of Herpetology, California Academy of Sciences

Osteological Characters of the Genus *Sebastolobus*," by Edwin Chapin Starks; "The Tertiary Sea-Urchins of Middle California," by John C. Merriam; "The Fauna of the Sooke Beds of Vancouver Island," by John C. Merriam; "The Origin of the Karyokinetic Spindle in *Passiflora coerulea* Linn," by Clara L. Williams; "New Mallophaga III," comprising "Mallophaga from Birds of Panama, Baja California, and Alaska," by Vernon L. Kellogg and Bertha M. Chapman; "Mallophaga from Birds of California," by Vernon L. Kellogg and Bertha Chapman; and "The Anatomy of the Mallophaga," by Robert E. Snodgrass; "The Nature of the Association of Algae and Fungus in Lichens," by George J. Peirce; "Californian Hypogaeous Fungi," by H. W. Harkness; "Studies on the Flower and Embryo of *Sparganium*," by Douglas Houghton Campbell; "Odonata from Tepic, Mexico, with Supplementary Notes on those of Baja California," by Philip P. Calvert, and "New Species of Dolichopodidae from the United States," by William Morton Wheeler. Professor John C. Merriam proposed a number of amendments to the constitution, the principal objects of which were to provide that ballots for the election of new members might be sent from any place through the mail; to strike out the provision that no new member could be elected during the month preceding the annual election, and also to strike out the provision that no more than one candidate could be voted for on one ballot. It was moved by Dr. Merriam and seconded by Mr. Torrey that the amendments be accepted as read. the motion carried. The amendments were then laid over for consideration at a subsequent meeting. Henry Ward Turner, of the U. S. Geological Survey, delivered an illustrated lecture on "The Lakes of Nevada, both Ancient and Modern." OCTOBER 30, at a special meeting, Dr. W. T. Swingle, of the U. S. Department of Agriculture, delivered an illustrated lecture on "Fruit Culture in the Mediterranean Region."

NOVEMBER 1, at a special meeting, Bailey Willis, of the U. S. Geological Survey, was introduced and delivered a lecture on "Mountain Growth and Decay," illustrated with stereoptican views from Mount Rainier and the Cascade Range. NOVEMBER 6, E. H. Harriman donated an Indian totem pole, brought by the Harriman Expedition from Alaska, for which thanks were returned. The death of Professor Bunsen, an honorary member, was announced. Professor John C. Merriam called up his proposed amendments to the constitution and gave an outline of them. This was followed by a general discussion, in which a number of members participated. Miss Eastwood moved that the proposed amendments should be printed and a copy sent to each member before acting on them. Professor A. C. Lawson moved as an amendment that the Council be requested to prepare a statement of the essential points of the proposed amendments, together with its recommendations regarding them, which motion was carried. Professor Lawson then brought up the subject of developing the social side of the Academy and suggested that once a year, at the time of the annual meeting, the Academy should hold a "converzaíone," which would be attended by members and their friends. On his motion, the social question was referred to the Council, who were requested to report their recommendations on the subject to the Academy. NOVEMBER 20, among the accessions to the museum were, by purchase, bow, arrows



Bailey Willis
Smithsonian Institution Archives (N 95-20509)

and spears of the Macabbe Tribe, Philippines. Professor A. O. Leuschner, of the University of California, delivered a lecture on "Double Stars," illustrated with lantern slides. DECEMBER 4, donations to the museum included several items made by the Yuma Indians, including dolls dressed in the tribal dress of Yuma women before the advent of the railroad through the country. James M. Hutchings delivered an illustrated lecture, entitled "Wanderings in the High Sierras with a Camera." DECEMBER 5, in the Board of Trustees, there was an indication of prosperity in the raising of the rent of the small stores, 815 and 817 Market Street to \$100 per month each from January 1 following. DECEMBER 18, the nominating committee presented a ticket for officers of 1900, the major changes being Dr. David Starr Jordan for president and M. W. Haskell for first vice-president. George M. Stratton, associate professor of psychology at the University of California, lectured on "The Evidence for Unconscious Mental States."

1900

At the annual meeting of 1900, held JANUARY 2, as the result of the annual election, the following were declared officers for the year: David Starr Jordan, president; M. W. Haskell, first vice-president; H. H. Behr, second vice-president; J. O'B. Gunn, corresponding secretary; G. P. Rixford, recording secretary; L. H. Foote, treasurer; Louis Falkenau, librarian; Charles A. Keeler, director of the museum; William H.

Crocker, George W. Dickie, C. E. Grunsky, James F. Houghton, E. J. Molera, George C. Perkins, and William M. Pierson, trustees. The usual reports, showing the condition and progress of the Academy, were read and placed on file. These included reports by Miss Eastwood, botany, Dr. Eisen, invertebrate zoology, and Mr. Loomis, ornithology. A resolution expressing appreciation of the services of the retiring president was adopted. On recommendation of the Council, Professors William E. Ritter and Charles H. Gilbert were elected honorary life members. Lord Kelvin, of the University of Glasgow, Scotland, and Professor E. W. Hilgard, of the University of California, were elected honorary members. JANUARY 15, Dr. David Starr Jordan, of Stanford University, lectured on "The Laws of the Dispersion of Animals."

FEBRUARY 5, among the donations to the museum, from L. F. Reichling, a collection of minerals, including many rare and beautiful specimens, a considerable number of gold specimens, and diamonds and other precious stones in the rough. Professor John C. Branner, of Stanford University, lectured on "American Trade in Brazil." FEBRUARY 6, the new Board of Trustees, organized by the election of William H. Crocker, president; William M. Pierson, president *pro tem*; and L. H. Foote, secretary. The Council asked the following appropriations for the year, which were allowed: for salaries, \$6,300; publications, \$4,000; periodicals, \$600; library, \$600; curators' supplies, \$225; telephone, \$110; book binding, \$340; contingent expenses, \$480; museum, \$800; illustrating lectures, \$150; postage and express, \$50; scrub-woman, \$160; wood and coal, \$140; printing and stationery, \$50 – making a total of \$14,015. The sum of \$75 was appropriated for a type-writing machine, and \$150 for transporting, arranging, and caring for a collection of fishes presented by Dr. Jordan. FEBRUARY 19, Dr. F. G. Canney, Dr. L. C. Deane, William H. Kobbe, Luther Wagner, George C. Price, and Curtis H. Lindley were elected resident members. A communication was received from the California Club, containing resolutions adopted by that Club in reference to measures for the preservation of the Calaveras Grove of Big Trees and asking the concurrence and aid of the Academy. Elisha Brooks, seconded by Miss Alice Eastwood, moved such concurrence. Gen. J. F. Houghton suggested that it would be more fitting for the Academy to take separate action in the matter and moved that President Jordan and Secretary Rixford, in connection with President Wheeler of the University of California, be appointed a committee to draw up resolutions requesting Congress to purchase the tract of land including the Calaveras Big Tree Grove with a view to its preservation. The motion was seconded by L. M. Loomis and, the original motion being withdrawn, it was carried. Professor William A. Setchell, of the University of California, delivered an illustrated lecture, entitled "A Botanical Trip to Alaska."

MARCH 5, Professor A. C. Lawson, of the University of California, delivered an illustrated lecture on "The Mineral Wealth of Russia, with Especial Reference to the Caspian Oil Fields." MARCH 6, in the Board of Trustees, the Council reported that they had increased the salaries of curators to \$80 per month. On motion the subject was referred back to the Council with a request that they should reconsider their action, as the Trustees did not feel justified in making such increase. A proposition

of William Banning to renew his note and mortgage on Santa Catalina Island and other property was referred to Messrs. Crocker, Pierson and Molera. MARCH 19, Professor John Fryer, Agassiz Professor of Oriental Languages and Literature at the University of California, delivered a lecture, entitled a "Sketch of the Language and Literature of the Chinese."

APRIL 2, Professor John C. Merriam, of the University of California, delivered an illustrated lecture on "Extinct Animal Life of the Bad Lands." Thanks were voted to William H. Crocker for the purchase and donation to the Academy of 1800 specimens of birds, making an important addition to the ornithological collection. APRIL 16, Ralph Arnold, F. C. Calkins, John Casper Branner, Harrison Barto, and Miss Effie A. McIlriach were elected resident members. The deaths of David J. Staples and Dr. Joseph Pescia, life members, were announced. Joseph Grinnell addressed the Academy on "Birds of the Arctic in Midwinter." MAY 1, in the Board of Trustees, it was decided to accept a new note and mortgage on Santa Catalina Island and other property from William Banning for the amount owing by him to the Academy. A loan of not exceeding \$10,000 was authorized to be made from the Bank of California for the purpose of taking up the note owing from the Academy to the First National Bank. William M. Pierson reported that he had offered to accept \$75.45 from the Central Iron Works of Quincy, Illinois, for repairs made to their guaranteed elevator, but that they did not seem inclined to pay. He was authorized to insist upon payment and, if necessary, take legal measures to enforce it. It was ordered that Dr. A. L. Kroeber should receive a salary of \$70 per month as curator of anthropology.

MAY 7, a preamble and resolutions were adopted in support of efforts of citizens of Santa Cruz, Santa Clara, and San Mateo counties and of San Francisco to make a public reservation of the "Big Basin" in Santa Cruz County and preserve intact the magnificent redwood and other forest vegetation growing upon it. Cloudsley Rutter, of the U. S. Fish Commission, delivered a lecture on "The Natural History of the Sacramento Salmon." MAY 21, a resolution of the San Francisco Board of Supervisors,³²⁻⁴ adopted May 14, was presented endorsing the resolution of the Academy of May 7, in reference to the preservation of the Big Basin and forests of *Sequoia sempervirens* in Santa Cruz County. It spoke of the tract of land, desired as a forest

³²⁻⁴ The complete text of the resolution, which incorporates the earlier Academy resolution adopted May 7, 1900, that was adopted by the Board of Supervisors of San Francisco on May 14, 1900, states, ,

"Resolution No. 418.—Whereas Representatives from Stanford University, the State University, the State Normal School at San Jose, Santa Clara College and citizens from near-by counties, met at Stanford University May 1 to consider ways and means for the preservation of the redwood forest known as the "Big Basin" country, situate in the counties of San Mateo and Santa Cruz; and, whereas preliminary steps were taken at said meeting to place the matter before Congress and have action taken by the United States Government to acquire the lands upon which the forest is growing for a National Park.

"And Whereas This forest track is within thirty miles of San Francisco, embraces an area of about thirty-five thousand acres, covering the watershed from which flows the San Lorenzo River, the Pescadero, Pomponio, Butano, Gazos, White House, New Years, Waddell, Scotts, Big Mill, San Vicente and Boulder creeks, and numerous other mountain streams, and is the finest body of redwood timber in the world, many of the trees exceeding sixty feet in circumference. Sawmills have already commenced cutting this forest into timber products, and we appreciate the importance of urging immediate action in the premises. We therefore endorse the following Resolutions adopted by the California Academy of Sciences:

"Whereas Many of the citizens of Santa Cruz, Santa Clara, and San Mateo counties and of the city of San Francisco have urged the establishing of a forest park to cover the "big basin" and the contiguous redwood forests in the Santa Cruz mountains; and, whereas such a park would secure, (*continued next page*)



Alfred L. Kroeber circa 1911
Phebe A. Hearst Museum of Anthropology
University of California, Berkeley

park and called the "Big Basin," as being within thirty miles of San Francisco, covering an area of about 35,000 acres; embracing the water shed, from which flowed the San Lorenzo River, Pescadero, Pomponio, Butano, Gazos, White Horse, New Year's, Waddell, Scotts', Big Mill, San Vicente, and Boulder creeks, and numerous other mountain streams, and containing the finest body of redwood timber in the world, many of the trees exceeding sixty feet in circumference. It further said that sawmills had already commenced cutting this forest into lumber products and urged the importance of immediate action in the premises. Professor Henry R. Fairclough, professor of classical literature at Stanford University, delivered an illustrated lecture, entitled "Our Northern Neighbors," being a study of Canada.

JUNE 5, in the Board of Trustees, it appeared that a loan of \$10,000 from the Bank of California had been effected, and that the note of the Academy to the First National Bank for that amount had been taken up. It also appeared that the Central Iron Works

³²⁴ (continued) if once in the hands of the United States Government, a large body of primeval forest of *Sequoia sempervirens* as a permanent possession for the whole of the people. This is of special interest to every man of science, as the time is approaching when every primeval redwood north of San Francisco will be felled by the lumbermen. And whereas, such a purchase will also secure for the use of the whole people of the peninsula extending from Santa Cruz to San Francisco the use of the mountain waters collected by this forest area.

"Resolved therefore, That the California Academy of Sciences cordially supports the efforts of the Committee on Ways and Means recommending an appropriation to secure the segregation of the above named territory as a natural forest park.

"Therefore resolved, That this Board does hereby actively co-operate in the movement and encourage every effort to have the United States Government act in the premises without delay . . ."

of Quincy, Illinois, had settled the claim of the Academy against them for repairs to the elevator by paying \$75.45. JUNE 18, the deaths of resident members Dr. Edward S. Clark and William G. Curtis were announced. Recent accessions to the herbarium included Pringles Mexican collection for 1899 of 260 specimens, purchased by the Botanical Club for \$26, 312 specimens from the desert regions of California and Nevada by C. A. Purpus, purchased for \$34, and many smaller donations for a total of 1773 specimens. Charles H. Townsend, of the U. S. Fish Commission, delivered an illustrated lecture on "The Depths of the Sea." JULY 16, George Partridge addressed the Academy on the "Rise of the Petroleum Industry." AUGUST 20, the death on August 17 of Gen. John Hewston, a life member, was announced. Richard W. Goode, of the U. S. Geological Survey, delivered an illustrated lecture on "The Topographical Work of the U. S. Geological Survey."

SEPTEMBER 3, Charles H. Townsend, of the U. S. Fish Commission, delivered an illustrated lecture on "The Recent Cruise of the Albatross among the Islands of the South Pacific, with Remarks on the People and Their Customs." SEPTEMBER 17, Miss Mary Elizabeth Parsons, C. E. H. Günzel, Miss Agnes Bowman, Dr. Mary Page Campbell, Thomas Magee, Dr. G. del Arno, J. T. Goodman, William B. Ewer, Ransom Pratt, Dr. H. L. Tevis, W. S. Tevis, and Cloudsley Rutter were elected resident members. Among recent accessions to the herbarium was a collection of 691 specimens from Yellowstone National Park. Marsden Manson lectured on "Some Original Problems in California." OCTOBER 1, the following papers, presented for publication, were read by title and submitted:^{32.5} "Systems of Simple Groups Derived from the Orthogonal Group," (second paper) by Leonard E. Dickson; "On the $m n^2$ Parameter Group of Linear Substitutions in $m n$ Variables," by E. J. Wilczynski; "Researches in American Oligochaeta, with Especial Reference to Those of the Pacific Coast and Adjacent Islands," by Gustav Eisen; "California Water birds. No. IV - Vicinity of Monterey in Autumn," by Leverett M. Loomis; "A Morphological Study of the Flower and Embryo of the Wild Oat, *Avena fatua* L.," by William Austin Cannon; "Synopsis of California Stalk-eyed Crustacea," by Samuel J. Holmes; "Nitophylla of California: Description and Distribution," by Charles Palmer Nott; and "The Development and Phylogeny of *Placenticerus*," by James Perrin Smith. Professor W. J. V. Osterhout of the University of California, lectured on "The Role of Water in Plant Growth." OCTOBER 15, the proposed amendments to the constitution, offered by Professor John C. Merriam on October 16, 1899, in reference to balloting for members by tickets transmitted through the mail, and which had not previously been disposed of, were again brought before the Academy. A lively discussion ensued; and, on a vote being taken, the amendments were rejected. A proposition was then made to amend Article V, Section I of the constitution, so as to change the time of the annual and regular stated meetings of the Academy to Saturdays instead of Monday evenings. It was referred to the Council.

NOVEMBER 5, the proposed amendment to the constitution changing the time of the annual and regular meetings to Saturday instead of Monday evenings, having

^{32.5} See footnotes 28.2 and 31.12.

been referred back to the Academy from the Council without recommendation, a vote was taken, and the amendment was rejected. After the declaration of the vote and rejection, J. F. Houghton gave notice that he changed his vote and would move a reconsideration, which, however, he never did. Professor A. C. Lawson, of the University of California, delivered an illustrated lecture, "On the Laramie Plateau." In the Board of Trustees, an appropriation of \$150 was made to enable Dr. A. L. Kroeber, curator of anthropology, to join an expedition sent out by the American Museum of New York for the purpose of securing plaster casts of the heads and hands of Indians; and of \$3,187.07 to pay the first installment of State and City and County taxes. NOVEMBER 19, the death on Nov. 13 of Thomas H. Caswell, a life member, was announced. President Jordan announced his inability to be present at the meeting on account of an excursion to the Big Basin which he was to join, when the redwoods would be viewed with a view to a bill for their purchase to be brought before the [State] Legislature. Leverett M. Loomis delivered a lecture on "Wilson, 'The Poet Ornithologist, The Father of American Ornithology.'"

DECEMBER 3, the death on Nov. 25th at Sound Beach, Conn., of John W. Hendrie, a life member and patron of the Academy was announced; and, on motion, Dr. Gustav Eisen and William S. Chapman were appointed a committee to present a proper memorial. A preamble and resolutions adopted by the California Club, urging upon the Federal Government the necessity of placing the National Forest Reservations on an income producing basis, were presented for approval and indorsement by Alice Eastwood, a member of the California Club. They set forth that Germany had ten million acres of forests growing upon lands unfit for other purposes which yielded an annual revenue of twenty-three million dollars; that forest farming in Belgium insured an income of ten dollars per acre to the public treasury; that Bavaria was celebrated for its money producing forests; that the United States owned in California eight million acres of forest reserves; that more timber was destroyed every year in this State by forest fires than would be needed for five years of economical use; that roads should be constructed and maintained in the reservations, so that the forests, which were of enormous value, might be made accessible and protected from fires; that mindful foresters should be employed with the object of preventing the cutting of any trees except those ripe for the ax and introducing a system of forestry similar to that successfully used in European countries; that the inauguration of forestry as an income producing industry would give employment to hundreds of men, notably to soldiers honorably discharged from the government service; that even a portion of the millions of acres of the government reserves, under a proper system of forestry, would yield a revenue sufficient to purchase all the groves of sequoias, nowhere else existing in the world and now held by private owners; and, in view of these considerations, beseeching the United States government to make an appropriation of money to be expended in the accomplishment of the purposes indicated, and urging upon all citizens, organizations and legislatures to join in commending and forwarding the necessary action to accomplish such purposes. Miss Eastwood's motion was duly seconded and unanimously carried. Professor Ernest M. Pease, professor of

Latin Language and Literature at Stanford University, delivered an illustrated lecture on "Pompeii."

DECEMBER 4, in the Board of Trustees, \$5,000 were ordered paid on the note of the Academy to the Bank of California, and \$175 appropriated to purchase a musk ox then in the museum. Leverett M. Loomis reported that he could purchase the Fosser collection of 1382 birds for \$400, which was, he said, less than one half their value; and thereupon \$400 were appropriated for the purpose. A communication was received from the Duc de Loubat of Paris, France, that he was sending the Academy a full set of his reproductions of Mexican codices, for which thanks were tendered him. In his communication, the Duc de Loubat suggested the purchase of a reproduction of the *Codex Borbonicus* by Ernest Leroux, which could be secured for 200 francs; whereupon William H. Crocker offered to contribute the necessary money, for which in like manner thanks were tendered. DECEMBER 17, William S. Chapman, of the committee on the death of John W. Hendrie, presented a memorial, which was approved and spread upon the minutes. It stated that Mr. Hendrie was born at Sound Beach, Connecticut on November 21, 1821, and died at the same place November 25, 1900. He graduated from Yale University at the age of about 28 years and came to California in 1851 with about \$1,000 he had managed to save up to that time. On his arrival in San Francisco, he engaged in mercantile pursuits and within ten years amassed a comfortable fortune. After retiring from active business, he formed a habit, which he pursued for many years, of spending his summers at Sound Beach and his winters at San Francisco. His attachment to both California and Connecticut was strongly shown by his liberal donations made to institutions in each of them. He gave to the Mercantile Library of San Francisco \$15,000 and to this Academy of Sciences \$10,000. To Yale University he gave \$65,000 in aid of the construction of its Law School building, which in his honor was given the name of Hendrie Hall." The nominating committee presented a ticket for officers of 1901. Dr. A. L. Kroeber delivered a lecture on "Mescal Eating: A New Religion of the Indians of the Southwest."

Chapter XXXIII: Years 1901-1902

1901

The annual meeting of 1901 was held JANUARY 7. The death of Mrs. Theodore H. Hittell,^{33.1} a resident member, who died on December 20, 1900, was announced, and, on motion, Miss Alice Eastwood and Dr. Gustav Eisen were appointed a committee to draw up suitable resolutions of respect to her memory. The following papers appearing in the publications of the Academy were read by title and submitted;^{33.2} "The Apparent Projection of Stars upon the Bright Limb of the Moon at Occultation, and Similar Phenomena at Total Solar Eclipses, Transits of Venus and Mercury, etc., etc.," by George Davidson; "Studies in Pacific Coast Entoprocta," by Alice Robertson; "California Water Birds No. V, Vicinity of Monterey in May and Early June," by Leverett M. Loomis; "On the Inhibition of Artificial Section of the Normal Fission Plane in *Stenostoma*," by William E. Ritter and Miss Edna M. Congdon; "The Development of the Karyokinetic Spindle in the Pollen-Mother-Cells of *Lavatera*," by Edith Sumner Byxbee; "Forminifera from the Tertiary of California," by Frederick Chapman, and "The Pleistocene Geology of the South Central Sierra Nevada, with Especial Reference to the Origin of Yosemite Valley," by Henry Ward Turner. The report of the inspectors and judges of the annual election reported that it resulted in the choice of the following persons, who were declared officers of the Academy for the year: David Starr Jordan, president; M. W. Haskell, first vice-president; H. H. Behr, second vice-president; J. O'B. Gunn, corresponding secretary; G. P. Rixford, recording secretary; L. H. Foote, treasurer; Louis Falkenau, librarian; Charles A. Keeler, director of the museum; William H. Crocker, George W. Dickie, C. E. Grunsky, James F. Houghton, E. J. Molera, George C. Perkins, and William M. Pierson, trustees. The annual reports of officers were read and placed on file. That of the president treated of the work of the different departments for the preceding year; the accessions of books and specimens and the publication of scientific papers, together with the outlook for future work. It also dwelt upon the subject of taxing the Academy, which it characterized as an institution of public utility, and said that no other Academy of Sciences in this or any other country was taxed. JANUARY 21, Charles Burckhalter, of the Chabot Observatory in Oakland,

^{33.1} née Elise Christine Wiehe

^{33.2} See footnotes 28.2 and 31.12.

delivered an illustrated lecture, entitled "A Popular Account of the Chabot Observatory Expedition to Georgia, May 28, 1900."

FEBRUARY 4, the first of a series of what were called "Members Meetings," usually called for the third Mondays of the months, was held in the Library of the Academy. The death in San Francisco, on February 3, of Col. John D. Fry, a life member, was announced. Among the donations were a number of valuable books on Mexican archaeology, including a set of *Codices*, presented by the Duc de Loubat of Paris. The books were entitled as follows: "Auf Alten in Mexico and [*sic*] Guatemala. Carcile Seler;" "Codice Messicano Vaticano No. 3773 (Hieroglyphs)"; "Il Manoscrito Vaticano 3773"; "Los Libros de L'Anáhuac"; "Les Livres de L'Anáhuac"; "Codice Messicano Borgiano (Hieroglyphs)"; "Das Tonalamatl der Aubin 'schen Sammlung, Dr. Eduard Seler"; "Codex Terreriano - Remensis, (Manuscrit)"; "Codice Messicano de Bologna (Hieroglyphs)," and "Descripcion del Codice Cospiano." In addition to the above were the following works of the same general character, purchased and presented by William H. Crocker: "Codex Borbonicus," and "Los Anciennes Villes du Nouveau Mondy Voyages d'Explorations au Mexique et dans l'Amérique Centrale, par Sesire Charnay." The thanks of the Academy were tendered to the donors. Dr. David Starr Jordan delivered a lecture on "The Fauna of Japan," in which he spoke particularly of the fishes of that country. FEBRUARY 5, the new Board of Trustees organized by the election of W. H. Crocker, president; W. M. Pierson, president *pro tem*; and L. H. Foote, secretary. On recommendation of the Council, the following appropriations for the year 1901 were made: \$6,350 for salaries; \$4,000 for publications; \$600, periodicals; \$600 library; \$225, curators' supplies; \$110, telephone; \$300, book binding; \$480, contingent expenses; \$800, museum; \$150, illustrating lectures; \$50, postage, freight and express; \$160, scrub-woman; \$140, wood and coal; \$100, printing and stationery - making in all \$14,065. The Society for the Prevention of Cruelty to Animals and the California State Floral Society were granted the use of the Academy's lecture hall for two evenings each at \$2.50 per evening. W. M. Pierson reported a renewal of the loan to William Banning on a note and mortgage on Santa Catalina Island and other property for a term of years. FEBRUARY 18, Professor William A. Setchell, of the University of California, delivered an illustrated lecture, entitled "Botanical Impressions of the Hawaiian Islands." FEBRUARY 25, at a special meeting, Dr. Simon Flexner, professor of pathology at the University of Pennsylvania, lectured on "Defenses Against Disease."

MARCH 4, Professor Charles A. Kofoid, of the University of California, lectured on "The Plankton of Rivers." MARCH 18, the U. S. Fish Commission donated twenty-four species of fishes, including four cotypes, from the Sacramento River and its tributaries, each species being represented by from one to 14 localities. A resolution, introduced by L. M. Loomis, was adopted and ordered spread upon the minutes, expressing the full sympathy of the Academy with steps, which were being taken, for the protection of the meadow lark as one of the most useful allies to agriculture. James M. Hutchings delivered an illustrated lecture, entitled "Among the Sequoias." APRIL 1, Cloudsley Rutter, of the U. S. Fish Commission, delivered a

lecture on "The Distribution of the Fishes of the Sacramento Basin." APRIL 2, in the Board of Trustees, in response to a recommendation of the Council, that the salaries of curators and assistant secretary and librarian should be restored to \$80 per month, the salaries of H. H. Behr, Alice Eastwood, Leverett M. Loomis and Effie A. McIllriach were fixed at \$80 per month each; that of Lulu Forbes at \$40, and that of L. H. Foote, secretary and agent of the Board of Trustees, at \$125 per month. APRIL 15, the thanks of the Academy were tendered to C. McCullough, of Walnut Grove, Arizona, for fourteen finely prepared specimens of Gambel's partridge. Miss Alice Eastwood and Dr. Gustav Eisen, the committee appointed to take appropriate action in regard to the death of Mrs. Theodore H. Hittell, presented a memorial, which was approved and ordered spread upon the minutes.^{33.3} It referred to Mrs. Hittell's ancestors as doctors of Medicine and surgeons for many generations, and to her father as a military surgeon in the German army at the battle of Waterloo. It also spoke of her coming to California in the early days; her marriage, and her children. It said, "with the instincts of a true woman and with generous hospitality, she made her home a gathering place for the literary, artistic, and scientific people of San Francisco. Her patriotism for her chosen country was unbounded, and this it was that led her to found the Silk Culture Society, to which she gave her unselfish devotion during many years of her life. The preservation of the California forests became an absorbing thought during recent years, when the destruction of our magnificent trees seemed threatened. Linked with this was the desire to have all the relics and records of the aborigines preserved from defacement and destruction. Occasionally she wrote articles on these subjects, which were published in the local papers and scientific journals." Professor John Fryer of the University of California, delivered a lecture on "The Influence of Women in China." MAY 6, Charles A. Kofoid, A. L. Kroeber, I. N. Chapman, P. E. Labouchere-Hillyer, John O. Snyder, and E. C. Starks were elected resident members. Professor W. J. V. Osterhout, of the University of California, read a paper entitled "Some Suggestions towards a Theory of Heredity." MAY 27, at a special meeting. Dr. Carl Schwalbe of Los Angeles delivered a lecture on "The Causes of Malarial Diseases." JUNE 4, in the Board of Trustees, \$100 were appropriated to enable P. E. Goddard to visit the Hoopa Indian Reservation for the purpose of making ethnological researches and collections, the collections to belong to the Academy.

^{33.3} The complete text of the memorial for Mrs. Theodore H. Hittell (née Elsie Christine Wiehe) states: "In the death of Mrs. Theodore H. Hittell, the California Academy of Sciences has lost one of its most valued members.

"For generations back some of her ancestors have been noted as doctors of medicine, and her father was one of the physicians in the German army at the Battle of Waterloo.

"Mrs. Hittell and her two sisters came to San Francisco in early days and started a German school, which was the first of its kind on the Pacific Coast. Later she was married to Theodore H. Hittell, to whom she bore two sons and one daughter.

"With the instincts of a true woman and with generous hospitality she made her home a gathering place for the literary, artistic, and scientific people of San Francisco.

"Her patriotism for her chosen country was unbounded, and this it was that led her to found the Silk Culture Society to which she gave her unselfish devotion during the best years of her life. The preservation of the Californian forests became an absorbing thought during recent years, when the destruction of our magnificent trees seems threatened. Linked with this was the desire to have all the relics and records of the aborigines preserved from defacement and destruction. Occasionally she wrote articles on these subjects, which were published in the local papers and scientific journals.

"In her California loses ones of its most devoted lovers.

"[Signed] Alice Eastwood, Gustav Eisen."

JULY 2, in the Board of Trustees, a communication was received from Hon. George M. Bowers, U. S. Fish Commissioner, asking the Academy to name a representative, to cooperate with Cloudsley Rutter and some person to be designated by the State Board of Fish Commissioners, to investigate the question of food of the sea lions of the California Coast. An appropriation of \$100 was made to the person who might be selected by the Academy. JULY 15, the deaths were announced of Harvey W. Harkness, a life member and former president, on July 10; Professor Joseph LeConte, a life member, on July 6; Louis A. Garnett, a life member, on June 26; and Dr. A. C. Hart, a resident member on May 28, 1901. Committees were appointed to take suitable action in reference to the memory of the deceased members, as follows: W. M. Pierson and L. H. Foote for Dr. Harkness; W. E. Ritter and A. C. Lawson for Professor LeConte; Frederick Gutzkow and Thomas Price for Mr. Garnett, and Ransom Pratt and Leverett M. Loomis for Dr. Hart. Dr. C. S. G. Nagel lectured on "Diseases of the Eye: What the Public Should Know of Them." AUGUST 6, in the Board of Trustees, the Council reported that they had selected Dr. E. C. Starks, curator of zoology in Stanford University, to cooperate with the Fish Commission in the investigation of the food of the sea lions on the California Coast. AUGUST 19, the death were announced of Joseph Britton, a life member on July 18, and of George S. Mead, a resident member, who died in Guatemala on July 19, 1901. The committee on the death of Dr. A. C. Hart presented a memorial, which was approved and ordered spread upon the minutes.³³⁴ It stated that Dr. Hart was but thirty-two years of age, yet he left behind him a record of arduous labor and well-earned accomplishments. He was educated at the University of the Pacific and the University of Pennsylvania. He had lived in San Francisco for nine years. "His body was frail, but he was dauntless in the face of fatigue. His tireless and incessant activity took the place of strength and endurance. Not satisfied with the mere mechanical skill of his profession of dentistry, he studied medicine and took a degree in the College of Physicians and Surgeons while still continuing the exacting labors required in his office. He early became fascinated by the scientific possibilities of his calling and constantly pursued the subject with characteristic ardor. He had the true type of scientific mind and his loyalty to truth. He had no theories to establish. He searched unceasingly for facts."

The committee on the death of Louis A. Garnett also presented a memorial, which was likewise approved and ordered spread upon the minutes. It said that Mr. Garnett was born 73 years ago in Virginia and came to San Francisco when the U. S. Branch Mint was established here in 1854, being its chief clerk. Afterwards he became the superintendent of a private gold refinery, and in 1865 president of the San Francisco Assaying and Refining Company. While holding these positions, he established a national reputation as an expert in finance and coinage, and was frequently, then and afterwards, consulted in reference to those subjects by the government, by bankers,

³³⁴ Of the four committees appointed to prepare memorials for deceased members Harkness, Joseph LeConte, Hart and Garnett, only the memorials for Hart and Garnett were presented at this meeting of the Academy. No explanation is given in the minutes for why the other memorials, those for Harkness and LeConte, were delayed. In 1905, because of the delays and the death of William Pierson, who had been asked to prepare the memorial for Harkness, Mr. Hittell, at the Academy meeting held April 3, 1905, was asked to prepare it. He submitted the memorial to the Academy at the April 17, 1905 meeting (*q.v.*); the minutes are silent about a memorial for Joseph LeConte.

and by others interested. On questions of the day regarding coinage and matters connected therewith, he contributed a number of essays to the press, which were regarded as of great value. In scientific pursuits, he took especial interest in mineralogy and practical geology. In connection with his friend and business associate, Gen. John Hewston, he furthered the purposes of the Academy whenever opportunity offered. Professor E. L. Beal, of the Biological Division of the U. S. Department of Agriculture, delivered a lecture on "Curiosities in Bird Food."

SEPTEMBER 2, Professor F. W. Putnam, of Harvard University and the American Museum of Natural History of New York, addressed the Academy on the subject of "American Archaeology." OCTOBER 1, in the Board of Trustees, thanks were tendered to William H. Crocker for a donation of \$150 to purchase the "Flora de Filipinos," and of \$225 for the purchase of Kusche's collection of bird skins. OCTOBER 7, Joseph Grinnell, Alexander Crow, Henry C. Fall, and Edward Berwick were elected resident members. Thanks were tendered William H. Crocker for the purchase and donation of a collection of nine hundred birds. Dr. C. Hart Merriam, chief of the Biological Survey of the U. S. Department of Agriculture, delivered a lecture on "The Coast Regions of Alaska," illustrated with lantern slides. OCTOBER 21, Professor Vernon L. Kellogg, of Stanford University, gave an informal talk on "The Mouth-Parts of Insects," illustrated with charts. NOVEMBER 18, thanks were tendered to Miss Mary Mead for the donation to the Academy of over four hundred birds, being the collection of her deceased brother, George S. Mead, a member of the Academy. Miss L. J. Martin, assistant professor of psychology at Stanford University, delivered an illustrated lecture on "The Expression of the Emotions." DECEMBER 2,



Joseph Grinnell
California Academy of Sciences Special Collections

the thanks of the Academy were tendered to Mrs. Blanche Trask for the donation of a collection of shells, minerals, and Indian stone implements, gathered on Santa Catalina and San Miguel Islands. Professor O. P. Jenkins, of Stanford University, gave an informal talk on the "Fishes of Hawaii." DECEMBER 16, the nominating committee presented a ticket for officers of 1902. The chairman announced the death of Mrs. E. B. Crocker, an honorary member and patron of the Academy, and appointed C. E. Grunsky and T. H. Hittell to draw up and present a fitting memorial. Professor William R. Dudley, of Stanford University, delivered an illustrated lecture on "The Forests and Forest Trees of California."

1902

At the annual meeting of 1902, held JANUARY 6, the following, in accordance with the report of the judges and inspectors of the annual election that day held, were declared officers for the year: David Starr Jordan, president; M. W. Haskell, first vice-president; H. H. Behr, second vice-president; J. O'B Gunn, corresponding secretary; Joseph W. Hobson, recording secretary; L. H. Foote, treasurer; Louis Falkenau, librarian; Leverett M. Loomis, director of the museum; William H. Crocker, George W. Dickie, C. E. Grunsky, James F. Houghton, E. J. Molera, George C. Perkins, and William M. Pierson, trustees. The usual annual reports were read and placed on file. That of the president touched upon the past work of the Academy for the year; the scope of its publications; the maintenance of its library and museum, and the popular



Leverett Mills Loomis, Director of the Museum
California Academy of Sciences Special Collections

science lectures given monthly. Department reports were submitted by curators Eastwood for botany, Behr for entomology, Fuchs, preparator in entomology, Loomis for ornithology, and Rutter, as honorary curator, for ichthyology. The Council nominated Gulian P. Rixford and Charles A. Keeler for honorary life membership, but, there being no quorum present, the president declared the annual meeting and the election of life members adjourned until the next regular meeting. JANUARY 7, in the Board of Trustees, \$5,000, the balance due on the \$10,000 note given the Bank of California on May 3, 1900 was ordered paid off. JANUARY 20, Mr. Grunsky of the committee on the death of Mrs. E. B. Crocker presented a memorial, which was approved and ordered spread upon the minutes. It showed that Mrs. Crocker's maiden name was Margaret Eleanor Rhodes. She was born in Akron, Ohio, February 25, 1822. In 1852 she married E. B. Crocker, then a young attorney of South Bend, Indiana, afterwards closely identified with the building of the Central Pacific Railroad. Immediately after their marriage, Mr. and Mrs. Crocker come to California by the way of Panama. They established their home at Sacramento, and it was for many years a center of social life. After a long service as attorney for the railroad, Mr. Crocker became a Justice of the Supreme Court. After his death, Mrs. Crocker, who had been left very wealthy, devoted herself chiefly to the dispensation of charity in many ways. She established the "Bell Conservatory" for the purpose of adding a feature of beauty to Sacramento and supplying labor to the unemployed. She directed that poor persons, presenting requests for flowers to decorate the graves of their dead in the adjacent cemetery should be provided with them free of charge. She established and endowed the Old Ladies Home of Sacramento. For the city of Sacramento she presented her magnificent art gallery and collection of paintings. She donated her large and handsome mansion on Third and O Street, Sacramento, to a local charity of that city, to be used as a Rescue Home. To the Academy, of which she was made an honorary member on January 3, 1888, she donated the "Mrs. E. B. Crocker Collection," a large and valuable series of birds and mammals in cases. All her charitable and philanthropic work was unostentatious, well conceived and modestly executed, her private and unheralded charities being continued and numberless.

The matter of the voting for the persons nominated at the annual meeting for honorary life membership was called up; but, in the absence of a voting quorum on this occasion also, the election lapsed for the reason that the annual meeting at which such elections were required to take place, could not be adjourned beyond the next regular meeting. Dr. David Starr Jordan delivered an illustrated lecture on "The Fisheries and Fishermen of Japan." In the Council, the following named curators, assistants, and employees were appointed for the ensuing year at the following monthly salaries: Dr. H. H. Behr, curator of entomology at \$80; Leverett M. Loomis, curator of ornithology, at \$80; Miss Alice Eastwood, curator of botany, at \$80; Miss E. A. McIllriach, assistant secretary and librarian, at \$80; Miss Lulu Forbes, assistant in library, at \$40; Charles Fuchs, preparator in entomology department at \$40; W. G. W. Harford, assistant in museum, at \$25; Mrs. G. Newell, assistant in botany department at \$40; John I. Carlson, janitor, at \$40; Cloudsley H. Rutter, honorary

curator of ichthyology, without salary. Charles H. Gilbert, W. A. Setchell and J. W. Hobson were appointed a committee on publications; and M. W. Haskell, W. R. Dudley and L. Falkenau, committee on the library.

FEBRUARY 3, the death of William F. Nolte, a resident member, was announced. Professor H. W. Rolfe, of Stanford University, delivered an illustrated lecture on "Oxford." In the Council, a collection of government reports and other publications, lying in the basement of the Academy building, was ordered to be presented to Stanford University. FEBRUARY 4, in the Board of Trustees, a communication was received from Frederick Gutzkow, stating that, in consequence of certain defects of construction in the Academy's rear-building, the danger of fire had been much enhanced by the occupation of the space adjoining the auditorium or lecture hall, which had been fitted up and rented for manufacturing purposes. The secretary was instructed to inform Mr. Gutzkow that he had made the same objections at the time the building was in the course of construction; that they had been referred to the architects, who had replied to them and had re-approved the plans adopted. It might be added that Mr. Gutzkow's general criticism on the faulty architectural construction of the auditorium was shared in by others; but that the appropriation of the adjacent spaces to manufacturing and commercial purposes, whatever danger from fire there might be in such use, had fortunately not so far carried any loss. In the meanwhile, it might also be added that it was a great good fortune for the Academy to have members, who like Mr. Gutzkow, take a strong interest in its welfare, and are willing openly and boldly to express their honest, unbiased opinion about any matters affecting the interests of the institution. The Camera Club made a tender of rent for their rooms leased of the Academy in the front building for the month of January 1902, but demanded that certain sums previously paid under mistake should be refunded. The matter was referred to W. M. Pierson with powers to adjust and settle. Mrs. Percy, widow of one of the architects of the Academy buildings, was authorized to have a tablet of marble, bearing the names of the architects and of the Board of Trustees at the time of the Academy's construction, placed above the second landing of the main stairway. FEBRUARY 17, Dr. Richard Benzinger, Martin E. Henriksen,^{33 5} Dr. C. S. G. Nagel, J. W. Congdon, Mrs. Zelia Nuttall, and Chester Barlow were elected resident members. Marsden Manson read a paper on the "Evolution of Climate."

MARCH 3, Professor F. Z. Washburn of the University of Minnesota, delivered a lecture on "The Eastern Oyster in Oregon." MARCH 4, the new Board of Trustees organized by the election of W. H. Crocker, president; W. M. Pierson, president *pro tem*; and L. H. Foote, secretary. The Council recommended the following appropriations for 1902: \$6,340 for salaries; \$5,000, publications; \$600, periodicals; \$900, library; \$225, curator's supplies; \$110, telephone; \$300 book binding; \$480, contin-

^{33 5} In the *Minute Books* (Stated Meetings, Jan. 1891-Nov. 1904, p. 281), Henriksen is listed among those elected as resident members, but his name was not among those included by Hittell in his manuscript for this date. Also, in the *Member Record Book*, a secondary compilation of member records from 1853 to 1912, the name is followed by the enigmatic notation, "Failed to qualify. June 16, 1902." On May 5, he was again proposed for membership by D. S. Jordan and C. H. Gilbert, and on June 16, his name appears once more among those "duly elected Resident Members"; this is duly noted by Hittell.

gent expenses; \$160, scrub-woman; \$140, wood and coal; and \$100 printing and stationery – making in all \$15,305. All these amounts were allowed except the item for publication, which was reduced to \$4,000. Mrs. G. Newell's salary as assistant in the herbarium, was fixed at \$40 per month. MARCH 17, for the first time, under the new recording secretary, J. W. Hobson, accessions to the museum are reported by departments, Ichthyology, Anthropology, Invertebrate Zoology, Botany and the Herbarium, and so forth. The following papers, presented for publication,^{33.6} were read by title and submitted: "Studies on the Coast Redwood, *Sequoia sempervirens*, Endl.," by George J. Peirce; "A Revision of the Genus *Calochortus*," by Carl Purdy; "A Group of Western American *Solanums*," by S. B. Parish; "An Account of the Species of *Porhyra* Found on the Pacific Coast of North America," by Henri T. A. Hus; "Description of Two new Genera of Fishes (*Ereunias* and *Draciscus*) from Japan," by David Starr Jordan and John O. Snyder; "Description of Three New Species of Fishes from Japan," by David Starr Jordan and Edwin Chapin Starks; "Notes on *Cerococcus*," by Ross W. Patterson; "Notes on New and Little Known Coccidae," by Shinkai Inokichi Kuwana; "The Redwood Mealy Bug (*Dactylopius sequoiae*, sp. nov.)," by George A. Coleman; "Studies on Ciliate Infusoria," by N. M. Stevens; "Coccidae (Scale Insects) of Japan," by Shinkai Inokichi Kuwana; "Some Observations on *Ascorhiza occidentalis* Fewkes, and Related Alcyonidia," by Alice Robertson; "List of the Coleoptera of Southern California, with Notes on Habits and Distribution, and Descriptions of New Species," by H. C. Fall; "The Comparative Stratigraphy of the Marine Trias of Western America,"^{33.7} by James Perrin Smith; "The Net-Winged Midges (Blepharoceridae) of North America," by Vernon L. Kellogg; "The Anatomy of *Epidella squamula*, sp. nov.," by Harold Heath; "Fishes of Panama Bay," by Chas. H. Gilbert; "Mammals of the Galapagos Archipelago, Exclusive of the Cetacea," by Edmund Heller; "Variation and Fusion in Colonies of Compound Ascidians," by Frank W. Bancroft; "The Root-tubercles of Bur Clover (*Medicago denticulata* Willd.) and of Some Other Leguminous Plants," by George James Peirce; "Determination of the Constant of Refraction from Observations made with the Repsold Meridian-Circle of the Lick Observatory," by Russel Tracy Crawford; "Some Arachnidia from California," by Nathan Banks; "On Some New and Imperfectly Known Species of West Coast Crustaceae," by Samuel J. Holmes; "Remarks on the Sexes of Sphaeromids with a Description of a New Species of Dynamene," by Samuel J. Holmes; "Some New Species of Pacific Coast *Ribes*," by Alice Eastwood; "The Palaeontology and Stratigraphy of the Marine Pliocene and Pleistocene of San Pedro California, with Notes on the Equivalent Formation of the Adjacent California Coast," by Ralph Arnold, containing "Descriptions of New

^{33.6} As earlier noted, Hittell suggests these are papers that have been submitted for publication but have not yet been published. The minutes state otherwise, "The following papers appearing in the publications of the Academy were read by title: . . ." (*Minute Books*, Stated Meetings, Jan. 1891-Nov. 1904, p. 283). As a matter of record, many of these had already been published although several, such as "The Comparative Stratigraphy of the Marine Trias of Western America," though accepted for publication, would wait their turn, in this case until July 29, 1904. See earlier comments in footnotes 28.2 and 31.12.

^{33.7} Occasional errors were introduced by the recording secretary when inscribing the titles of the papers in the *Minute Books*. For example, recorded in the handwritten minutes, "The Comparative Stratigraphy of the Western Trias of North America" for " . . . the Marine Trias of Western America." The errors have been corrected in the titles cited here.

Anthozoa," by T. Wayland Vaughn and "Descriptions of the Family Pyramdallidae," by William H. Dall; "Cretaceous Deposits of the Pacific Coast," by Frank M. Anderson, and "Cell Studies – I. Spindle Formation in Agave," by W. J. V. Osterhout. Edward Ehrhorn, entomologist of Santa Clara County, spoke about "Scale Insects," illustrating his remarks with specimens and microscopic slides.

APRIL 7, Captain John P. Finley, of the U. S. Army, delivered a lecture, entitled "A Review of Some Industrial, Scientific and Military Problems Incident to Our Island Possessions in the Pacific." APRIL 21, the thanks of the Academy were tendered to William H. Crocker for the purchase and donation of the Slevin collection of 1,000 birds from Europe and America. Professor W. E. Ritter of the University of California, read a paper, entitled "The Enteropneusta of the Pacific Coast, with a Description of the Chordate Affinities of the Group." MAY 5, Lieutenant J. C. Cantwell, of the U. S. Revenue Cutter Service, read a paper, entitled "Notes on Alaskan Natives." MAY 6, in the Board of Trustees, C. E. Grunsky, announced that the inscription to be placed above and below the medallion of James Lick on the first landing of the marble stairway to the museum would be "One of His Bequests to the People, James Lick (medallion). Erected by the California Academy of Sciences 1889-1890. H. W. Harkness, President. Trustees – C. F. Crocker, D. E. Hayes, S. W. Holladay, E. J. Molera, Irving M. Scott, George C. Perkins, John Taylor, Architects – George W. Percy, Frederick F. Hamilton." MAY 19, Professor A. A. Lawson, Department of Botany, Stanford University, read a paper entitled, "A Discussion of the Morphology of the Nucleus and the Mechanics of Mitosis." In the Council, Miss McIlriach was granted leave of absence during the month of June. C. E. Green and W. C. Blasdale tendered their resignations, which were accepted. A communication was received from C. Mereschkowsky, of the University of Kazan, Russia, through the hands of Professor William E. Ritter and Dr. David Starr Jordan, requesting a financial loan from the Academy. It was ordered that a message by telephone should be forthwith transmitted to Professor Ritter that the constitution of the Academy would not permit the consideration of the request.

JUNE 16, Dr. Martin Krotzyner, Dr. Harold Ohrwall, Miss Clara S. Ludlow, Charles D. Snyder, Martin E. Henriksen,^{33.8} and William J. Hackmeier were elected resident members. Marsden Manson delivered a lecture on "Geysers and Volcanoes," illustrated with models and apparatus, showing intermittent ejections of water and the forms assumed by sawdust thrown up from a vent. In the Council, David Starr Jordan and Leverett M. Loomis were appointed a committee on lectures. Mr. Loomis was appointed to act on the library committee in place of Professor Haskell, who had leave of absence for the remainder of the year. Miss McIlriach had by marriage become Mrs. Cloudsley Rutter and was relieved of her duties as assistant secretary and librarian. She was, however, appointed to supervise the printing and do the proof-reading of the Academy's publications at a monthly salary of \$50, beginning July 1, 1902. The keys of the library, formerly entrusted to her, were committed to the care of the director of the museum. Miss Lulu Forbes was appointed assistant

^{33.8} See footnote 33.5.

secretary under the supervision of the director of the museum, and assistant librarian under the direction of the librarian, at a monthly salary of \$50, to commence on July 1, 1902. The salary of Leverett M. Loomis, director of the museum, on account of increased duties, was raised from \$80 to \$125 per month to commence July 1, 1902.

JULY 7, the deaths were announced of John Taylor, a former Trustee, on June 2; of Louis Sloss, a life member and former Trustee, on June 4, and of George C. Hickox, a life member, on July 5, 1902. H. W. Turner, late of the U. S. Geological Survey, delivered and illustrated lecture on "The Geology of the Great Basin." JULY 21, the death of J. G. Cooper, a life member, was announced. It appeared that Dr. Cooper joined the Academy in 1867 and served at various times as vice-president, corresponding secretary, librarian and director of the museum. He was also for a number of years curator of invertebrate zoology and devoted much attention to conchology. He wrote many valuable papers and in all branches, to which he directed his attention, he was widely and favorably known for his scientific attainments. His death took place on July 19, 1902. Thanks were tendered to William M. Pierson for the purchase and donation of a collection of 100 specimens of birds from North and South America and Europe, many of them rare. Dr. B. E. Fernow, director of the New York State College of Forestry and Professor of Forestry in Cornell University, delivered an illustrated lecture on "Effects of Forest Devastation." In the Council, W. G. W. Harford was granted a month's leave of absence. Mrs. J. Wilkins was employed to do general cleaning work at a salary of \$35 per month. A communication was received from Leverett M. Loomis, director of the museum, asking that the date at which his salary should be increased from \$80 to \$125 per month be changed from July 1, 1902 to December 1, 1902. He said that the object of thus deferring the increase of his salary for five months was to avoid any possible embarrassment in his plans for the betterment of the Academy. In response to his desire, the raise in his salary was deferred to December 1, 1902. A request of the Southern Pacific Railroad Company for certain of the Academy's publications was referred to the director of the museum with instructions to furnish such publications as he thought proper. A like order was made in reference to a similar request from the University of the Pacific.

AUGUST 4, Dr. R. A. Harper, of the University of Wisconsin, gave an illustrated lecture on "The Dust Fungi." AUGUST 5, in the Board of Trustees, on recommendation of the Council, an allowance of \$80 per month for six months, commencing July 1, 1902, was made to Mrs. Effie McIlriach Rutter for editing the Academy publications; of \$60 per month for six months to Lulu F. Forbes as assistant secretary and librarian, and of \$35 per month, from August 1 to end of the year, to Johanna E. Wilkins for services as janitress. The sum of \$100 was appropriated to F. M. Anderson for his collection of invertebrate fossils on condition that it should be applied in payment of a life membership. The secretary was authorized to rent stores Nos. 815 and 823 Market Street for three years, at the end of present leases, for \$350 per month each. AUGUST 18, William M. Noyes presented a collection illustrating silk culture in California. Among the larger accessions were 1528 plants from various California localities by Miss Eastwood, and 241 from Lake Co., donated by Miss Agnes

Bowman. Announcement was made of the death of James Spiers, a resident member, on August 13, and of John Dolbeer, a resident member, on August 17, 1902. Frank W. Bancroft, instructor in physiology at the University of California, lectured on "The Role of Natural Selection in Evolution." In the Council, Dr. Harold Heath was appointed honorary curator of invertebrate zoology. It was ordered that a publication should be made in convenient form of the Constitution, By-laws, and Lists of Members of the Academy.

SEPTEMBER 1, Miss Alice Eastwood delivered a lecture on "General Botanical Features of the Coast Mountains of California." SEPTEMBER 15, a communication was received from Mrs. Elizabeth Jane Lockington, announcing the death of her husband, William Neale Lockington. He died at Worthing, Sussex, England, on August 3, 1902, aged 62 years. He became a member of the Academy in 1873 and for a number of years, and while a resident of San Francisco, was an active and efficient worker. He wrote and published many papers on invertebrate zoology. Leverett M. Loomis moved the appointment of a committee to take such steps as might be necessary to relieve the property of the Academy from taxation, with power to fill vacancies and, if deemed advisable, to add to its numbers. As the taxing of the Academy, an institution of learning and of public concern, was felt by all to be the imposition upon it of an unjust burden, the motion was unanimously carried. The president appointed W. M. Pierson, C. E. Grunsky and Leverett M. Loomis as such committee. Professor W. J. V. Osterhout, professor of botany at the University of California, gave a lecture on "Professor Loeb's Discoveries and their Significance." In the Council, requests for exchange of publications were received from the University of Colorado, the University of Missouri, the Numismatic and Antiquarian Society of Philadelphia, the *Museu Royal d'Histoire Naturelle de Belgique*, and the *Ornithologischer Verein* of München, Germany. They were all referred to the library committee with power to act.

OCTOBER 6, the death of Major J. W. Powell, Director of the Bureau of American Ethnology and an honorary member of the Academy, was announced. Rabbi Jacob Voorsanger delivered an address on "Professor Joseph LeConte," speaking of him as a man, a scholar, a scientist and a philosopher. OCTOBER 20, in the Council a communication was received from Miss Gertrude F. Boyle offering to donate to the Academy her bust of John Muir after its completion in bronze. The offer was accepted subject to the approval of the bust by William Keith, the artist. Dr. John Van Denburgh was appointed honorary curator of the department of herpetology. A number of honorary members, eight foreign and ten from the United States, were proposed to be voted for at the next annual election. In the stated meeting of the same date, it was announced that Mr. S. J. Harkness of Scofield, Utah, had donated the "Dr. H. W. Harkness Collection of South Sea Anthropological Specimens," for which thanks were tendered him. James Wilson presented specimens of coal, gutta-percha and honey-bees from Mindanao, Philippine Islands. The herbarium reported the accession of more than 600 plant specimens, mostly through exchange. The death of Col. George H. Mendell, a resident member, was announced. Professor William A.

Setchell, of the University of California, gave a lecture on "Some Cases of Regeneration in Plants." OCTOBER 27, at a special meeting, Dr. C. Hart Merriam, Chief of the Biological Survey of the U. S. Department of Agriculture, delivered a lecture, entitled "Protective and Directive Coloration of Animals," illustrated with lantern slides.

NOVEMBER 3, Theodore H. Hittell read a historical paper, entitled "Pioneers in Death Valley," giving an account of the Manly party in Death Valley in 1849. NOVEMBER 5, in the Board of Trustees, it was ordered that the small stores, Nos. 817 and 821 Market Street, should be rented for three years at \$150 per month each. The sum of \$3,236.51 was appropriated to pay the first installment of taxes for the fiscal year 1902-3. NOVEMBER 17, the death of Chester Barlow, a resident member, was announced. Dr. George J. Peirce, of Stanford University, delivered a lecture on "The Relations of Land and Water Plants to their Surroundings." At a joint meeting of the Council and Board of Trustees a committee to nominate officers for the year 1903 was selected, consisting of Charles Burkhalter, Otto von Geldern, William Greer Harrison, Edward Bosqui, and Ransom Pratt. NOVEMBER 24, at a special meeting, Professor William H. Dudley, of Chicago University, gave an illustrated lecture on "The Colors of Birds, Butterflies, and other Animals." DECEMBER 1, the death of Lewis Gerstle, a life member and former trustee, was announced. Dr. David Starr Jordan delivered an illustrated lecture on "Samoa." DECEMBER 2, in the Board of Trustees, the salary of Leverett M. Loomis, director of the museum, was advanced to \$125 per month from December 1, 1902. DECEMBER 8, at a special meeting,



C[linton] Hart Merriam
George Sprague Myers Portrait Collection
Department of Herpetology, California Academy of Sciences

Professor William H. Dudley, of Chicago University, gave an illustrated lecture on "Colors of Flowers, Fruits and Foliage." DECEMBER 15, the death of George W. Prescott, a life member, was announced. The Botany Department reported the accession of 1120 plant specimens, mostly from California. The nominating committee presented a ticket for officers for 1902. Frank M. Anderson read a paper, entitled "Triassic Volcanoes of the Klamath Mountains." In the Council, a communication was received from William Keith approving of the statuary bust of John Muir made by Miss Gertrude F. Boyle, which thenceforth occupied a place of honor in the Academy's library. Dr. A. L. Kroeber was appointed honorary curator of the department of anthropology. Theodore H. Hittell was nominated for life membership in recognition of valuable services rendered the Academy.

Chapter XXXIV: Year 1903

At the annual meeting, held JANUARY 5, on nomination of the Council, Theodore H. Hittell was elected an honorary life member. Frank M. Anderson was elected a life member, and Beverly Letcher a resident member. On account of the frequent deaths, which had occurred among the honorary members of the Academy, it was thought proper to fill up the depleted ranks and, on recommendation of the Council, the following were elected honorary members: Professor Alfred Newton, of Cambridge, England; Dr. Philip Lutley Sclater, of London; Dr. Richard Bowdler Sharpe, of London; Dr. Franz Steindachner, of Wien (Vienna); Professor Kakichi Mitsukuri, of Tokyo; Dr. Albert Günther, of London; Dr. Ramsey H. Traquair, of Edinburgh; Dr. A. Alcock, of Calcutta; Dr. Theodore N. Gill, of Washington, Dr. C. Hart Merriam, of Washington; Mr. Robert Ridgway, of Washington, Dr. Leonhard Stejneger, of Washington; Professor Frederic W. Putnam, of New York; Professor Henry Fairfield Osborn, of New York; Dr. Leland O. Howard, of Washington; Professor John Henry Comstock, of Ithaca, New York; Professor Edmund Beecher Wilson, of New York, and Professor Charles D. Walcott, of Washington. The deaths of Captain Oliver Eldridge, a life member, on December 16; Leo Eloesser, a life member, on December 29, and T. E. Slevin, a resident member, on December 23, 1902, were announced. The following papers, presented for publication, were read by title and submitted; "New Species from the Sierra Nevada Mountains of California," by Alice Eastwood; "Culture of the Hupa," by P. E. Goddard; "The Hypopygium of the Dolichopodidae," by R. E. Snodgrass; "Notes on Fishes from the Gulf of California, with the Description of a New Genus and Species," by C. Rutter; "Notes on Fishes from the Pacific Coast of North America," by Chas. H. Gilbert. The judges and inspectors of the annual election reported the choice of the following, who were declared officers for the year: William Alvord, president; Alpheus Bull, first vice-president; H. H. Behr, second vice-president; J. O'B. Gunn, corresponding secretary; J. W. Hobson, recording secretary; L. H. Foote, treasurer; Louis Falkenau, librarian; Leverett Mills Loomis, director of the museum; W. H. Crocker, George W. Dickie, C. E. Grunsky, James F. Houghton, E. J. Molera, George C. Perkins, and W. M. Pierson, trustees. The usual reports, showing the condition and progress of the Academy during the preceding year were read and placed on file. In the Board of Trustees, \$50 were appropriated to Leverett M. Loomis for expenses of the committee appointed to attend the Legislature, with the object of procuring an amendment to the State Constitution exempting the Academy from taxation.

JANUARY 19, H. B. Torrey, instructor in zoology at the University of California,



Kakichi Mitsukuri

Distinguished ichthyologist, Professor of Zoology and Dean of the College of Science, Tokyo Imperial University. Professor Mitsukuri was the first scientist of non-European ancestry to be elected an honorary member of the Academy
George Sprague Myers Portrait Collection,
Department of Herpetology, California Academy of Sciences

lectured on "Some Problems of Growth and Regeneration." In the Council, Leverett Mills Loomis, Alpheus Bull and J. W. Hobson were appointed a committee on publications, and Louis Falkenau, J. W. Hobson and Leverett Mills Loomis committee on the library for 1903. Curators, assistants and employees for 1903 were appointed with monthly salaries as follows: Dr. H. H. Behr, curator of entomology at \$80; Leverett Mills Loomis, executive curator and curator of ornithology at \$125; Miss Alice Eastwood, curator of botany at \$80; Miss Lulu Forbes, assistant secretary and librarian at \$70; Charles Fuchs, preparator in department of entomology (half time) at \$40; W. G. W. Harford, assistant in museum at \$25; John I. Carlson, assistant in museum at \$50; Mrs. G. Newell, assistant in botany department at \$40; Mrs. J. E. Wilkins, janitress at \$35; Mrs. Cloudsley Rutter was employed from month to month to supervise printing of Academy publications at \$80 per month.

Leverett Mills Loomis, director of the museum, presented a report to the effect that for the preceding year the work of the museum had been largely devoted to the housing and arrangement of scientific specimens; but that it was now in readiness for exploration and larger accessions. In addition to the constant employment of the



William Alvord
California Academy of Sciences Special Collections



Frank Marion Anderson (circa 1940)
Photo Collection, Department of Geology
California Academy of Sciences

curators of entomology, botany and ornithology, three honorary curators were actively engaged in the work of the Academy: Dr. John Van Denburgh in herpetology, Dr. Kroeber in anthropology and Mr. Anderson in paleontology. Under the direction of these gentlemen, Mr. John I. Carlson, assistant in the museum, was labeling and arranging specimens; and the work was well in hand in those departments. But exploration would build up the collections and afford ample material for publications by the curators, which would largely tend to make known the scientific resources as well as the activities of the Academy. Its income, above appropriations already made, if put into explorations, would be sufficient to make a good beginning; and, if that beginning were made, it would doubtless attract outside assistance to enlarge the work, just as in the case of the American Museum of Natural History of New York and other institutions, which were on account of their work in the field in the vanguard of scientific institutions. He therefore proposed, as a definite plan for explorations in 1903, that R. H. Beck of San Jose should be employed for the year at a salary of \$70 per month and his expenses in the field. Mr. Beck was well known as a collector; he had been three times to the Galapagos Islands in the interest of the Zoological Museum of Tring, England, and was well qualified to be at the head of an expedition. In the next place, three or four students should be employed as needed to help Mr. Beck at the same remuneration of one dollar per day and expenses in the field as was paid by the U. S. Fish Commission. Miss Eastwood could show one of the students how to collect and preserve plants; Dr. Van Denburgh could instruct another how to collect reptiles; Mr. Beck could teach another how to assist in collecting and preparing birds, and Dr. Kroeber could give directions in reference to anthropological speci-



Rollo Beck

California Academy of Sciences Special Collections

mens. Among the first localities to be visited, which would furnish valuable materials, were several islands off the coast of Lower California, all within comparatively easy reach of San Diego. There were also a number of localities in California that would well repay further search, such as the upper Santa Barbara Islands, Tulare Lake region, and the tule region where the San Joaquin and Sacramento rivers enter the head of Suisun Bay. The ocean off the California coast was an almost unknown region in reference to its off-shore ornithology. Mr. Loomis himself hoped to continue his observations in that interesting field, so far as he could find time to do so; and he suggested that Mr. Beck would be a valuable aid in that work. Mr. Anderson, honorary curator of palaeontology, had some intervals of time when he could give his attention to collecting fossils in California; and he had offered to make collections in this rich field and give all the specimens collected to the Academy, provided his expenses in the field were paid. This offer should not be neglected. All the exploration work proposed could be accomplished at an expenditure of \$4,000. With \$5,000, better results could be obtained and parties kept in the field during the entire year. On motion the report was approved and reported to the Board of Trustees with a recommendation that the appropriation should be granted.

On motion of Mr. Loomis the following rules for the guidance of the committee on publications were adopted and ordered transmitted to that committee in the form of instructions: I. Action of the committee in accepting and rejecting papers offered for publication shall be open at all times to the inspection of the members of the Council. II. The minutes of the meetings of the Committee shall be open at all times to the inspection of the members of the Council. III. The committee shall enforce the following rules: (1) Poorly prepared manuscripts can not be accepted; unless perfectly legible, manuscripts must be type-written; (2) Proof sheets must be corrected and returned promptly; when not so returned publication shall be proceeded without further delay; (3) When the cost of alteration in the proof does not exceed five per cent of the total cost of printing, this expense shall be borne by the Academy; costs in excess of five per cent shall be charged to the author. The following honorary curators for 1903 were appointed: Dr. John Van Denburgh for herpetology; Dr. A. L. Kroeber for anthropology; and F. M. Anderson for palaeontology. On motion, it was ordered that the meeting of the Academy of May 18, 1903, should be made an occasion for celebrating the Semi-Centennial Anniversary of the Academy; and a committee of three consisting of Messrs. Falkenau, Loomis and Gunn, was appointed to make suitable preparations for that occasion. It was announced that G. P. Rixford became a life member during the month under the provision of the Constitution.

FEBRUARY 2, the death of General James F. Houghton, a trustee of the Academy, was announced; and Messrs. Grunsky, Hittell and Rixford were appointed a committee to draft suitable resolutions of respect to his memory. Charles A. Keeler delivered an illustrated lecture on "Polynesian People." FEBRUARY 3, the new Board of Trustees organized by the election of William H. Crocker, president; William M. Pierson, president *pro tem*; and L. H. Foote, secretary. The secretary reported that a contract had been entered into with the Central Light and Power Company to furnish light and

power at three cents per kilowatt for the ensuing year. On recommendation of the Council, the following appropriations were made for 1903; \$6,540 for salaries; \$4,760, publications and proof reading; \$900, library; \$600 periodicals; \$300 book binding; \$800, museum; \$225, curators supplies; \$110, telephone; \$75, postage, freight and express; \$100, printing and stationery; \$75, illustrating lectures; \$140, wood and coal; \$200, scrubwoman; \$480, contingent expenses – making in all \$15,305.00. A communication, addressed by the director of the museum to the Council, asking a consideration of the possibility of engaging in exploration work on a larger scale as a means of enlarging the scope of the Academy and building up its departments, having been referred by the Council to the Trustees with a recommendation that an appropriation of \$4,000 be made for such exploration work, the Board decided to make the appropriation, at the same time instructing the secretary to inform the Council that while they were willing to cooperate in all legitimate work of the Academy, their action on this occasion should not be taken as a precedent, as further appropriations would have to depend upon the surplus in the treasury.

FEBRUARY 16, Leverett Mills Loomis, of the committee on relief from taxation, reported that both houses of the Legislature at Sacramento had adopted the proposed amendment to the State Constitution, exempting the Academy from taxation, and had directed its submission to the vote of the people at the next general election. On motion of Mr. Loomis, the thanks of the Academy were tendered to Senator Hamilton Bauer and Assemblyman E. D. Knight for introducing into their respective houses the proposed amendment. The secretary stated that James D. Phelan had donated to the Academy a sum of \$100 for the purchase of a medal, to be awarded by the Academy to the person who in its judgment had most advanced the interests of agriculture by his investigations and by the application of scientific principles to plant life; and that the Council had accepted the gift, subject to the approval of the Academy and had appointed a committee, consisting of Marsden Manson and Horace Davis to take the matter in charge. On motion, that action of the Council was approved. Theodore H. Hittell offered a preamble and resolution, which were adopted, to the effect that whereas the Spanish Archives of California were of a distinctively local character and were being constantly examined by both writers and students of California history, the Academy, in the interest of historical research, earnestly protested against the removal, as had been suggested, of those manuscripts to the Library of Congress at Washington. Professor A. L. Kroeber delivered a lecture on the "Investigations [on the Language]³⁴¹ of the California Indians." He illustrated his remarks with phonographic reproductions of Indian words and songs. In the Council, the use of the Hall and freedom of the Academy was granted to the American Ornithological Union during the two days of its meetings in San Francisco, May 15 and 16, 1903. It was ordered that annual vacations be granted Academy employees as follows: curators, one month; assistants, two weeks; janitress, one week; but in all cases, except for short collecting trips by curators, leave of absence must be granted

³⁴¹ In Hittell's manuscript, the title of the talk is given as "Language of the California Indians." In the *Minute Books*, the title is recorded as "Investigations of the California Indians." As noted by Hittell, the handwritten minutes do state that the talk was illustrated with the phonograph (Stated Meeting, Jan. 1891-Nov. 1904, p. 322).

by the Council. A communication was received from Dr. Marsden Manson regarding the publication of his paper on the "Evolution of Climates." In response the Council expressed its regrets to Dr. Manson that it could not at that time comply with his request respecting the publication of the paper. A request from Mrs. Rutter that she be furnished with "an ordinary rotary office chair" was approved. A proposition from Abraham S. Mayer, offering for sale the "Julius S. Arnheim collection of shells" for \$15,000, was declined.

MARCH 2, Dr. John Van Denburgh delivered an illustrated lecture entitled "Reptiles and Their Venom." MARCH 3, in the Board of Trustees, Leverett M. Loomis reported the adoption by the State Legislature of the proposed amendment to the constitution of the State of California, exempting the Academy from taxation; that the expenses of the committee in attending the legislature had been for railroad fares and hotel bills, \$31.85, and that the surplus of \$18.15, over the \$50 appropriation, had been returned to the treasury. Mr. Loomis also reported that William H. Crocker had expended \$250 for a rare collection of 100 birds and donated them to the Academy. The use of the lecture hall was granted to the Sempervirens Club for one evening, with the understanding that the Club would compensate the janitor for his services. MARCH 16, the committee appointed to prepare resolutions of respect to the memory of Gen. James F. Houghton presented their report, which was approved and ordered spread upon the minutes. It said that in the death of Gen. Houghton, the Academy had lost a member whose active interest in its work had been constant and whose earnest and faithful participation for years in the management of its affairs had been invaluable. Speaking for the members in general, it emphasized their appreciation of the deceased as one who in all the walks of life, social and official, maintained the high standards that make for the betterment of mankind. Leverett Mills Loomis stated that the Council had invited the American Ornithologists Union to hold its San Francisco meetings on May 15 and 16 in the Academy building. On motion of Mr. Loomis, J. W. Mailliard, Charles A. Keeler and Dr. John Van Denburgh were appointed a reception committee to welcome the delegates of the Ornithologists Union from abroad.^{34.2} Miss Alice Eastwood lectured on "The Conifers of the Pacific Coast." APRIL 6, Professor Louis Samuel Kroeck, of the University of the Pacific, and Herbert Brown of Yuma, Arizona, were elected resident members. John Otterbein Snyder delivered an illustrated lecture entitled "Glimpses of Bird Life on a Coral Island in the Mid-Pacific."

APRIL 7, in the Board of Trustees, Daniel E. Hayes was elected to fill the unexpired term of Gen. J. F. Houghton, deceased. Among the bills ordered paid were one of \$54.80 to the Central Light and Power Company; one of \$500 to R. H. Beck for expenses of the exploration expedition to San Miguel Island, together with a salary to him of \$75 per month during employment. The sum of \$3,075.69 was appropriated to pay the second installment of taxes for 1902-3. APRIL 20, various additions of anthropological, zoological and botanical specimens were received from the explor-

^{34.2} Hittell says "a reception committee to welcome the delegates . . . from abroad." The resolution, as reported in the handwritten minutes (*op. cit.*, p. 325) is more generic, stating ". . . were appointed a reception committee." Perhaps by "from abroad" Hittell means anyone from out-of-state, but this is unlikely.

ing expedition to the Revillagigedo Islands, sent out under the charge of R. H. Beck. The Botany Department also reported receiving a collection of 435 plants from Lower California, Arizona and Utah, purchased by the California Botanical Club from T. S. Brandegee for \$35. A donation of pamphlets was received from Dr. H. Woodward, F.R.S., late of the Geological Department of the British Museum, for which thanks were tendered. Leverett Mills Loomis presented amendments to the By-laws of the Academy, making more precise provisions in reference to the time and government of meetings and rules of order, which were read and referred to the Council. Professor F. E. L. Beal, of the Biological Survey of the U. S. Department of Agriculture, delivered a lecture on "Work in Economic Ornithology." In the Council, it was ordered that the services of Mrs. C. Rutter as proof-reader should be dispensed with after May 1, 1903. The special committee of arrangements for the observance of the Semi-Centennial of the Academy reported a program of exercises, which was ordered to be tastefully printed. The special committee on award of the Semi-Centennial medal submitted a report that the medal should be awarded to Luther Burbank of Sonoma County, California. It was ordered that copies of recent Academy publications should be sent to each of the San Francisco daily morning and evening newspapers.

MAY 4, the deaths were announced of James E. Mills, a resident member, at San Fernando, Mexico, on July 25, 1901, Addison E. Head, a life member, on December 12, 1902, and Irving M. Scott, a life member and former trustee on April 28, 1903. On motion, the amendments to the By-laws, proposed at the last meeting and referred to the Council, having been reported back with approval, were unanimously adopted. Their main provisions were that the annual and regular meetings should be held in the Academy building (not necessarily in the lecture hall) at 8 o'clock in the evenings; that in the absence of the president and vice-presidents, a member should be chosen by a plurality of *viva-voce* votes to preside, and that the committee on publication should be appointed by the Council. Professor A. O. Leuschner lectured on "The Asteroids." MAY 5, in the Board of Trustees, a report was made of the papers contained in the safe deposit box. Among these were the deeds from James Lick to the Academy dated February 15, 1873 and July 11, 1873; deed of John Lick, dated January 2, 1880, and deed from collateral heirs of James Lick, dated January 2, 1877, besides other important papers of the Academy. The sum of \$30 was appropriated for decorating the Academy building during the visit of President Roosevelt to San Francisco; \$100, donated by James D. Phelan, were ordered paid to Shreve & Co. for a gold medal for Luther Burbank, who had been pronounced the most deserving man to receive it, and \$452.94 were appropriated for exploration expedition supplies and \$100 for hire for one month of the schooner intended to carry the expedition.

MAY 18, this being date of a regular meeting nearest to the fiftieth anniversary of the Academy it was determined to observe it as the Semi-Centennial Anniversary Meeting. There was a very full attendance of members and their friends. After the election of Rudolph J. Taussig as a resident member, the regular order of business was suspended, and the Semi-Centennial programme taken up. The exercises com-

menced with an address by Theodore H. Hittell, entitled "A Historical Sketch of the California Academy of Sciences." The purpose was to give a brief review of the Academy's history, its early struggles and its progress from its foundation in 1853 to its existing flourishing condition. Charles A. Keeler recited an "Anniversary Ode." Leverett Mills Loomis read a carefully prepared paper entitled "The Academy in 1903," in which he gave a synoptical view of the condition of the Academy and its equipment for scientific work. The remainder of the programme consisted in the presentation, in the name of the Academy, of a beautiful gold medal to Luther Burbank. It will be borne in mind that at the meeting of February 16, 1903, the secretary announced that James D. Phelan, of San Francisco, had donated one hundred dollars "for the purchase of a medal, to be awarded to the person who, in the judgment of the Academy, had most advanced the interests of agriculture by his investigations and by the application of scientific principles to plant life." The person chosen as most worthy of this honor was Luther Burbank, of Sonoma County, who had accomplished so many wonders in producing new and valuable varieties of fruits and vegetables that his fame was already world-wide among scientific men. Mr. Burbank, though of the most modest and retiring character, had been induced to attend the meeting; and the presentation was made in the presence of the Academy in a few words of appreciation by President William Alvord. Upon receiving the medal under such unexpected circumstances, Mr. Burbank seemed overwhelmed and could barely express his thanks; but the Academy, at the suggestion of the President, spoke for him with long and hearty applause. In the Council, a communication was received from Professor William E. Ritter, asking the Academy contribute \$20 towards the support of an American table at the Zoological Station at Naples, Italy. In response it was resolved "not to contribute this year." The resignation of G. C. Price as a member, accompanied with dues up to June 1, 1903, was accepted. A request to be placed on the exchange list was received from the Alaska Academy of Sciences, and in response it was ordered that all present publications should be forwarded to it.

JUNE 1, Edward Berwick delivered a lecture entitled "Thirty Year's Experience as a California Fruit Grower" in which he told the story of his struggles in bringing his famous apple orchards in Santa Cruz County to their high degree of productiveness. JUNE 15, among the accessions to the museum were ten casts of faces of California Indians from the American Museum of Natural History of New York. There was also presented a meteorite, weighing two hundred and twenty-two pounds. It came from Arizona and was the gift of H. W. Gregory to whom due thanks were tendered. Dr. T. S. Palmer, of the Biological Survey, U. S. Department of Agriculture, delivered a lecture on "What is being done for the Protection of Birds and Game in the United States." In the Council, John I. Carlson, assistant in the museum, on account of ill health, requested leave of absence without pay to August 15. His request for leave of absence was granted but his salary ordered to continue. A request of Miss Alice Eastwood, curator of botany, to be reimbursed six dollars paid out for repairs of her type-writing machine used in the service of the Academy was referred to the Board of Trustees. Her request for leave of absence on a collecting trip for from two

to five weeks was granted. Dr. David Starr Jordan asked leave to withdraw Dr. Gilbert's paper on "New Species of Fishes from Monterey Bay." The secretary was instructed to reply to Dr. Jordan that the Council was unable to grant his request as the plates for Dr. Gilbert's paper and the papers following it had been made and numbered.

JULY 6, among the accession to the library was Blum's "Flora of Java" in four volumes folios, magnificently illustrated. They were the gift of William Alvord. On motion of Mr. Loomis, seconded by General Foote, the following preamble and resolutions were unanimously adopted:

Whereas, the work of Mr. Luther Burbank has contributed greatly to scientific knowledge regarding hybridization; and

Whereas, discoveries of the highest scientific importance are constantly being made in the course of his work, which should be adequately recorded and supplemented by additional experiments; and

Whereas, this is impossible without a specific endowment for this purpose:

Therefore Be It *Resolved*, That the California Academy of Sciences does hereby heartily endorse the request to the Carnegie Institution for a grant in aid for Mr. Burbank in his researches in full confidence that such a grant will yield most valuable returns to science.

Dr. S. W. Dennis delivered a lecture entitled "Is Medicine a Science?" JULY 20, announcement was made of the death at San Francisco on July 17, 1903, of Gilbert Palache, a life member of the Academy. Mr. Loomis moved an amendment to Article IV, Section 2 of the Constitution of the Academy in reference to the nomination, election, and terms of officers. The amendment was received and referred to the Council. S. W. Holladay delivered an address entitled "A Year in London," giving his experiences on a recent visit to that city. In the Council, the honorary curators Dr. John Van Denburgh, Dr. A. L. Kroeber and F. M. Anderson were appointed regular curators in their several departments without salary. On motion it was resolved that a proof-reader for the publications of the Academy, who should also be assistant to the executive committee of the Board of Trustees, should be employed after September 1, 1903, at a salary of \$70 per month – the selection of such proof-reader to be left to the committee on publication. Eadweard Muybridge offered to donate copies of his recent books, "Animals in Motion" and "The Human Figure in Motion." This valuable donation was accepted with thanks.

AUGUST 3, announcement was made of the death on July 16, 1903 of Major William B. Hooper, a life member of the Academy. W. H. Storms, editor of the *Mining and Scientific Press*, delivered a lecture entitled, "Auriferous Conglomerates in the Black Hills of South Dakota." AUGUST 17, James D. Phelan, Luther Burbank, and Captain Amos M. Simpson were elected resident members. Among the donations to the library was Pratts' "Flowering Plants, Grasses, Sedges, and Ferns of Great Britain" in six volumes, presented by William Alvord. A communication was received from the Council approving the amendment of Article IV, Section 2 of the Constitution which had been proposed on July 20, 1903. On motion of Mr. Loomis, seconded by Mr. Grunsky, the amendment was approved and ordered to be submitted to vote at the next annual election.

A communication was received from the President and Regents of the University of California, inviting the members of the Academy to attend the "Dedication of the Physiological Laboratory" at Berkeley on Thursday afternoon, August 20, 1903. Dr. W. J. V. Osterhout, Assistant Professor of Botany at the University of California, delivered a lecture entitled "Irritability of Plants." In the Council, it was ordered that the department of ornithology should be supplied with ten new zinc cases at a cost of about \$225. The arrival of the Revillagigedo expedition, with a large and valuable scientific collection, was announced.

SEPTEMBER 7, the director of the museum stated that William Alvord, president, had purchased at a cost of \$500 and presented to the Academy a collection of four hundred and eighty-six Chile birds, and also a collection of Chile birds' eggs. He added that as the Academy had not previously possessed a single specimen from the South Temperate Zone of South America, the gift was another and notable advance towards making the Academy's ornithological specimens a cosmopolitan collection. On motion, due thanks were tendered to Mr. Alvord. Dr. Frederic W. Putnam, Peabody Professor of American Archaeology and Ethnology and Curator of the Peabody Museum of Harvard University, delivered an illustrated lecture entitled, "Ancient Earthworks of the Ohio Valley." SEPTEMBER 21, among the many accessions to the Museum, which as usual continued to come in from various donors, were a large number brought up by the expeditions under the auspices of the Academy to the Revillagigedo Islands off the west coast of Mexico. The botanical accessions alone amounted to over sixty-three hundred specimens; there were also 3503 land and marine shells, about 300 insects of various orders, 41 reptiles, 921 birds and 35 sets of eggs, and six mammals. The department of paleontology reported the addition of 500 specimens of Miocene and Pliocene fossils from California, and botany 6301 plants, including 1756 from New York, by exchange, and 2905 collected by the curator in California and southern Oregon. Dr. C. Hart Merriam, Chief of the Division of Biological Survey, U. S. Department of Agriculture, delivered an illustrated lecture entitled "Indian Baskets and the People Who Make Them," in which he particularly directed attention to the excellence of the manufacture for the purposes intended, and the significance of their ornamentation. He explained how, by the use of different colored fibers, they varied the designs they wove in their fabrics, and showed that there was a meaning in all their designs. In the Council, Mr. Loomis of the committee on publication reported the engagement of Miss Mary E. Hyde as proof-reader at a salary of \$70 per month; and the engagement was approved. Theodore H. Hittell, in view of the preparation of this "Historic Account," was given permission to take from the Academy at his convenience such of its records and printed proceedings as he required, giving his receipt therefor. Thanks were tendered the Southern Pacific Railroad Company for a 1000-mile ticket to enable R. H. Beck him to prosecute his work in making collections for the Academy at Monterey Bay and vicinity. J. M. Selfridge and C. A. Kofoid presented resignations as members of the Academy, and their resignations were accepted.

OCTOBER 5, announcement was made of the death of Francois Crépin, an honorary

member of the Academy. Charles Keeler delivered a lecture entitled "Some Nature Sculptors and Their Work." OCTOBER 19, among the accessions to the library was the "Codex Vaticanus" (English Edition) in two volumes, donated by the Duc de Loubat; also a copy of the original edition of Say's "Entomology," presented by L. E. Ricksecker of Santa Rosa, California. Due thanks were tendered. Frederick Mosen delivered an illustrated lecture entitled, "The Monuments of a Prehistoric Race." In the Council, Miss Mary E. Hyde's salary as a proof-reader was ordered to commence from October 1, 1903.

NOVEMBER 2, Dr. John C. Merriam, Assistant Professor in the University of California, delivered an illustrated lecture entitled, "Explorations of the Caves of California." He showed that there were caves in the limestone regions near Mount Shasta containing remains of extinct animals as interesting as those of the famous caves in Europe. NOVEMBER 16, among the many accessions to the museum were 1050 specimens of invertebrate fossils from the oil-producing formations of Kern and San Luis Obispo Counties, collected by F. M. Anderson and John Owen. On account of the new field opened, the collection was recorded as of great interest and importance. The accession report for the botany department shows that 224 specimens of a total of 1052 from the Revillagigedo expedition will be retained for the collection, the balance, all duplicates, will be used for exchange. H. R. Wiley, Special Lecturer on Jurisprudence in the University of California, delivered a lecture entitled, "What Mexico is Today." A joint meeting of the Council and Board of Trustees selected, as nominating committee of officers for the year 1904, William Greer Harrison, Dr. George Chismore, Charles Burckhalter, Ransom Pratt, and Edward Bosqui. In the Council, Miss Hyde's salary as proof-reader was increased from \$70 to \$80 per month. In response to letters from the American Society of Civil Engineers for exchanges of publications, the corresponding secretary was directed to answer that the Academy was glad to continue sending its geological and mathematical publications in exchange for the publications of the American Society of Civil Engineers; but for its biological publications, it desired in exchange publications of a similar character. In reply to a request from Mr. Bullock Clark, State Geologist of Maryland, for the loan for the purposes of study of the Academy's collection of Pacific Coast Cenozoic Echinodermata, the director of the museum was instructed to write that the Academy could not comply, owing to the fact that its curator of paleontology was working up its invertebrate material, and it was necessary that all such material should be kept at the Academy.

DECEMBER 7, the death of Cloudsley Rutter, a resident member of the Academy, was announced. Henry Payot delivered an illustrated lecture entitled, "In the Shadow of the Pagoda." DECEMBER 21, the committee on nominations selected in accordance with the last amendment to the Constitution, presented a ticket of candidates for officers and trustees for the coming year. The ticket was ordered posted in the Hall of the Academy and officers were appointed to hold the annual election on January 4, 1904. Charles D. Snyder lectured on "Phenomena of Regeneration and Their Bearing on the Larger Problems of Biology." In the Council, R. H. Beck was

employed as collector of specimens for the Academy for the month of January, 1904, to be paid out of a balance remaining from the appropriation of \$4,000 for explorations in 1903. E. P. Lewis of the University of California resigned his membership and it was accepted. Rose Smith Eigenmann offered to donate a collection of fishes in exchange for a life membership; but on motion the offer was declined.

Chapter XXXV: Year 1904

The annual meeting was held on Monday, JANUARY 4, 1904. The report of the officers of the annual election that day held was presented and read by the secretary. It appeared from the report that the whole number of votes cast had been fifty and that each of the candidates proposed by the Nominating Committee had received that number of votes; and they were accordingly declared elected as follows: William Alvord, president; Alpheus Bull, first vice-president; H. H. Behr, second vice-president; J. O'B. Gunn, corresponding secretary; J. S. Hobson, recording secretary; Lucius Foote, treasurer; Louis Falkenau, librarian; Leverett Mills Loomis, director of the Museum; William M. Pierson, Daniel E. Hayes, William H. Crocker, C. E. Grunsky, E. J. Molera, George C. Perkins, and George W. Dickie, trustees. For the amendment to the Constitution (Art. IV, Sec. 2) there had been cast forty-eight ballots, and one against it; and it was, therefore, declared adopted and made part of the organic instrument.

This amendment provided that the Trustees and officers of the Academy should be elected by ballot on the day of the annual meeting. They should hold their offices for the term of one year commencing on the succeeding third Monday of January and continuing until their successors should be elected and qualified. Before the first Monday of December of each year the Trustees and council jointly should select a nominating committee of five members of the Academy not holding office; and this committee should propose and present to the stated meeting on the third Monday of December following a ticket of candidates for Trustees and officers for the ensuing year, which ticket was to be forthwith posted in a conspicuous place in the Hall of the Academy. Other tickets might be presented and other candidates balloted for at the annual election, provided the names of such other candidates, together with the names of five or more members proposing them should be posted in the Hall of the Academy at least one week prior to the day of the election. Two inspectors and two judges of election were to be appointed on the previous third Monday of December, who were to have charge of the ballot-box and conduct the election; and the polls should be kept open from 9 o'clock a.m. to 6 o'clock p.m. The officers of election were to keep a register of all members voting; but no member was to be allowed to vote who was delinquent in the payment of dues for any portion of the preceding year. At the close of the election, the judges should announce the number of ballots cast and the number of votes cast for each candidate; and the candidates, who received a plurality of the votes cast for the office for which they had been respectively nominated, should be declared duly elected.

Written reports from the president, treasurer, librarian, and director of the museum were received and placed on file. Written reports were also received from the curators as follows: Miss Alice Eastwood of botany; Dr. H. H. Behr and Charles Fuchs of entomology; Leverett Mills Loomis of ornithology; Dr. John Van Denburgh of herpetology; Dr. A. L. Kroeber of anthropology, and F. M. Anderson of invertebrate paleontology.

JANUARY 18, Henry B. Kaeding, Mrs. Frances Lent, Mrs. Edward Probert, W. W. P. Holt, and John Isaac were elected resident members. Among the many accessions to the museum and library were five hundred specimens of invertebrate fossils and five hundred of vertebrates. Of these about eight hundred and fifty were from explorations under the auspices of the Academy in California. Among the books presented were over fifty-one volumes of natural history donated by J. W. Mailliard. Charles Burckhalter, director of the Chabot Observatory in Oakland, delivered a lecture entitled "On Some Solved and Unsolved Problems in Astronomy." In the Council Louis Falkenau, J. W. Hobson and Leverett Mills Loomis were appointed library committee and Leverett Mills Loomis, Alpheus Bull and J. W. Hobson committee on Publications. R. H. Beck was employed as a collector for the month of February. Alpheus Bull, J. W. Hobson and Leverett Mills Loomis were appointed a committee on membership. T. H. Foulkes of Tarapata, Peru, having offered to make entomological collections in Peru if furnished with a collector's outfit, it was ordered that a suitable outfit should be furnished. It was also ordered that a collection of butterflies and moths, already sent from Peru by Mr. Foulkes, should be properly mounted. J. J. Rivers, J. O. Snyder and Frank W. Bancroft asked to resign their membership and their resignations were accepted. Curators, assistants and employees were appointed for the year 1904 at monthly salaries as follows: curators – Dr. H. H. Behr, entomology, at \$80; Leverett Mills Loomis, executive and ornithology, at \$125; Miss Alice Eastwood, botany, at \$80; Dr. John Van Denburgh, herpetology, without salary; Dr. A. L. Kroeber, anthropology, without salary; F. M. Anderson, invertebrate palaeontology, without salary; Miss Lulu F. Forbes, assistant secretary and librarian, at \$70; Miss Mary E. Hyde, editorial assistant, at \$80; Charles Fuchs, preparator in entomological department (half time), at \$40; W. G. W. Harford, assistant in museum, at \$25; John I. Carlson, assistant in museum, at \$50; Mrs. G. Newell, assistant in botany department, at \$40; Mrs. J. E. Wilkins, janitress, at \$30.

At an adjourned meeting of the Council, held JANUARY 20, it was ordered that an assistant curator of ornithology should be employed at a monthly salary of \$60. The sum of \$350 was appropriated for jars, tanks and exploration expenses in the department of herpetology. In the botany department, the salary of Mrs. G. Newell as assistant curator was increased to \$50 per month; and \$440 were appropriated for exploration, curator's supplies, and purchase of plants. The sum of \$280 was appropriated to purchase cases in the department of invertebrate palaeontology, and \$50 for shelving in the anthropological department. The salary of Miss Forbes as assistant secretary and librarian was increased to \$80 per month; and the Board of Trustees were requested to make liberal appropriations for the purposes of explora-

tions and collections. The salary of Mrs. Wilkins, as janitress, was increased to \$40 per month. Clara S. Ludlow resigned her membership. In response to a claim on behalf of the executors of Dr. H. W. Harkness, it was ordered that all property belonging to his estate left in possession of the Academy should be turned over to them. The following appropriations were recommended and afterwards duly made by the Board of Trustees: For salaries, \$8,520; publications, \$4,000; library (including purchase of books), \$900; subscriptions to periodicals, \$600; and binding, \$500; in all \$14,520; museum (for general purposes \$1,200 and curator's supplies \$225) in all, \$1,425; telephone \$110; postage, freight, \$75; printing and stationery, \$100; illustrating lectures, \$100; fuel, \$140; contingent expenses, \$480—amounting to a total of \$16,950.

FEBRUARY 1, Edward Berwick, President of the California Postal Progress League delivered a lecture entitled, "Postal Progress." FEBRUARY 15, H. R. Fairclough, Professor of Latin in Stanford University, delivered an illustrated lecture entitled "The Palace of Minos, or the Cretan Labyrinth." In the Council, a vote of thanks was tendered Captain J. M. McDonald for a donation of "Studer's Birds of North America." In response to a request of the University of Oregon to purchase certain publications of the Academy, it was ordered that the desired publications should be donated. MARCH 7, the death was announced of Dr. H. H. Behr, second vice-president of the Academy; and on motion a committee consisting of Frederick Gutzkow, Dr. George Chismore and Miss Alice Eastwood, was appointed to prepare and present an account of the life and services of the deceased. On motion of Mr. Loomis, seconded by Mr. Gutzkow, the Academy then adjourned as a mark of respect to the memory of Dr. Behr; but the audience was invited to remain for a lecture "On the Poetry and Symbolism of Indian Basketry," by George Wharton James of Pasadena. MARCH 21, very large accessions were made to the museum, including many specimens of different kinds from the Galapagos Islands collected by R. H. Beck; plants from San Clemente and Santa Catalina Islands and San Jacinto mountains by Mrs. Blanche Trask and large numbers of Mexican and California plants obtained by exchange. H. S. Durden added to his previous donations of California woods and F. M. Anderson increased the collections of California invertebrate fossils by six hundred and thirty-four specimens.

Frederick Gutzkow, of the special committee appointed for the purpose, presented and read a memorial of the life and services of Dr. H. H. Behr, deceased. It appeared that Dr. Hans Hermann Behr,³⁵¹ second vice-president of the Academy, died in San Francisco on March 6, 1904, at the age of eighty-five years and six months. He was born August 18, 1818, at Köthen, Dukedom of Auhalt, Germany. He received a thorough classical education and studied medicine and natural sciences at the German universities of Halle, Würzburg and Berlin. In 1843, he received his degree as doctor

³⁵¹ The correct spelling of Dr. Behr's middle name has been the subject of some controversy. In the memorial, a copy of which, in typescript, is pasted into the *Minute Books* for the stated meeting of March 21, 1904, it is shown as Herrman, but elsewhere, in earlier publications and in later memorials, it is Herman or Hermann. In the printed version of the memorial (in pamphlet form published by the Academy in 1905, 7 pp., portrait), it is shown as Herman. E. O. Essig in *A. History of Entomology* (MacMillan, New York, 1931, p. 553) follows the memorial. However, Hermann is the more common German form of the name, and in view of the uncertainty, we have used Hermann both here and in the Index. [Eds.]

of medicine at Berlin. In 1844, he went to Australia where he lived from some time among the aborigines and wrote back to various German scientific journals numerous articles about Australia and the Australians, which attracted marked attention. He became especially interested in the botany and entomology of the country. In the course of his investigations he became acquainted and formed relations of friendship with the famous Australian State Botanist Baron Mueller of Melbourne; and it was in great part due to the friendship thus formed that California afterwards became indebted to Baron Mueller, through the mediation of Dr. Behr, for the introduction of many valuable Australian trees and plants. From Australia Dr. Behr extended his travels to Java, the Straits-Settlements, India, and the Cape of Good Hope, during all the time observing, collecting, studying and writing. In 1847, he returned to Germany and commenced the practice of medicine at Köthen, but he remained there on this occasion only a year. During the revolutionary turmoils of 1848, his political views brought him into antagonism with other members of his family and as the result of disagreements he discontinued his practice and undertook a second voyage, this time first to Brazil and other portions of South America and then to the Philippine Islands. There, at Manila, he settled for two years, practicing medicine and devoting himself to scientific study, especially in his favorite departments of botany and entomology. In 1851, he came to California and settled in San Francisco, where he resumed the practice of his profession, but at the same time devoting much of his attention to his favorite scientific studies. After thus settling in California, he never left it, except for a short trip to Germany in 1853 in order to marry Fraulein Agnes Omylska, a refined lady of Polish descent, whom he brought back as mistress of his home. From the union thus formed, which however, was unfortunately severed by the comparatively early death of his wife, there sprang three children; two daughters, both of whom were married and became residents of his native city of Köthen in Germany, and one son, Hans G. Behr, well-known in San Francisco and California as an able mechanical engineer but engaged for the time in large mining business at Johannesburg in South Africa.

Dr. Behr became a member of the Academy on February 5, 1854, so that at the time of his death he had been a member a little over fifty years, during all of which time he took a lively and efficient interest in its proceedings and progress. His scholarly attainments and wide learning and the varied knowledge he had gained by personal experience and observation in the course of his extended travels, as well as by attentive study, rendered him a peculiarly valuable member of our scientific body. He read the classics of Greece and Rome with fluency; understood several other ancient tongues, including Sanscrit and Hebrew, and spoke with facility four or five modern languages besides German and English. During the half century of his membership of the Academy, excepting a few years previous to his death when the infirmities of age prevented his attendance, he rarely missed a meeting; and hardly any scientific or literary subject could be brought forward on which he did not give valuable information. He was outspoken in his opinions and a sworn enemy to scientific humbugs and professional quacks. This characteristic led him into several

bitter controversies and one or two personal encounters in which he proved himself fully equal to his antagonist. But they made him many enemies and were not favorable to his financial success as a practitioner. One of the most obnoxious of his adversaries was a doctor, or so-called doctor, who had charge of a local German newspaper and for a time filled its columns with abuse of Dr. Behr, particularly on account of his being a member of the Catholic Church and asserting that he was a "Jesuit" of the most sinister designs – a calumny which had more or less effect upon its object's professional clientage. It was a dirty prostitution of the newspaper, and Dr. Behr had no means of publicly answering back; but he never failed, when occasion offered, to wing a sarcastic arrow by word of mouth against his enemy, which never failed to reach the mark it was intended for. Among other modes of getting even, on discovering a particularly despicable and obnoxious new species of louse, he gave it scientifically the name of his backbiter.

At the same time he was noted as a wit, a humorist, and an affable social companion. He early became a member of the Bohemian Club and contributed perhaps as much as any other member of that association by his sallies and occasional humorous papers to the fun and hilarity of its meetings.

Though undoubtedly skillful as a physician and well versed in the progress of medical science, it cannot be said that Dr. Behr loved the profession; and still less did he understand the art, so highly developed among many modern practitioners of far inferior attainments, of making it pay. His happiest days were when he could escape from professional occupation and scour the fields in search of plants and particularly of butterflies, in which latter he became especially interested. On these excursions it was his practice to go, never alone but always with a trusted friend or two, and enjoy rambling, talking science or exchanging jokes. These companions were usually a few congenial members of the Academy or, for several years while he was professor of botany in the California Pharmaceutical College, promising students of that institution. He was always ready to impart his vast stores of information and took peculiar pleasure in doing so. But the thing in which he seems to have taken greatest pleasure was to add to his collections of butterflies. He commenced making these collections in early life and gradually gathered specimens from all parts of the world, making up a cabinet which for variety and completeness was said to be of the first order. This collection he proposed in May, 1891, to donate to the Academy provided he should be employed as permanent curator of entomology at a salary of \$80.00 per month, in which event he would give up his medical practice and devote his remaining years to his duties as such curator. This proposition was recommended by the Council, and a contract on the terms proposed accordingly entered into with Dr. Behr by the Board of Trustees. From that time to the end, the contract was fruitfully carried out on both sides. In the meanwhile, Dr. Behr on January 5, 1879 had been elected an honorary life member on the Academy and on January 5, 1880 became second vice-president, which office he continued to fill by re-election until 1886. In 1887, he was elected first vice-president and continued such

until 1896 when he again became second vice-president and filled that office as well as being curator of entomology to the time of his death.

Following the reading of the written memorial, which, on motion of W. S. Keyes, was recommended to be printed for distribution among the members, Mr. Gutzkow gave a number of his own personal reminiscences of the departed scientist. Dr. George J. Peirce, Associate Professor of Plant Physiology of Stanford University delivered a lecture entitled "Heredity and Environment." In the Council, a report of Trustees was received to the effect that it had approved and ordered all the appropriations recommended and made by the Council; and also, in addition thereto, that it had appropriated \$200 more for the herbarium in the botany department, and "the sum of \$5,000 for exploration purposes upon condition that the cost of a vessel, if purchased, or the rent of one, if hired, should be secured from outside sources." The salary of Leverett Mills Loomis as executive curator was increased \$25 per month and that of Miss Alice Eastwood, curator of botany, \$20 per month. Dr. Edwin Cooper Van Dyke was appointed curator of entomology without salary; and the salary of Charles Fuchs, as preparator in the entomological department, was increased to \$80 per month, beginning April 1, 1904, and he to give his entire time to his duties as such. E. W. Gifford was appointed assistant in the department of ornithology as a salary of \$40 per month, commencing April 1. It was ordered that the employment of R. H. Beck as assistant curator of ornithology should be continued and his salary paid. Dr. F. E. Blaisdell asked to pay for a life membership by giving to the Academy a collection of one hundred and twelve sets of bird eggs, three hundred and twenty-five birds' skins, six mammals, and one hundred reptiles, and it was recommended that the offer should be accepted by the Board of Trustees. Requests for Academy publications were received from the Brooklyn Institute of Arts and Sciences, the Davenport Academy of Sciences, the Library of the Field Columbian Museum, and Dr. Alexan-



Edwin Cooper Van Dyke, circa 1940
California Academy of Sciences Special Collections



Edward W. Gifford (1911)
California Academy of Sciences Special Collections

der W. Pavlows. They were referred to the library committee with power to act. A communication was received from Miss Alice Eastwood, stating the valuable services rendered the Academy by Mrs. Blanche Trask of Avalon, Santa Catalina Island, and asking that she be elected a member and dues remitted. An election took place to fill the vacancy in the office of second vice-president occasioned by the death of Dr. H. H. Behr. Otto von Geldern and Frederick Gutzkow were nominated. Mr. von Geldern received five votes and Mr. Gutzkow two; and the former was declared elected.

APRIL 4, Dr. David Starr Jordan, President of Stanford University, delivered a lecture entitled "The Salmon of Alaska." APRIL 18, a number of accessions to the museum and library were reported, after which Miss Alice Eastwood announced the death of William M. Canby, a well known botanist of Wilmington, Delaware. She gave a brief sketch of his character and services to science and moved that a suitable resolution of respect to his memory should be prepared and adopted. Miss Eastwood and Dr. Mary P. Campbell were appointed to draft and present appropriate resolutions. Robert H. Fletcher, Director of the Mark Hopkins Institute of Art, delivered an illustrated lecture entitled, "Primitive Art." In the Council, Miss Mary E. Hyde requested leave of absence for first half of May and additional leave of absence for remainder of May without salary. It was ordered that she have leave of absence with full salary for entire month of May. Charles Fuchs was given leave of absence for a collection tour of one month commencing April 28, Miss Alice Eastwood was given three weeks' leave of absence for a collecting trip to Southern California. She was also given permission to send to other herbariums two thousand duplicate specimens of plants. In reply to an invitation from Stuttgart, Germany, for the Academy to send

a delegate to the International Congress of Anthropologists, called to meet at Stuttgart in August, 1904, Dr. A. L. Kroeber was appointed to represent the Academy. MAY 2, Dr. John C. Merriam and Dr. F. E. Blaisdell were elected resident members. Professor Jacques Loeb, of the University of California, delivered a lecture entitled "The Instincts and Will of Lower Animals." MAY 16, among the accessions to the museum, collected in California under the auspices of the Academy, were two hundred and seventy-three water birds and eight land birds. F. M. Anderson curator of invertebrate palaeontology, lectured on "The Origin of Petroleum." In the Council, it was recommended that the recording secretary for extra services required of him should be paid a monthly salary of \$25, and the Board of Trustees was requested to provide for such salary, commencing January 1, 1904.

JUNE 6, Charles Keeler lectured on "Nature Study in its Relations to Life and Art." JUNE 20, among the accession to the Museum were three hundred and eighty-eight insects from Peru, some of them rare, presented by T. H. Foulkes. There were also about three thousand specimens collected in California for the Academy by Mr. Fuchs. These, with fourteen specimens collected by Dr. F. E. Blaisdell, one hundred and ninety-eight by J. I. Carlson, and eighty-four by Dr. Edwin C. Van Dyke, made the accessions of entomological specimens about three thousand six hundred and eighty-four. There were added to the collections of ornithology eight hundred and ninety specimens, including a flamingo from the Galapagos Islands, collected by R. H. Beck, and three hundred and thirty-six birds, four hundred and eighty-six eggs, and thirty-five nests, collected in Alaska and California, purchased from Dr. F. E. Blaisdell. The accessions in the department of herpetology amounted to seven hundred and fifteen specimens and those in the department of invertebrate palaeontology to four hundred and eighty-eight specimens, collected in California, Oregon and Nevada by F. M. Anderson. There were also various accessions to other departments contributed by members or friends-all tending to manifest the rapid progress and growth of the institution. Harvey R. Wiley, Special Lecturer on Jurisprudence in the University of California, lectured on "The American Character." In the Council, the salary of John I. Carlson was increased from \$50 to \$60 per month, to commence on July 1. The director of the museum reported that there had never been in the history of the Academy such large accessions to all the scientific collections in any one month as those received during the past one. At the request of Miss Alice Eastwood, a leave of absence of three weeks was granted the assistant curator in the department of botany.

JULY 18, accessions to the museum continued to pour in, among which were three hundred and forty land and water birds, thirteen nests, and fifty-seven eggs collected in California by R. H. Beck. Dr. E. C. Van Dyke contributed one hundred and nineteen land shells from Black Mountain, North Carolina, collected at an elevation of over five thousand feet above sea level. Announcement was made of the death on June 20, 1904, of Simon H. Seymour, a life member of the Academy. Dr. Albert Abrams lectured on "Tuberculosis, the Great White Plague: Its Cause, Prevention, and Cure." In the Council, at the request of Mr. Loomis, a vacation of two weeks was granted to

Mr. Gifford, his assistant in the department of ornithology. Thanks were tendered to S. W. Holladay for the donation of a portrait of Benjamin B. Redding, formerly a trustee and very efficient member of the Academy. AUGUST 1, Dr. S. W. Dennis delivered a lecture entitled, "Food, Health, and Disease, or Our Mental Wants and Physical Needs." AUGUST 15, among the accessions to the collections were three hundred specimens of insects from Alaska and California and three thousand four hundred and forty-three plants. Among them were desert plants contributed by Mrs. Elwood Cooper and G. P. Rixford, some of which were supposed to be new species. Among other plants collected about Yreka, California, and donated by Miss Edna Churchill, was one said to be new to North America. A large number were collected under the auspices of the Academy by the curator Miss Alice Eastwood, Mrs. Gwen Newell, Mrs. Frances Lent, and Fordyce Grinell, Jr. The accession to the department of herpetology amounted to one hundred and nineteen specimens; and numerous additions were made to other collections, among them three hundred and fifty marine invertebrates from Alaska and California from Dr. F. E. Blaisdell and seventy invertebrate fossils from F. M. Anderson. Alvin Seale delivered a lecture on "The Islands and Natives of the South Seas." In the Council, thanks were tendered to the Department of Anthropology of the University of California for the donation to the Academy of a copy of "The Book of the Life of the Ancient Mexicans." M. E. Henriksen tendered his resignation of membership and it was accepted.

SEPTEMBER 5, the deaths were announced of Professor Rudolph Philippi, an honorary member, at Santiago, Chile, and William M. Pierson, a member of the Board of Trustees, who died at San Francisco on September 4, 1904. Dr. Alfred Emerson, lecturer on Classical Archaeology in the University of California lectured on "Ancient Marbles in the Phebe A. Hearst Collection." SEPTEMBER 19, Dr. W. J. V. Osterhout, Associate Professor of Botany in the University of California, delivered a lecture entitled, "New Light on the Origin of Species." OCTOBER 1, a special meeting was called to hear Professor Attilio Brunialti, Grand Officer of the Crown of Italy, who delivered an illustrated lecture entitled "Monuments and Art of Italy." OCTOBER 3, Mrs. Blanche Trask of Avalon, Santa Catalina Island, was elected a life member and the following gentlemen resident members: Dr. Edwin Cooper Van Dyke, Dr. F. Fehleisen, Professor Frederick G. Hesse, Dr. Adalbert Fenyes, J. G. Grundel, and Robert Hawxhurst, Jr. The accessions to the collection were again very large, among them one hundred and fifty insects from Madagascar by Professor Harold Heath, fifty from Kentucky by Dr. F. E. Blaisdell, and eleven hundred and seventy-one from Colorado by Miss Alice Phelps, and two thousand and five plants, of which over half were collected by the curator, Miss Alice Eastwood. Miss M. E. Parsons donated sixty-four plants from Lake Tahoe; G. L. Berry sixty-three from Arizona; Charles von Geldern forty from Humboldt County; J. W. Austin ninety from Inyo County, and Mrs. H. P. Wilder thirty-six from Old Grayback Peak in San Bernardino County. In the department of ornithology, Dr. John Van Denburgh contributed eighty-eight land and water birds from California and one specimen of the rare O-O bird from Hawaii. E. W. Gifford furnished one hundred land and water

birds collected in Alameda County, and the curator, Leverett M. Loomis, a Mississippi kite. In the department of herpetology, the chief contribution was Dr. John Van Denburgh's private collection of about four hundred United States reptiles and batrachians. In the department of invertebrate palaeontology, F. M. Anderson added over four hundred specimens to his previous contributions of invertebrate fossils. Dr. Oliver P. Jenkins, Professor of Physiology and Histology in Stanford University, delivered a lecture entitled, "How Animals Breathe."

OCTOBER 17, announcement was made of the death of H. H. Moore, a life member of the Academy. Edward Booth, Instructor of Chemistry at the University of California, lectured on "Radium and Radioactivity." In the Council, the sum of \$50 was recommended to be appropriated to cover the expense of making an inventory of the publications of the Academy, and \$50 to cover the expenses of R. H. Beck in the field for another month. A donation was received from William Alvord of three valuable volumes entitled, "A Monograph of the Genus *Lilium*" by H. J. Elwes, "The Rhododendrons of Sikkim, Himalaya," by Joseph Dalton Hooker, and "Commely-naceae et Cyrtandraceae Bengalenses" by Charles Baron Clarke, for all of which thanks were tendered. A purchase of two Galapagos tortoises from Mrs. Lillian Johnson for \$12 was recommended.

The Council and Board of Trustees, in joint meeting on NOVEMBER 1, selected a nominating committee of candidates for office in 1905: Ransom Pratt, William Greer Harrison, Rudolph J. Taussig, Charles Burckhalter, and Hermann Kower. NOVEMBER 7, the deaths were announced of William M. Lent, a life member, on October 17, 1904, and Mrs. Frances Lent, a resident member, on October 20, 1904, both in San Francisco. Accessions to the museum consisted of ninety-seven specimens of spiders from J. I. Carlson, sixty-four of diptera from Dr. T. C. Thomson, and fifty-five of insects, all from California. E. W. Gifford furnished twenty Alameda County land and water birds; Leverett Mills Loomis, two land birds from Hawaii, and Louis Duarte, a Pomarine jaeger from Monterey Bay. Among the contributions to the department of herpetology were thirty-nine specimens of lizards from Honolulu by Miss E. Muther. They were said to represent half the species of lizards on the Hawaiian Islands; and they were the first reptiles received from that part of the world by the Academy. Joseph R. Slevin contributed one hundred and thirty four specimens of reptiles and batrachians from Monterey County, and Joseph Grinnell fifteen lizards from Santa Barbara County. Mrs. Blanche Trask contributed a human skeleton found on San Nicolas Island, and F. M. Anderson three hundred and sixty-two invertebrate fossils from the oil regions of San Luis Obispo, Santa Barbara and Kern Counties. Theodore H. Hittell read a paper entitled "The Place in History of the California Pioneers."

NOVEMBER 21, the department of entomology received forty-six specimens of insects from Southern California contributed by F. Grinnell, and one hundred and thirty-two from Colorado contributed by Miss Alice Phelps. The botany department received over twelve hundred plants, among them two hundred and sixty-seven from Glen Alpine donated by William Price, one hundred and forty-six from Colorado,

donated by Miss Alice Phelps, and two hundred and ten collected in Santa Barbara County by F. and C. Franceschi. Some were received in exchange; some for determination or identification, and some purchased. In the department of ornithology, one hundred and sixty-eight specimens, mostly larger swimming birds from California and Washington, were received from William H. Kobbi; twenty-seven California water birds from E. W. Gifford, two western Pacific petrels from Dr. E. A. Mearns, U.S.A., and a California dipper from R. H. Beck. The department of herpetology received a number of snakes, lizards, salamanders and frogs, some from Colorado, the rest from California. In other departments, Mrs. E. D. Van Denburgh contributed two Esquimaux waterproof coats and other curiosities from Alaska; S. Colelough, specimens of tin and tin ore from Alaska; and F. M. Anderson, eleven hundred and eight invertebrate fossils from the Coalinga Oil District of Fresno County, California. Accessions to the library for the preceding three months were reported as one hundred and twenty-eight volumes, six hundred and seventeen parts of volumes, and fifty-four pamphlets. Charles Burckhalter was appointed to prepare a memorial on the life and work of William M. Pierson, deceased, late a member of the Academy and Board of Trustees. The California Miners' Association invited the Academy to send delegates to its annual convention to be held in San Francisco in the following month. The invitation was accepted and the president authorized to appoint delegates. Dr. J. Rollin Stonaker, Assistant Professor of Physiology in Stanford University, delivered a lecture, illustrated with lantern slides, entitled "Home Life of Birds." In the Council, thanks were tendered William H. Hobbs for a donation of one hundred and sixty-eight valuable ornithological specimens, chiefly swimming birds. The Board of Trustees was asked to continue the employment of R. H. Beck during December at a salary of \$75 and \$75 for his expenses in the field; also to appropriate \$50 for the purchase of a collection of sea-mosses from Mrs. J. M. Weeks. On motion of General Foote, the committee on publications was requested to investigate the subject of sending available publications of the Academy to colleges, public libraries, and other educational institutions of the State.

DECEMBER 5, announcement was made of the death in Switzerland on November 25, 1904 of Henry F. Teschemacher, a life member of the Academy. In response to a communication from Zoeth G. Eldredge requesting cooperation in a protest to the U. S. Postmaster General against the mutilation of Spanish proper names in the designation of post offices in California, the corresponding secretary was instructed to write to the U. S. Postmaster General on the subject and convey to him the hearty approval of the Academy of the protest and of the retention of old Spanish geographical names unmaimed and unchanged. Leverett M. Loomis presented a final report of the committee appointed September 15, 1902, to seek relief from the Academy's burden of taxation. He read a letter from the Secretary of State, dated December 3, 1904, to the effect that the official returns at the general election in the previous month gave the State vote on Senate Constitutional Amendment No. 4, exempting the Academy from taxation, as 73,207 for and 62,275 against it, and thus showing that the exemption was granted by a majority of nearly 11,000 votes and that the Academy

and its property would be thenceforth not burdened with taxation. On motion, the committee was discharged with thanks for the valuable services it had rendered, and special recognition was taken of the strenuous and untiring labors of Mr. Loomis in securing the desirable results. Walter K. Fisher of Stanford University then delivered a lecture, illustrated with lantern slides, entitled "Bird Life on a Tropical Island of the Pacific." DECEMBER 12, at a special meeting, Dr. C. Hart Merriam of the U. S. Biological Survey delivered a lecture, illustrated with lantern slides, entitled "The Work of the United States Biological Survey." He showed what had been accomplished and what was being accomplished by that valuable department under the auspices of the national government.

DECEMBER 19, among the numerous accessions to the museum, including insects, birds, salamanders, and invertebrate fossils from California and fossil plants from Oregon, there was presented by the State Fish Commission the head and part of the hide of a mountain sheep from Inyo County, a large mounted fish from Aranson's Pass, Texas, and six fishes from the Samoan Islands. The committee on nominations presented a ticket for the year 1905 and officers were appointed to conduct the approaching annual election. In the Council, the committee on publications reported that it had cleared up all arrearages from previous committees and that the work of publication was up to date. In the preceding two years the committee had disbursed \$8,202.88 and issued two volumes of *Memoirs*, which were the most extensive publications the Academy had so far attempted. It had also issued twelve numbers of *Proceedings* and the title-pages, tables of contents, and indexes to six volumes. The arrearages in indexes had run back to 1895. It had also brought out a pocket volume containing the Constitution, By-laws, and lists of officers and members of the Academy. It said that by reorganizing the system of work, the cost of publication had been reduced fully one-fourth and a higher standard of excellence attained. An application of Dr. G. W. Dorn for resident membership was laid on the table. The Board of Trustees was asked to appropriate \$150 for the employment of R. H. Beck in the field during January, 1905. A letter from Leverett Mills Loomis to the Board of Trustees, dated December 5, 1904, was ordered to be placed by copy in the Council files. It stated that he had received from the Secretary of State in Sacramento the returns from the official canvass of the vote in the recent election on the proposed Constitutional amendment exempting the California Academy of Sciences from taxation. The amendment had been carried by a majority of throughout the State of nearly eleven thousand votes. The entire cost to the Academy of the tax-exemption campaign, including personal expenses of attending the last legislature, when the amendment was formally passed for submission to popular vote, amounted to less than \$700, including \$50 for salary of a type-writer and \$325 for stamped envelopes. Professor Douglas H. Campbell was appointed to represent the Academy "in the deliberations and votings on nomenclature questions discussed at the International Botanical Congress to be held in Vienna in June, 1905." The library committee was instructed to take measures to secure portraits of all the founders and presidents of the Academy. Mrs. William M. Pierson donated in the name of her late husband a

crayon portrait of Dr. Harvey W. Harkness, former president of the Academy, for which thanks were tendered. A communication from Professor Prospero Barrows relating to the "Mechanics of the Brain" was referred to Dr. Van Denburgh and Dr. Van Dyke. Leverett Mills Loomis and Luthur Burbank were nominated for life membership.

Chapter XXXVI: Year 1905

At the annual meeting of 1905 held JANUARY 3, Leverett Mills Loomis and Luther Burbank, in response to recommendation and nomination by the Council, were elected life members. T. S. Minot and Joseph Cheesman Thompson, U.S.N., were elected resident members. Reports of the various officers and curators for the year 1904 were submitted and placed on file. The report of the officers of the annual election, this day held, was then presented and read, from which it appeared that there had been thirty-five votes cast, all of which had been received by the following named officers, respectively, who were thereupon declared duly elected to serve for the year 1905: E. J. Molera, president; Alpheus Bull, first vice-president; Otto von Geldern, second vice-president; J. O'B. Gunn, corresponding secretary; J. W. Hobson, recording secretary; L. H. Foote, treasurer; Louis Falkenau, librarian; Leverett Mills Loomis, director of the museum; William S. Tevis, D. E. Hayes, William H. Crocker, James D. Phelan, J. C. Cebrian, George C. Perkins, and George W. Dickie, trustees.

JANUARY 16, Charles Burckhalter read a "Memorial on the Life and Work of William M. Pierson,"^{36.1} who died, a trustee of the Academy, on September 4, 1904. Mr. Pierson was born in Cincinnati, Ohio, on February 3, 1842. On his father's side he was of English extraction, the first representative of the family on that side in America, having been a missionary to the Indians in the early part of the seventeenth century. On the mother's side he was of Dutch blood and descended from early Knickerbocker settlers of New York. He spent the most of his childhood in New York City, but at ten years of age, he was brought by his parents to San Francisco, where he arrived on July 4, 1852. For a short time after his arrival he attended a private school; but, tiring of this, he entered the employ of a stationer, and later attended as session of the high school. At the age of 14 he began to read law in the office of Judge

^{36.1} A few details, recorded in the memorial as it appears in the handwritten minutes but either omitted or truncated in Hittell's abstract of the memorial, show that

"Mr. Pierson was born in Cincinnati, Ohio, February 3, 1842. On his father's side he was of English stock. The first representative of the family in America, the Rev. Abraham Pierson (1608-78), settled in Branford, Conn. and became a missionary to the Indians, for whom he prepared a catechism in their own language.

"Strenuously opposed to the union of Connecticut and New Haven Colonies, he withdrew from Branford in 1667 with a large part of the population, and founded Newark, New Jersey. Cotton Mather and Governor Winthrop were his warm friends. His son, also Abraham Pierson, was the first rector of Yale College (1701-07); and his descendant, Rev. Hamilton Wilcox Pierson, was a prominent Presbyterian minister in Kentucky, and president of Cumberland College (1855-62).

"His mother's family was of Knickerbocker extraction, directly descended from Annetja Jansen, commonly known as 'Anne the Jans,' wife of Everardus Borgardus, and the original owner by grant from Governor Wouter Van Twiller, of the land now held by the Corporation of Trinity Parish, New York." (*Minute Books, Stated Meetings, Dec. 1904-Nov. 1914, pp. 10-11*).



Joseph Cheesman Thompson (1908)^{36.2}
 Department of Herpetology, California Academy of Sciences

Nathaniel Bennett and continued his studies with Frank M. Pixley and afterwards with Henry H. Haight. In 1862, at the age of twenty, by virtue of a special act of the Legislature, the Supreme Court was authorized to admit him to practice law the same as if he were of full age; and not long afterwards he formed a law partnership with Henry H. Haight, which continued until the latter was elected Governor of the State in 1867, after which he practiced alone until 1890 when he formed a law partnership with R. B. Mitchell. In the meanwhile, from 1875 to 1879 he served a term in the Legislature as a Senator from San Francisco. In his law business, he was engaged in several notable cases, among which were the contest over the estate of James G. Fair, the extradition proceedings in reference to Antonio Ezeta, President of Salvador, and *People vs. Wells, Fargo & Co.* Notwithstanding his active business life, he found time to devote much time to science and especially to astronomy, of which he became one of the most amateur cultivators in the country. He owned a fine eight and a half-inch Brashear reflecting telescope, which he later presented to the Students' Observatory of the University of California. He donated numerous astronomical photographs to the Chabot Observatory of Oakland and to the Lick Observatory, and in 1898, at his

^{36.2} This photograph of Thompson was taken in Berlin while Thompson, a naval surgeon, was on detached duty to the Secretary of War. Thompson was in Berlin to establish an alias, one Victor Kühne, a German naturalist, before returning to the Subic Bay Naval Base in the Philippines. During the next four years, Thompson, in the guise of Victor Kühne, traveled widely throughout Eastern Asia, especially in Japan and Korea, where he amassed large collections of amphibians, reptiles and insects, which he sent to the Academy. Thompson, in addition to his military duties, also held the nominal title of Assistant Curator of Herpetology at the Academy. Thompson's association with the Academy ended abruptly in 1912 following a series of altercations with John Van Denburgh, then Curator of Herpetology, over the supposedly inappropriate use by Van Denburgh of the collections that he, Thompson, had sent. (See also Barbour, Thomas, 1917.)

own expense, he sent Mr. Burckhalter to India to observe the total eclipse of the sun. He took an active part in the organization of the Astronomical Society of the Pacific in 1889; was its first vice-president and its second president. In 1891, he became a fellow of the Royal Astronomical Society and was a charter member of the British Astronomical Association. He became a member of the Academy on August 3, 1896 and was elected a trustee on January 4, 1897. By his wife, a descendant of Jonathan Edwards, he left two sons, Lawrence H. and Frederick H. Pierson.

After the reading of the Pierson Memorial, Charles Keeler lectured on "The Alaskan Coast," in which, among other things, he gave a graphic description of his first view of the peak of Mount St. Elias.

In the Council, curators, assistants and employees for the year 1905 were appointed with monthly salaries as follows: Curators — Leverett Mills Loomis, executive and of ornithology, at \$150; Dr. Edwin Cooper Van Dyke, entomology, without salary; Miss Alice Eastwood, botany, at \$100; E. W. Gifford, assistant in ornithology department, at \$50; Miss Lulu F. Forbes, assistant secretary and librarian, \$80; Miss Mary E. Hyde, editorial assistant, \$80; Charles Fuchs, preparator in entomology department, at \$80; W. G. W. Harford, assistant in museum, at \$25; John I. Carlson, assistant in museum, at \$50; Mrs. G. Newell, assistant in botany department, at \$55; and Mrs. J. E. Wilkins, janitress, at \$45. A. P. Redington tendered his resignation of membership, which was accepted. Louis Falkenau, Joseph W. Hobson and Leverett Mills Loomis were appointed library committee for 1905, and Leverett Mills Loomis, Alpheus Bull and Joseph W. Hobson committee on publications.

At an adjourned meeting of the Council, held JANUARY 20, the committee on budget and exploration recommended the following appropriations for 1905: to the department of ornithology for cases and trays \$530; department of herpetology for cases, jars, etc., \$575.50, department of botany for cases, extra help, supplies, local explorations field assistant and purchases of specimens \$1,400; department of invertebrate palaeontology for cases, trays and exploration \$557; department of anthropology for local explorations \$200; department of entomology for cases, trays, boxes, cork, bottles, and local exploration \$535.95 — making in all \$3,798.45. The committee also recommended that at least \$7,500 should be appropriated for the first year's expenses of a two years' scientific expedition to the Galapagos Archipelago and that provision be made by the Board of Trustees also for the expenses of the second year. The director recommended that J. R. Slevin should be appointed as field assistant to the department of herpetology at a monthly salary of \$50, and R. H. Beck as chief of the Galapagos expedition and field assistant to the department of ornithology at a monthly salary of \$75. Both were to accompany the expedition to the Galapagos Islands and in the meanwhile to do local field work. Their salaries and expenses were to be paid out of the above mentioned appropriations of \$7,500. In addition to the above the following budget of expenditures of the Academy for 1905 was recommended: for salaries \$9,300; publications \$4,000; books, periodicals and binding \$2,200; museum and local explorations \$3,500; telephone \$110; postage and freight \$100; printing and stationary \$100; illustrating lectures \$100; fuel \$140; extra janitor

work \$144; contingent expenses \$480; compensation to J. W. Hoburn for expenses \$300, making in all a budget expenditure of \$20,324. The salary of W. G. W. Harford as assistant in the museum was increased \$10 per month, the increase to be paid out of the Crocker Fund. Mrs. G. Newell was granted a month's leave of absence on account of illness.

FEBRUARY 6, accessions to the library for the month of January were reported to have been thirty-six volumes, two hundred and thirty-eight parts of volumes, and seventy-nine pamphlets. David Starr Jordan, President of Stanford University, delivered a lecture, illustrated with stereoptican views, entitled, "The Matterhorn." FEBRUARY 20, many specimens of insects, plants, birds, reptiles, and shells were added to the museum. Edward Berwick delivered a lecture entitled, "California's Contributions to the Neglected Sciences of Agriculture and Horticulture." In the Council, a collection of shells offered for sale by Mr. M. De Lange was declined. Charles Fuchs was authorized to make a collecting trip of one month for the Academy to the Tejon region of Kern County, and \$80 was allowed him for his expenses on the trip. He asked and was also allowed to take his summer vacation of two weeks in addition, so as to enable him to spend six weeks continuously in the field. John I. Carlson was granted one year's leave of absence on half pay of \$30 per month, on account of ill health.

MARCH 6, thirty-three volumes and one hundred and eighty-five parts of volumes were reported as accessions to the library for the preceding month of February. Dr. Stanley Stillman lectured on "The Vermiform Appendix." MARCH 20, many accessions were made to the museum, among them two hundred and thirty-three water birds from the ocean off Monterey, fifty-four specimens of living shells, and seven hundred and seventy-five fossil invertebrates. Professor A. O. Leuschner of the University of California delivered a lecture entitled, "The Sun." In the Council, Miss Alice Eastwood was allowed to arrange with the printers for the issue of five hundred copies of her forthcoming book entitled "The Forest Trees of California" for her own use, provided it were done without expense to the Academy. It appeared that the same concession had been granted to authors connected with Stanford University in reference to books written by them and published by the Academy. Miss Lulu F. Forbes tendered her resignation as assistant secretary and librarian to take effect April 20, 1905. Her resignation was accepted and the secretary instructed to convey to her the Council's high appreciation of her eight years of service in the Academy. Miss Mary E. Hyde was elected to fill the vacancy caused by the resignations of Miss Forbes. It was ordered that Miss Hyde be employed not only to fill the position of assistant secretary and assistant librarian but also to continue her services as editorial assistant at the total monthly salary of \$90. It was also ordered that an assistant in the library should be employed at a salary not to exceed \$50 per month.

APRIL 3, announcement was made of the death of Isaac L. Requa, a life member of the Academy. Because of the death of William M. Pierson, on motion, Theodore H. Hittell was appointed chairman of the committee, first appointed on July 15, 1901, to prepare and present a suitable memorial on the life and services of Dr. Harvey W.

Harkness, deceased, formerly for a number of years president of the Academy. Dr. William E. Ritter, Professor of Zoology in the University of California, delivered a lectured entitled, "Some General Characteristics of the Life of the Sea." APRIL 17, among the accessions to the museum were eighty-three birds, twenty-five reptiles, and two hundred and thirteen invertebrate fossils. Seventeen volumes and one hundred and fifty-seven parts of volumes were reported added to the library during March. Theodore H. Hittell read a memorial of the Life and Services of Dr. Harvey W. Harkness, former president of the Academy.^{36.3} Dr. Harkness died in San Francisco on July 10, 1901, at an age of over eighty years. He was born on May 25, 1821, at Pelham, Massachusetts, of parents who derived their descent from Scotch ancestors. He was the seventh child of a very large family and in early years was obliged to work upon his father's farm; but during the winters he found opportunity to attend the best public schools in the neighborhood and acquired the rudiments of a good education. He early manifested a strong inclination for learning; but on account of the comparative poverty of the family and also of a hereditary tendency to consumption, he was compelled to wage a long and almost desperate struggle against circumstances adverse to his advance. By energy and persistence, however, he at length triumphed and, having turned his attention to the study of medicine, he in 1847, at the age of twenty-six, received his degree as a physician and surgeon at the Berkshire Medical College of Massachusetts. In the spring of 1849, he joined the mighty emigration that crossed the plains in that year, making one of a party that started from Rock Island, Illinois and reached California in October. He settled first at Bidwell's Bar, but in 1850 moved to Sacramento, where he remained in busy and lucrative practice of his profession for nineteen years. In 1854, he married Miss Amelia Griswold but she died within a year after their marriage; and her death left him with a still deeper tinge of melancholy than that which he had brought with him from his earlier life. In 1869, at the age of forty-eight he gave up his regular professional business and retired with a well-earned competence.

Having become an intimate friend at Sacramento of the builders of the Western half of the first transcontinental railroad, he on May 10, 1869, assisted at the ceremony of laying the last rail connecting the Atlantic and Pacific at Promontory and was chosen to present, on behalf of the State of California, the golden spike used upon that occasion. After his retirement from practice, he spent the most of his time in San Francisco, which he finally made his permanent residence; but in the meantime he visited the Eastern States several times and on one occasion extended his travels to Europe and as far as Egypt, where on November 17, 1869, he was present as an invited guest of the Viceroy at the opening of the Suez Canal. In the early years of his residence at Sacramento, he took an active interest in the cause of the public schools and in 1853 was elected the first president of the Sacramento Board of Education, and in recognition of his services on behalf of public education his name was given to the "Harkness Grammar School" of that city. From early years he took great interest in and devoted much time to the study of science, and particularly to the botany of

^{36.3} The complete text of the memorial, an extensive abstract of which is presented here, is inscribed in the *Minute Books*, Stated Meetings, Dec. 1904-Nov. 1914, pp. 20-22.

the lower cryptogamic plants and chiefly the fungi of the Pacific Coast. On September 4, 1871, he was elected a regular member of this Academy. In 1879, he was elected first vice-president and served for that year. In January 1884, he was again elected first vice-president and on the same day was chosen an honorary life member. In January 1885, he was for the third time elected first vice-president and at the end of that year he was again nominated to fill the same office for 1886; but a contest took place and he was defeated at the polls. Being roused and put upon his mettle by this defeat, he in January, 1887, came forward as a candidate for president, to which office he was elected; and he contrived, by repeated annual re-elections, to fill that office for nine years and up to January, 1896.

As a member of the Academy, and especially after he became its president, he devoted most of his time to promoting its interests and the cause of sciences for which it was founded. He attended strictly to the duties of his office; was seldom absent from a meeting, and presided with dignity and decorum. Though he had little or nothing to do with the donation of James Lick to the Academy, he had much to do with the economical administration of the magnificent benefaction, and he exerted considerable influence in securing the generous donations of Charles Crocker, Leland Stanford and Mr. E. B. Crocker, and also the Pierce bequest. The Academy was likewise indebted to him for its large collection of fungi as well as many other of its valuable scientific stores. He was an active, efficient and devoted assistant to the Academy in its transition from penury to competence, from its chrysalis state to its condition of prosperous activity. It was during his incumbency as president that its magnificent buildings on Market Street were erected. He placed its corner-stone and gratuitously labored with a sort of fatherly superintending interest over every part of its construction, watching with jealous inspection every brick that was laid and every trowel that was handled in its building. And when it was completed, it was he, more perhaps than any other, that directed and guarded that careful removal and transportation of its treasures from its previous dark, dingy, dusty and dilapidated old quarters on Dupont Street to the bright, airy and well-kept galleries on Market Street. For all this and many other acts of gratuitous attention, solicitude and devotion to its interest, both as a member and for many years its efficient president, the California Academy of Sciences owes to him a deep debt of gratitude.

On motion, the memorial of Dr. Harkness was ordered to be spread upon the minutes. On further motion it was ordered that a committee should be appointed to draw up and present a suitable testimonial of respect to the memory of William Alvord, previous president of the Academy, who had died on December 21, 1904; and Alpheus Bull, John O'B Gunn and Theodore H. Hittell were appointed. Dr. Louis C. Deane then delivered a lecture entitled, "Some Popular Fallacies Concerning the Eye." In the Council, Miss Elsie J. Stephens was selected as assistant in the library at a monthly salary of \$50. The salary of Miss Mary E. Hyde as editorial assistant and assistant secretary and librarian was raised to \$100 per month to begin May 1. E. W. Gifford was authorized to go on a collecting expedition along the shores of San Francisco Bay, to be absent one month, and \$18 was allowed him for necessary

equipment. In answer to a request from London that the Academy appoint a delegate to the Fourth International Ornithological Congress to be held in London on June 12, 1905, J. W. Mailliard was appointed and authorized to represent the Academy. Miss Alice Eastwood was authorized to make a botanical expedition to Del Norte County and Humboldt Counties about the latter end of April.

MAY 1, Dr. H. W. Fairbanks delivered a lecture entitled, "People and Scenery of Southern Utah." MAY 15, among the accessions to the museum were two hundred and twenty-four water birds from Alameda County, a large number of reptiles from Arizona and California, and many shells and invertebrate fossils, the shells from the Gulf of California and the fossils from the Cretaceous and Miocene formation of the Southern Coast Range. The accessions to the library for the month of April were reported to have been thirty-two volumes, two hundred and forty-five parts of volumes, seventy-one pamphlets, eleven maps and three plates. Dr. Emmet Rixford lectured on "Vaccination." In the Council, at the request of Mr. Loomis, E. W. Gifford, assistant in the department of ornithology, was granted permission to accompany the proposed expedition to the Galapagos Islands. Mr. Loomis made a report of the excellent work done by John I. Carlson in collecting reptiles in Arizona, where he had gone for recuperation, a large number of specimens having already been received from him by the Academy. In response to a request of Dr. Marsden Manson in reference to the establishment and maintenance by the Academy of two seismograph instruments, one on Mount Tamalpais and the other at the Observatory at Victoria, British Columbia, the secretary was instructed to reply that for lack of funds the Academy could not at present undertake such work. A communication was received from the secretary of the Lewis and Clark Congress of Arts and Sciences, inviting the members of the Academy to participate in its sessions at Portland, Oregon, on September 11-14, 1905. A committee was appointed to take such measures as might appear advisable in response to the invitation.

JUNE 5, V. J. A. Rey was elected a life member, and Major George Owen Squier, Milo S. Baker, Dr. Stanley Stillman, R. H. Bennett, Jr. and Major General W. A. Kobbe, U.S.A. were elected resident members. Seventy-four birds, two hundred and thirty-two reptiles, eight articles of native dress from Korea, and one hundred and seventeen ancient stone implements from Tulare and Madera Counties were added to the museum. The May accessions to the library were reported at seventy-nine volumes, one hundred and ninety-eight parts of volumes, seven maps, and three plates. Announcement was made of the death of Alpheus Spring Packard, an honorary member, at Providence, Rhode Island, on February 14, 1905, and Henri de Saussure, an honorary member, on February 25, 1905, at the age of seventy-five years.

Theodore H. Hittell, of the committee to prepare a suitable tribute of respect to the memory of William Alvord, late president of the Academy, presented and read a memorial^{36.4} from which it appeared that Mr. Alvord, though technically speaking, neither a scientist nor an artist, manifested a great and abiding interest in matters of science and art, devoted a very considerable share of his attention and means to their

^{36.4} The lengthy memorial is inscribed in the *Minute Books* (Stated Meeting, Dec. 1904-Nov. 1914, pp. 28-32). The Academy published the memorial in an 8-page pamphlet; a portrait of Alvord is included.

advancement, and was imbued with a true and genuine scientific and artistic spirit. He was born at Albany, New York, on January 3, 1833, and educated at the Albany Academy. In 1850, at the age of seventeen, recognizing the necessity of making his own way in the world, he went to New York City and engaged himself as a clerk and assistant in a large hardware establishment. In 1853, at the age of twenty, having already by diligence and strict attention to his duties mastered a competent knowledge of business, he felt strong enough to branch out for himself and chose California as the scene of his enterprise. He accordingly made his way to this State and settled at Marysville, where he established the hardware house of Alvord and Haviland. After two years of successful business at Marysville, finding that a wider field was necessary to satisfy his aspirations he removed to San Francisco and founded the large wholesale and importing hardware house of William Alvord & Co. in the conduct and management of which he continued for a number of years. The close, constant, and confining application required for the successful carrying on of the extensive operations of that house injured his health and at length obliged him to sell out his interests in the business and take a trip to Europe for rest, recreation and recuperation. He had in the meantime established so great reputation for sound judgment, enterprise, executive ability and unimpeachable honor and honesty that in 1871, after his return from Europe, he was nominated and elected by a handsome majority mayor of San Francisco, which office he filled with credit to himself and advantage to the city for two years.

In 1873, when Golden Gate Park began to become a thing of beauty and a joy forever to the inhabitants of San Francisco, he was appointed one of the commissioners for its improvement and management, in which position he continued until 1882. In 1878, while still acting as park commissioner, he was appointed one of the police commissioners of San Francisco and continued such until 1899. In the meantime, while thus engaged in public duty, he was an enterprising but at the same time safe and solid money manager, to whom in great part was due the exalted position of San Francisco in the financial world. In 1871, the same year in which he was elected mayor of the city, he became a director in the Bank of California, of which he had been one of the original incorporators in 1864. In 1875, when that bank, which did the largest business in the State, became involved and was obliged to suspend, threatening ruin to thousands and producing widespread consternation in the entire business community, Mr. Alvord was one of the most active and efficient of the solid men who came forward to save the credit of the City and State by rehabilitating the bank, restoring its bullion balances, and replenishing its trays with current coin. In 1903 he was elected and from that time continued its president up to the time of his death.

To satisfy his yearning towards art and his love for the beautiful, he became an active member and promoter of the San Francisco Art Association, of which he became president in 1871, and filled that office by re-election for four successive terms. To satisfy his love of nature and contribute to the preservation of the woods and forests, which constitute so great an attraction of California scenery, he became

a member of the American Forestry Association of Washington City, of which he was president during the years 1890 and 1891. His amiable qualities, dignified and decorous demeanor, engaging presence and executive ability opened for him and obliged him to accept first rank in almost every society into which he entered or with which he was connected. He at various times became president of the Alaska-Treadwell Gold Mining Company, the Alaska Mexican Gold Mining Company, the Alaska United Gold Mining Company, the San Francisco Spring Valley Water Company, the San Francisco Clearing House, the Pacific Club, the Loring Club, the Astronomical Society of the Pacific, chairman of the local board of directors of the London, Liverpool and Globe Insurance Company, director of the Selby Smelting and Lead Works, director of the United Railroads of San Francisco, director of the Spreckels and Western Refining Companies, director of the Security Savings Bank, and director of the California Title Insurance and Trust Company.

Mr. Alvord became a resident member of the California Academy of Sciences by regular application and election on February 19, 1872. He joined it in its dark days when it was still struggling for existence and when no one joined except to help it along in recognition of its great value to the City and State as an educational and civilizing institution. Two years afterwards, on July 16, 1874, when James Lick made his magnificent donation of over three million dollars to the cause of science, art and philanthropy, of which the Academy was one of the chief beneficiaries, Mr. Alvord was named one of the original board of Lick trustees. On February 19, 1897, just twenty five years after first joining the Academy, and having, during all those years, contributed to its support, he became, by virtue of its constitution, a life member. In January, 1903, he was elected president of the Academy and occupied that position for nearly two years up to the time of his death. During most of that period, though his health was much affected and it was deemed imprudent to expose himself to the night air, he attended the regular council meetings in the daytime. On the occasion, however, of the semi-centennial meeting of the Academy on the evening of May 15, 1903, he ventured out; and it became his pleasant duty to present to Luther Burbank, the so-called Wizard of Horticulture, the beautiful gold medal, the gift of James D. Phelan in appreciation of his wonderful work. Mr. Alvord made a short but pertinent address of presentation and when Mr. Burbank, overcome by his feelings, hesitated in his reply, Mr. Alvord with admirable tact and readiness, which to some extent furnished the reason why he was so popular as a presiding officer, exclaimed: "It is not necessary, Mr. Burbank, to make any reply. The Academy will speak for you!" in answer to which the audience burst out in loud and prolonged applause.

When he was commissioner of Golden Gate Park he always on his visits to its lawns and sylvan retreats carried along a packet full of crumbs, which we would scatter about for the delectation of the wild birds, thereby not only gratifying his own instinctive feelings of love for the interesting creatures but also tending to make them attached to the park as a home where they would always find provision and protection. He was a man of warm affections. Though he had lived most of his life a bachelor, he in June 1884 married Mrs. Mary E. Keeney and became an attached and devoted

husband. On May 23, 1903, she died and her death affected him deeply. At the end of that year, 1903, he was prevailed upon to accept the office of president for another year, but towards the end of 1904, on account of the precarious state of his health, being liable as he fully realized to drop at any moment, he declined to undertake another term. His premonitions proved too true. On December 21, 1904, his heart ceased to beat, and his death, as soon as announced, evoked universal testimonials of respect to his worth. In the disposition of his estate, he liberally remembered the Academy and thus to the last testified his interest in it and in its objects. As before intimated, though his attention was chiefly devoted to vast and complicated business affairs, he had a true and genuine feeling for science and art and always regarded them as shining lessons of guidance on his path. It may be well in this connection to remember that saying of the old Romans, in which there was much truth in their days and is much truth now, that the highest stage of human life is that of the good citizen, to the making of whom all science and art and education are subservient. President Alvord was in a very eminent degree a good citizen.

The memorial, on motion, was approved and ordered spread upon the minutes of the Academy. Harvey R. Wiley, Special Lecturer on Jurisprudence in the University of California then read a paper entitled, "The Limitations of Economic Reform." JUNE 19, among the accessions to the museum were three thousand insects of various orders collected for the Academy by Charles Fuchs in Tulare, Kern, and Los Angeles Counties. H. H. Bailey presented a kingfisher of a species new to the Academy's ornithological collection, also an oriole's nest, both from the neighborhood of San Blas, Mexico. Seventeen specimens were added to the department of herpetology, and three hundred and fifty-five marine invertebrate fossils from the Miocene beds of the Kern River Oil District, California, added to the collections in the department of invertebrate palaeontology. A box of vertebrate fossils from Terlinqua, Texas, was received from H. W. Turner. Professor John C. Merriam of the University of California delivered an illustrated lecture entitled "Prehistoric Cave Dwellers of Southern France." In the Council, Miss Alice Eastwood was granted permission to sell copies of her book on "The Forest Trees of California," which she had had printed with permission in addition to those printed by the Academy. Miss Hyde was granted permission to take her vacation from whatever date in July she could best arrange to leave her work. The use of the Academy Hall was tendered to the American Anthropological Association which had arranged to meet in San Francisco on the last three days of August, 1905.

In the meanwhile, the Academy's scientific expedition to the Galapagos Islands had been prepared and was about ready for sailing. For its purposes, and for future expeditions, the Academy had, on May 12, 1905, purchased from the U. S. Navy Department a schooner, known as the "Earnest," built by William J. Woodal at Baltimore, Maryland, in 1875, and used in government service in the Pacific Coast, chiefly in Alaskan waters. This vessel had been found unsuited for the purposes of government and was therefore offered for sale; and the Academy bought it for the sum of \$1,000; repaired, re-equipped and put it in first class order at an expense of

about \$4,550, including a new set of sails and binnacle purchased of the government for \$50; changed its name to that of "Academy," and had it regularly registered in the U. S. Customs House by that name and as its property.^{36.5} Under the new registration, it was given the number 202055. Its measurement was one hundred and fourteen tons gross and eighty-seven net; its length eighty-five feet; width twenty three and five-tenths feet and its depth eight and five-tenths feet. All that it needed for posting to sea was its compliment of men and supplies. The personnel of those selected to make the expedition consisted of Rollo H. Beck, chief of expedition and Captain of vessel; Alban Stewart, botanist; Washington H. Ochsner, geologist and conchologist; Francis X. Williams, entomologist; Edward W. Gifford, joint ornithologist; Joseph S. Hunter, joint ornithologist and mammalogist; Joseph R. Slevin, herpetological collector; Ernest S. King, assistant herpetological collector; Captain J. J. Parker, navigator; Captain Frederick Nelson, mate; and James W. White, steward. All were able bodied and vigorous young men and each was to do his part in sailing the vessel and keeping the watches as well as the work of exploring and collecting, preparing and storing on board all the scientific specimens they could find. The supplies and stores provided were ample and of the best for a two years' cruise; and everything being in order, after a pleasant reunion of members of the Academy on board the vessel, as it lay at the wharf near the foot of Market Street, it put to sea, in charge of a tug to take it beyond the Heads, on June 28, 1905.

JULY 3, John Z. White delivered a lecture entitled, "Henry George and His Doctrine." JULY 17, among the accessions to the various collections were four hundred and sixty-nine insects from Arizona and California, seventeen hundred and fifty-four specimens of plants; three hundred and six snakes, toads, lizards, a sala-

^{36.5} At the christening of the *Academy*, a poem composed by F. M. Dickie was read either by Miss Ann Dickie (as indicated on a typescript copy of the poem in the possession of the Archives of the Academy, which states "Recited by Miss Anna Dickie in christening the Academy.") or Miss Hyde (as stated in a contemporary newspaper account, "Miss Anna Dickie formally christened and dedicated the schooner, a bottle of champagne being broken over the bows. Miss Hyde read an original poem . . .") Both poem and news account were uncovered by the Academy's Special Collections Librarian, Karren Elsbernd, who has helped us in many ways throughout this project. The poem read at the christening is as follows:

OH, it's HO for Galapagos
Far southward o'er the sea,
Whose lonely caves' low booming roar
Breathes forth a mystery

For there the fishes build their nests
On high in aged trees,
While the cats and mice all play at tag
Under the long green seas;

Where monstrous turtles crawl about
All sizzling in the sun,
Until the cook in strident tones
Cries, "Fetch him in, he's done."

Insects and beetles, so I've heard,
Darken the noon-day sky;
There is a blessed isle for them,
They never hear "Shoo fly"

To you most gallant mariners
That boldly brave the main
Your daring in this enterprise
Will in our hearts remain

To cast aside all friendships ties,
O'er the blue sea to roam,
Ah, may your welcome be sincere,
When this good ship comes home.

In all your loneliness, brave hearts,
One comfort may be shown,
These decks will never be hen-pecked
For all the wild oats sown.

Then let us here with right good cheer,
All toast our much loved host.
May every move of this trip prove
Fit theme for honest boast.

I christen thee "Academy,"
And away the wine goes splashing;
Its creamy foam is fit alone
For a vessel brave and dashing.

Our hopes for thee will ever be
Right manfully confirmed
May 'st glorify unto the sky
The name which thou hast earned



Schooner "Academy"
California Academy of Sciences Special Collections

mander and a frog, mostly from Arizona. Dr. F. E. Blaisdell contributed sixty-four marine shells and two jars of crustaceae from Panalaska. The accessions to the library for June were reported as thirty-four volumes, two hundred and seventy-seven parts of volumes and three maps. Henry Payot delivered a lecture, illustrated with stereoptican views, entitled, "Bride of the Adriatic." In the Council, thanks were tendered to John D. Spreckels for the use of a steamer in towing the vessel of the Academy's scientific expedition to the Galapagos Islands out to sea. AUGUST 7, Henry Payot delivered a lecture, illustrated with stereoptican views, entitled, "A World's Shrine." AUGUST 21, among the accessions to the museum were nine thousand four hundred and thirty-two insects, of which eight thousand were collected by John I. Carlson in



“Crew” of the Academy’s Galapagos Expedition Schooner Academy,
taken just before departure from San Francisco, June 28, 1905

(Standing, left to right) Frederick T. Nelson, mate; Alban Stewart, botanist; Ernest S. King, assistant herpetologist; Rollo H. Beck, expedition leader; Joseph S. Hunter, ornithologist; Joseph R. Slevin, herpetologist; Edward W. Gifford, ornithologist; Washington H. Ochsner, geologist and conchologist; Francis X. Williams, entomologist. (Sitting): Captain J. J. Parker, navigator.
California Academy of Sciences Special Collections



Getting supplies on board Schooner Academy, June 26, 1905
California Academy of Sciences Special Collections



Francis Xavier Williams, entomologist, with brothers and mother on board Schooner Academy (June 26, 1905) before departure for the Galapagos Islands. (Left to right: Richard, Mrs. Cyril Williams, Francis Xavier, Cyril, and Philip)
California Academy of Sciences Special Collections

Arizona; eight hundred and twelve by Dr. Edwin C. Van Dyke in Washington, and the remainder by Dr. F. E. Blaisdell in the neighborhood of Mount Shasta. Nine hundred and ninety-five specimens of plants were added to the herbarium, mostly from California but some from Alaska, Washington, Oregon, Idaho, Nevada and the Phillipine Islands, respectively. One hundred and ninety-five snakes, frogs, toads, lizards and salamanders were added to the herpetological collections and four hundred and twenty fossils and shells from Oregon and Washington to those of invertebrate paleontology. The accessions to the library during July were reported as forty-six volumes, two hundred and fifty-seven parts of volumes and one pamphlet. Attention was called to the Convention of the American Anthropological Association, which was to be held in San Francisco on the last three days of August; and the chair was authorized to appoint a reception committee to offer it the courtesies of the Academy. Captain William W. Harts, of the U.S.A. Engineer Corps, then delivered a lecture entitled, "Control of Hydraulic Mining Debris in California by the Federal Government." In the Council, Mrs. Wilkins, janitress, was granted one week's leave of absence from August 21 and Miss Stevens, assistant in the library, a week's vacation to be taken after Miss Hyde's return. Miss Alice Eastwood was granted a vacation of one month.

SEPTEMBER 4, Dr. Albert Abrams lectured on "The Chemistry of Life." SEPTEMBER 18, there were added to the museum one thousand and nine specimens of insects from Arizona and California; three hundred and forty-three plants from New Mexico, Wyoming, Colorado, Arizona, California, Washington, and British Columbia; two hundred and thirty-three snakes, toads, turtles, lizards and salamanders from the Mississippi Valley, Arizona and California; and one hundred and ninety invertebrate

fossils and deep-water marine shells. Accessions to the library during August were reported as eighty-one volumes, two hundred and forty-nine parts of volumes and two pamphlets. E. J. Molera, Alpheus Bull and J. O'B. Gunn, who had been appointed a committee to extend the hospitalities of the Academy to the American Anthropological Association, reported that the Association had been the guest of the Academy on August 30, holding one of its sessions in the Academy Hall, and that the committee had provided a bountiful luncheon at the St. Francis Hotel, paid for by subscriptions of members of the Academy. Dr. H. W. Fairbanks delivered a lecture, illustrated with stereoptican views, entitled, "The Great Earthquake Zone of the Coast Ranges." He pointed out much of the line of faults or slips made by previous earthquakes were afterwards followed in the great shake of April 18, 1906. In the Council, it was stated the San Francisco Free Public Library published in its bulletins the subject of Academy lectures a month in advance with recommendations of books to be read in reference to the subjects of lectures. Leverett Mills Loomis reported that the Galapagos Islands' expedition had been heard from. On July 19 it was at Natividad Island off the Coast of Lower California; all were well, and large collections had already been made. A number of communications from foreign as well as American scientific institutions, soliciting exchange of publications, were referred to the committee on publications with power to act. There was hardly a meeting at which communications of this kind were not received showing that the Academy was favorably known throughout the entire scientific world.

OCTOBER 2, Percy F. Montgomery delivered a lecture entitled, "The Romance of Nevada." OCTOBER 16, the accessions to the museum were seventeen hundred and ninety-six insects from Arizona and California; one hundred and sixty-eight snakes, frogs, toads, and lizards from Arizona; thirty-one Indian grass sacks and archaeological specimens from Alaska and the Santa Barbara Islands, and specimens of stream tin and fossil bones from Dominion Creek, Yukon Territory, Canada. The accessions to the library for September were reported at one hundred and twenty volumes, two hundred and fifty-five parts of volumes; one hundred and eighty-one topographical sheets of the U. S. Geological Survey, two maps, and six pamphlets. Dr. Benjamin G. Blodgett, Organist of the Memorial Church at Stanford University, lectured, with illustrations on the piano, on "Popular Music; Its History, and the Secret of Its Power." In the Council, it being reported that there were three vacancies in the list of honorary members, the following gentlemen were recommended and nominated to fill them: E. Ray Lankester, Director of the British Museum, Hugo De Vries, Professor of Botany in the University of Amsterdam, Holland, and Señor Don Manuel Villada, Professor in the Museum of the National School of Agriculture, City of Mexico. It was stated that the Galapagos expedition had been again heard from. It was at Clipperton Island on August 10 and at Cocos Island on September 11. All were well and work progressing in a highly satisfactory manner. Valuable archaeological specimens from the Santa Barbara Islands and Southern California were donated by Mrs. Blanche Trask, for which due thanks were returned.

NOVEMBER 6, Dr. James R. Slonaker, Assistant Professor of Physiology at

Stanford University, lectured on "The Pearl Button." NOVEMBER 20, among the accessions to the Museum were eighteen hundred and sixty-five insects from California and Arizona; one hundred and fifteen reptiles; and forty Cretaceous and Carboniferous fossils from Colorado. Nine volumes, one hundred and ninety-one parts of volumes and two pamphlets were reported added to the library in October. Announcement was made of the death on November 18, 1905, of Charles G. Hooker, and member of the Academy since February 20, 1882. William Greer Harrison lectured on "Shakespeare's Sea Pictures." In the Council, the resignation of membership by J. M. Turner and C. P. Wilcomb were accepted. An invitation to send five delegates to the Fourteenth Annual Convention of the California Miners' Association at Nevada City was accepted. Dr. A. L. Kroeber and Dr. E. C. Van Dyke, in recognition of their services to the Academy, were nominated for life membership. Mr. Loomis was authorized to distribute to certain friends of each the Academy "Memorials" on Dr. H. H. Behr, and William Alvord. At a joint meeting of the Council and Board of Trustees, a nominating committee of officers for 1906 was selected, consisting of Ransom Pratt, William Greer Harrison, Charles Burckhalter, Hermann Kower and Edward Bosqui.

DECEMBER 4, Dr. Gustav Eisen delivered a lecture on "Biological Stations and Aquaria." DECEMBER 18, the accessions to the museum were eight hundred and seventy-five insects from Mendocino County; two thousand and ninety-seven specimens of plants, mostly from California but some from Pennsylvania, Colorado, Arizona, Alaska and the Philippine Islands; three birds; seventy-five snakes, frogs, toads and lizards from Eastern United States, Montana, Arizona and California, including nine salamanders from the Farallones Islands. Dr. J. C. Thompson, U.S.N., contributed two skulls, a dancing club, two wooden images and thirty-four stone implements from Easters Island, and a manganese nodule from a depth of fifteen hundred fathoms in the Pacific Ocean between Mangreva and the Galapagos Islands. To the collections in the department of invertebrate palaeontology were added, four hundred and twenty-eight specimens of marine shells, fossils from oil-bearing districts and two pounds of foraminiferous sand, mostly from localities in California. During the preceding November forty-eight volumes, two hundred and thirty-seven parts of volumes, and thirty pamphlets were added to the library. The committee on nominations made a report renominating all the officers of 1905 for 1906; and election officers were appointed to take charge of the polls at the approaching annual election. Alexander McAdie of the U. S. Weather Bureau lectured on "The Weather of San Francisco."

Chapter XXXVII: Year 1906

The annual meeting of 1906 was held on JANUARY 2. E. Ray Lankester, Director of the British Museum; Hugo De Vries, Professor of Botany in the University of Amsterdam, Holland, and Señor Don Manuel Villada, Professor in the Museum of the National School of Agriculture in the City of Mexico, were elected honorary members. Dr. Alfred L. Kroeber and Dr. Edwin Cooper Van Dyke, on the recommendation of the Council, were elected life members. N. S. Dorn, Dr. Gregory del Arno and Ernest Branton were elected resident members. Annual reports of the officers and curators of the Academy were read and placed on file. The officers of the annual election, held that day, reported that there had been thirty votes cast and that they were all for the following candidates, who were thereupon declared duly elected officers for the year 1906: E. J. Molera, president; Alpheus Bull, first vice-president; Otto von Geldern, second vice-president; J. O'B. Gunn, corresponding secretary; J. W. Hobson, recording secretary; L. H. Foote, treasurer; Louis Falkenau, librarian; Leverett Mills Loomis, director of the museum; William S. Tevis, D. E. Hayes, William H. Crocker, James D. Phelan, J. C. Cebrian, George C. Perkins, and George W. Dickie, trustees.

JANUARY 15, the accessions to the museum were six hundred and eighty-nine mounted flies and wasps from California and Mount Rainier, Washington; two hundred and sixty-five specimens of plants from California; one hundred and six birds from the Eastern United States, Central and South America, and one hundred and sixty-five Eocene invertebrate fossils from the coal measures of Corral Hollow Creek, Alameda County. Seventeen volumes, two hundred and forty three parts of volumes, thirty-eight pamphlets, one hundred and seventeen topographical charts, fourteen maps, and five atlases were reported added to the library in the preceding December. Announcement was made of the death of Dr. George Chismore, a member of the Academy; and on motion a committee consisting of Theodore H. Hittell and Lucius H. Foote, was appointed to prepare a suitable memorial of his life and work. Charles Keeler lectured on "The Polynesian People." In the Council, curators, assistants and employees for 1906 were appointed with monthly salaries as follows: The curators were Leverett Mills Loomis, executive and of ornithology, at \$150; Miss Alice Eastwood, botany, at \$100; Dr. Edwin C. Van Dyke, entomology, without salary; Dr. John Van Denburgh, herpetology, without salary; Dr. A. L. Kroeber, anthropology, without salary; F. M. Anderson, invertebrate palaeontology, without salary; Miss Mary E. Hyde, editorial assistant and assistant secretary and librarian, at \$100; Charles Fuchs, preparator in entomology department, at \$80; Mrs. G. Newell,

assistant in botany department, at \$55; Miss Elsie J. Stevens, assistant in library, at \$50; Rollo H. Beck, chief field assistant, at \$75; Joseph P. Slevin, assistant in herpetology department, at \$50; E. W. Gifford, assistant ornithologist, at \$50; the last three and the first two and their expenses in the field to be paid out the exploring appropriation; W. G. W. Harford, assistant in museum, at \$35, in addition to \$25 received from the Crocker Fund, making up \$60; John I. Carlson, assistant in museum, at \$50; Mrs. J. E. Wilkins, janitress, at \$45. In addition, \$25 per month was appropriated as compensation for extra services of J. W. Hobson, recording secretary. The resignation of membership by Herbert P. Johnson was accepted. Leverett Mills Loomis, Alpheus Bull and Joseph W. Hobson were appointed committee on publication, and Louis Falkenau, Joseph W. Hobson and Leverett Mills Loomis, library committee. President Molera stated that he had received a very courteous letter from the Consul General of Ecuador noting the arrival of the Academy's expedition at the Galapagos Islands and expressing his interest in the objects of the expedition.

At an adjourned meeting of the Council, held JANUARY 22, all of W. G. W. Harford's salary of \$50 per month was ordered to be included in the general salary list. The budget committee recommended the following appropriations for the year 1906: for the salaries \$9,300; publication \$4,000; library \$2,500; museum and local exploration \$5,230; telephone \$110; postage, freight, etc. \$100; printing and stationery \$100; illustrating lectures \$200; fuel \$140; extra janitor work \$1,800; contingent expenses \$450-making in all for general Academy the sum of \$22,340. Appropriations for the different departments were recommended as follows: entomology, for cases, boxes and supplies, \$1,000; botany, for cases, supplies, exploration, etc. \$1,400; ornithology, for cases, platforms, etc. \$757; herpetology, for cases, jars, preparations, etc., \$1,075; anthropology, for trays, \$25; invertebrate palaeontology, for purchases, exploration trays, etc., \$507.95; for alcohol, \$100; for explorations by Dr. J. C. Thompson, U.S.N., in Philippine Islands, \$355 – making an additional total of \$5,229.95.

FEBRUARY 5, Edward Berwick lectured on "Britain Revisited after Forty Years' Absence." FEBRUARY 19, Dr. David Starr Jordan, President of Stanford University, lectured on "The Blood of the Nation." In the Council, it was declared that Henry E. Mathews had become a life member of the Academy by virtue of the provisions of the Constitution. It was ordered that Mrs. E. L. Kerr should be provided with a collector's outfit on her agreement to collect specimens for the Academy in the United States of Columbia, which she was about to visit. MARCH 5, the accessions to the museum were twelve hundred and thirty-eight insects from various points on the West Coast of America; two hundred and seventy-two specimens of plants from Washington and British Columbia; one Indian storage-basket with cover from Arizona, one hundred Indian stone-implements from California, and an Indian cane-flute from Arizona; ten thousand shells, known as "The Gifford Collection"; and two hundred and eighty-nine invertebrate fossils; and a moon fish from Lower California. Report was made of accessions to the library during January as sixteen volumes, two hundred and sixteen parts of volumes, twenty atlases, three maps and two pamphlets. The

death of Samuel P. Langley, Secretary of the Smithsonian Institution, and an honorary member of the Academy was announced.

Theodore H. Hittell, of the committee appointed for the purpose at a previous meeting, presented and read a memorial of the life and work of Dr. George Chismore, which was approved and ordered spread upon the minutes.^{37.1} It appeared that Dr. Chismore had one of the most extraordinary of all the extraordinary careers of early Californians. He was born at Litchfield, Herkimer County, New York, on January 30, 1840. His father was a gunmaker by occupation, and his mother a niece of the inventor of the Remington rifle. At his birth, his mother was only eighteen years old. He lost her four months afterwards and was left to be brought up by others. At four years of age he was sent to public school and continued his attendance there until he was ten. From his very first years he manifested remarkable brightness and quickness of intellect, sympathetic feeling and independence of character. At the age of seven he saw an old man, who had been attacked by cholera, led screaming with pain through the streets. Nearly everybody else fled with terror of the dread disease; but little George was so much affected that he rushed up, proffered his help, followed the man to his lodging, and waited at his side, giving him water and rendering him such kindly services as were within his power, until the sufferer died.

From his earliest years he manifested a remarkable aptitude for mechanical engineering, acquired no doubt in part from inheritance but more particularly from the freedom with which he was allowed to run about and use tools in the gun-factory of his grand-uncle, Eliphalet Remington. In a short time, he became so proficient in his knowledge of machinery and its working that at the precocious age of eleven, his grand-uncle engaged him as engineer to run the steam-engine that furnished the factory power, for which service George received wages at the rate of fifty cents per day. At the end of a year, becoming dissatisfied, he threw up his employment as engineer and went to live with his uncle, Charles Merry, his mother's brother, who was a dentist and also something of an artist. Here George's mechanical ingenuity again manifested itself by his manufacture, at the age of twelve, of a set of artificial teeth for his grandmother Merry, which fitted her well and afforded her great satisfaction. This grandmother Merry had a very high appreciation of George's intellectual abilities and endeavored to persuade him to become a lawyer. She represented to him that her father, Major Samuel G. Merry, George's great-grandfather, had left a claim to a lost tract of land in central New York, including the site upon which stood the City of Utica; and that if he would become a lawyer and prosecute and recover the old family rights, there would be a brilliant future opened for him. But George did not fancy the long, hard dry, and plodding wrestling for years, which a course of law study in those days would subject him to, and declined the glittering prospect. On the contrary, his Uncle Charles Merry's pictures, added to his own inborn love of picturesque nature and an irrepressible desire to see the world, and particularly the ocean, filled his mind with the idea of becoming a marine artist. As, however, some ready cash would be necessary to carry out this scheme, and as

^{37.1} The memorial, written by Theodore Hittell, is spread across 8 pages (pp. 62-69) of the *Minute Books* for the years Dec. 1904-Nov. 1914.

his grand-uncle Remington had not been able to find any satisfactory substitute to run his engine, George consented, for a time at least, to again take charge of it and resumed engineer work at an increase of pay amounting to seventy-five cents per day.

It happened about this time that exceedingly favorable news arrived from his Uncle John Merry, who was then engaged at mining near Placerville in California. The prospect of making a fortune by digging gold fired the imagination not only of George, but also that of his uncle Charles, the dentist, and likewise that of his uncle, Eliphalet Merry, who was a sea captain of New Bedford, Massachusetts; and before the end of 1853, they were all on their way, in Eliphalet's ship, to California. On arrival at San Francisco, the ship was disposed of and the adventurers proceeded to Placerville, where they rolled up their sleeves and did the hardest manual labor of their lives. But by that time, placer mining yielded smaller and smaller returns; and towards the end of 1855, they all resolved to go back, though not by any means with fortunes, to their old home in New York. They returned by the way of Nicaragua at the time William Walker had taken possession of the government of the country and was pursuing his adventurous career there. The glamor of the famous filibuster's first successes had excited George's curiosity, perhaps even his ambition; at any rate, upon reaching Nicaragua, he slipped off from the company of his uncles and, making his way to Walker's recruiting headquarters, offered himself as a soldier in the filibuster army. Fortunately, the officer in charge, a rough but tender-hearted Irishman, glanced at the stripling and, looking around to see that no one was observing or could hear him, said in a low but earnest voice: "Young fellow, if you know what is good for you, you'll get out this as quick as you can!" The look and tone, with which this caution was given, was enough for a lad of George's quick apprehension; and he "got out of that" as fast as his legs would carry him and managed by alacrity to overtake his uncle's train, which had gone on without missing him. On the Atlantic side the steamer was greatly overcrowded; but, worse than that, cholera broke out among the close-packed throng; and George seeing the suffering around him and the general avoidance of the stricken by other passengers, assumed the role of a voluntary nurse and soothed many a poor fellow's last moments. It was thus he passed his sixteenth birthday.

Upon arriving at Ilion, where the Remington gun-factory was established, he went to work with his father and remained for about a year. During this period he, among other things, became a capital shot and also an expert swordsman and fencer, which latter accomplishment he learned made the tuition of one of Kossuth's officers, who had drifted into that part of the country. But among the old scenes and associations of a few years before, the idea of becoming a marine artist again took possession of him; and this time he resolved that nothing should draw him off from the project. He accordingly, about the age of seventeen, broke up his connections at Ilion, made his way again to New Bedford, and shipped there as a sailor before the mast on a whaler bound for the North Pacific. He took brushes and paints along in his kit; but, as may well be imagined, he found little opportunity in the life he was compelled to lead for using them. He became an adept at handling canvas, but the only brush he could find

an opportunity of wielding was the scrubbing brush, while the nearest approach to pigment was the slush, with which he learned to grease the masts. Though in the daytime he could keep his eyes open and gain plenty of experience, and in the nightwatches study the stars and exercise his memory by reciting to himself all the poems he could remember, and sometimes throw his own feelings and emotions into verse, the life he led became irksome and he determined to abandon it on the first opportunity. This presented itself, after a cruise of two, about the end of 1858, when the vessel ran into Honolulu, Hawaii. There, watching his chances, George managed to slip off unobserved and hide himself until after the ship departed. Being without money and finding no employment at Honolulu, he stowed himself away on board the America Bark Metropolis and, when discovered, was allowed to work his passage in it to San Francisco. In the course of the voyage, the captain ordered him to hand upon a certain rope, and George took hold with a will; but in some way it had been fouled, and he found it trying his strength. The captain in a huff used an expression derogatory to George's mother. In an instant George dropped the rope; jumped back and, placing his hand upon his sheath-knife, exclaimed that he would allow no man to speak against his mother. He, of course, expected to be thrown into irons for insubordination; but the captain simply looked him steadily in the eyes for a moment and then turned and walked away. But from that moment George found himself treated with a great deal more respect than before; and, when the vessel arrived at San Francisco, the captain, taking off his own cap, went round among his officers and men and made a collection for the needy chap, ordinarily quiet and obedient, who was so ready to fight for the honor of his mother's name.

In San Francisco, with the exception of a few odd jobs at mending guns and repairing sewing-machines, he found nothing to do and resolved to make a second attempt at digging gold in the mines. He accordingly again proceeded to Placerville, but, instead of stopping there, crossed over to French Creek near Georgetown. Evidently, however, he was not born to be a miner. With all his work he could make no accumulations; and at the end of a few laborious months he again threw down the pick and shovel and resolved to go back to San Francisco and ship as a sailor for China. He flung his blankets over his shoulder and started on the trail over the mountain back towards Placerville. But he had not gone far when he met a gentleman on horseback coming the other way. They looked at each other with considerable attention, but passed with a mere "Good Morning." Each, however, turned around for a second look, when the stranger asked, "Aren't you George Chismore?" "I am," answered George. "Where are you going?" asked the other "I am going," replied George, "down to the Bay to ship for China." "You are not going to do anything of the kind," rejoined the other. "You are going home with me to Georgetown. I am your cousin Spencer, Dr. A. W. Spencer, as they call me. I am practicing dentistry with some success at Georgetown: so turn around and come right along!" Thus, strangely and unexpectedly, for neither had any idea of the presence of the other in the country, did these two cousins meet; and thus, still more strangely, in the remote mountains of California, did young Chismore find an opportunity and opening for

that career as a surgeon and physician in which he afterwards became so distinguished.

At Georgetown, he again took up the business of dentistry, but at the same time became interested in medicine as a science and read, with a care and attention seldom devoted by a young student to his work, all the medical books he could find; and the more he read the more interested and absorbed he became in the subject. He had at last found his vocation. In 1854, he returned to San Francisco and matriculated in the Medical Department of the University of the Pacific and attended a regular course of lectures. In 1855, before he could finish the prescribed curriculum and take his academic degree, he was offered by the Western Union Telegraph Company a tempting position as surgeon and medical officer in its telegraph-building expedition to and through what was then Russian America, undertaken with the purpose of spanning Behring's Straits and connecting the western with the eastern continent by that route. Though he informed the representatives of the company that he was not as yet an M.D., they replied in substance that it was not the M.D. they wanted, but the man who could and would look after the health of their people and do the work required of a good surgeon and doctor. He thereupon accepted the employment and accompanied the expedition in its labors of building some fifteen hundred miles of telegraph line in the wilds of British Columbia and Alaska. While engaged in this work, news came of the final success of the telegraphic cable across the Atlantic, which rendered the proposed line by Behring's Straits useless and occasioned the stoppage of the work and abandonment of the project. It was in Alaska that Chismore became interested in the aboriginal inhabitants and picked up a sufficient knowledge of their language to act as interpreter between Ibbits, the great Klinget Chief, and United States Secretary of State, William H. Seward, on the visit of the latter to the Northwest Coast in 1867. Upon his return not long afterwards to San Francisco, Chismore made arrangements to resume his studies in the medical college and take his degree. But, as he was going along the street one day, he was tapped upon the shoulder and asked if he were not George Chismore. Upon his replying in the affirmative, the gentleman, who had asked the question, said that he had an invitation for him to act as surgeon and medical officer of troops in the service of the United States in Arizona and New Mexico. He replied as before that he had not yet graduated, but was answered, in substantially the same manner as by the Western Union Telegraph Company's agents, that it was known he was not a graduate, but he was *wanted*. The opportunity of becoming acquainted with Arizona and New Mexico, as he was already acquainted with the northwestern country, was under the circumstances too tempting to be rejected; and he accordingly accepted the commission; sailed to Wilmington near Los Angeles; and then proceeded across the Colorado Desert to Fort Yuma.

In the service of the United States, he remained for several years and accompanied the troops from point to point over almost all the Southwest and back to San Francisco, when for a while he was stationed at the Presidio. From there he again went to Alaska, this time in connection with United States soldiers in the service of the Government

and was stationed at Fort Tongass near Sitka, where he remained until the garrison was withdrawn, and he was then, at his own earnest solicitation, relieved from further government duty. During all the time of his service in the Army, as before in that of the Western Union Telegraph Company, his lively and companionable disposition, his kindness and attention to those who needed his professional ministrations, his readiness to endure hardship or enjoy sport, as they presented themselves, and to be cheerful under any and all circumstances, being always excessively fond of a good story or a rich joke and so to speak, the life of any company he happened to be in, he was a universal favorite among both officers and men as well as among the rough pioneers and adventurers with whom he was, from time to time in his various expeditions, thrown in contact; and in the course of his after life in San Francisco, it was rare that any one of all those old acquaintances ever visited the metropolis without hunting him up, grasping him heartily by the hand and recalling some lively recollection of the old days.

It was his fortune in the course of his residence in Alaska to meet the remarkable Kochise, daughter of Ibits, the Klinget Chief already mentioned in connection with United States Secretary of State Seward. Not so much as an Indian princess as a woman of intelligence and amiability, Chismore loved and married her; his affection for her lasted while she lived, and to the end of his days her recollection was to him a sacred memory. By her he had a daughter, Miss Emma Chismore, his only child, whose health, comfort, education and welfare were thenceforth the first objects of his life.

Upon finally returning to San Francisco in 1872, Chismore resumed his connection with the Medical Department of the University of the Pacific; attended a second course of lectures, and graduated as a regular M.D. in 1873, notably the most experienced graduate ever enrolled in California, and perhaps in the United States. His next move was to open an office and devote himself to practice and study in his profession, for which, hard as it may have been, he gave up entirely the glorious freedom of outdoor life in the mountains and forests, except an occasional trip, by way of relaxation and recuperation, to the evergreen redwoods or pine-clad Sierras, and to enjoy, at least once in a while, his inborn and ineradicable love of fun and jollity and his taste for artistic and literary recreation, he in 1874 became a member of the San Francisco Bohemian Club, of which he was one of the choric spirits, and twice its president, once in 1886 and again in 1896. On April 3, 1899, he became a member of the California Academy of Sciences and remained such until his death, which took place in San Francisco on January 11, 1906, at the age of very nearly sixty-six years.

In his profession, after ten or eleven years of successful general practice, he devoted his attention more and more specially and exclusively to the recondite and difficult diseases of the genito-urinary system, particularly bladder and kidney disorders, in the management and treatment of which he soon became famous in the surgical and medical world. In operations for calculus or stone in the bladder, known to the profession as lithotomy or litholapaxy, among the most difficult and critical in

the whole range of surgery, he not only became a proficient but he advanced surgical science and efficiency by the invention of a new and improved form of lithotrite or instrument used in those delicate operations. With this instrument and the skill he exhibited in its use, he performed many remarkable cures, a full record of which he left for the benefit of those to follow after him. His surgical success could not help bringing him reputation as well as remuneration. As he had always, on account of the geniality of his disposition, been a favorite with sailors, soldiers, mountaineers, and adventurers in the wild; so, on account of his social qualities and great learning and ability in his profession, he became a favorite among scholars and learned men and especially those of his own profession, who looked upon him as a master and sent to him for treatment, or called upon him for advice, in all difficult cases of his specialty in their own practice. But perhaps the best illustration of his standing in the profession is afforded by an anecdote that for a considerable time has been current among his friends. It is said that some years ago a wealthy gentleman of San Francisco, who was afflicted with a very serious calculus of the bladder, went to New York to submit himself to one of the most prominent and costly surgeons there. After stating his case and its distressing symptoms, the surgeon casually asked "Where do you live? where did you come from?" "I have come here for your advice and treatment direct from San Francisco." "From San Francisco!" exclaimed the surgeon, "Yes, from San Francisco, California, where I have lived for many years." "Well," replied the surgeon, "my advice is that you immediately go back to San Francisco. You have there the most expert operator and greatest specialist in cases such as yours in America, perhaps the world. Return at once and submit your case to Dr. George Chismore."

MARCH 19, among the additions to the museum were: from J. C. Thompson, U.S.N., three hundred and six insects, fifty-one reptiles, one hundred and fifty land, fresh water and marine shells, twelve specimens of worms and crustaceae, and one eel from Guam, the Hawaiian and Philippine Islands; from G. P. Rixford, one hundred and fifty insects, fourteen reptiles, six fresh water shells, one bottle of crabs and one fish from Salvador, Central America; and from Dr. E. C. Van Dyke, fifty-one spiders from California. A number of other smaller contributions were made by others, showing continued interest in adding to the stores of the Academy. It appeared that during February twenty-eight volumes, one hundred and thirty-two parts of volumes, ninety-nine topographical sheets and two pamphlets were added to the library. Announcement was made of the death of William S. Chapman, an active and efficient life member of the Academy. T. H. Hittell introduced and moved the adoption of the following Preamble and Resolution; which were carried unanimously.

Whereas the Outdoor Art League of the California Club and other Associations, interested in the progress and prosperity of the State of California, have appealed or are about to appeal to the Congress of the United States for recognition of the State's just and equitable right to five per centum of the cash sales of public lands within her borders of the benefit of her Common Schools, including a State School of Forestry.

Resolved, That the California Academy of Sciences heartily and earnestly joins in such Appeal and that the Recording Secretary be instructed to forward a copy of this

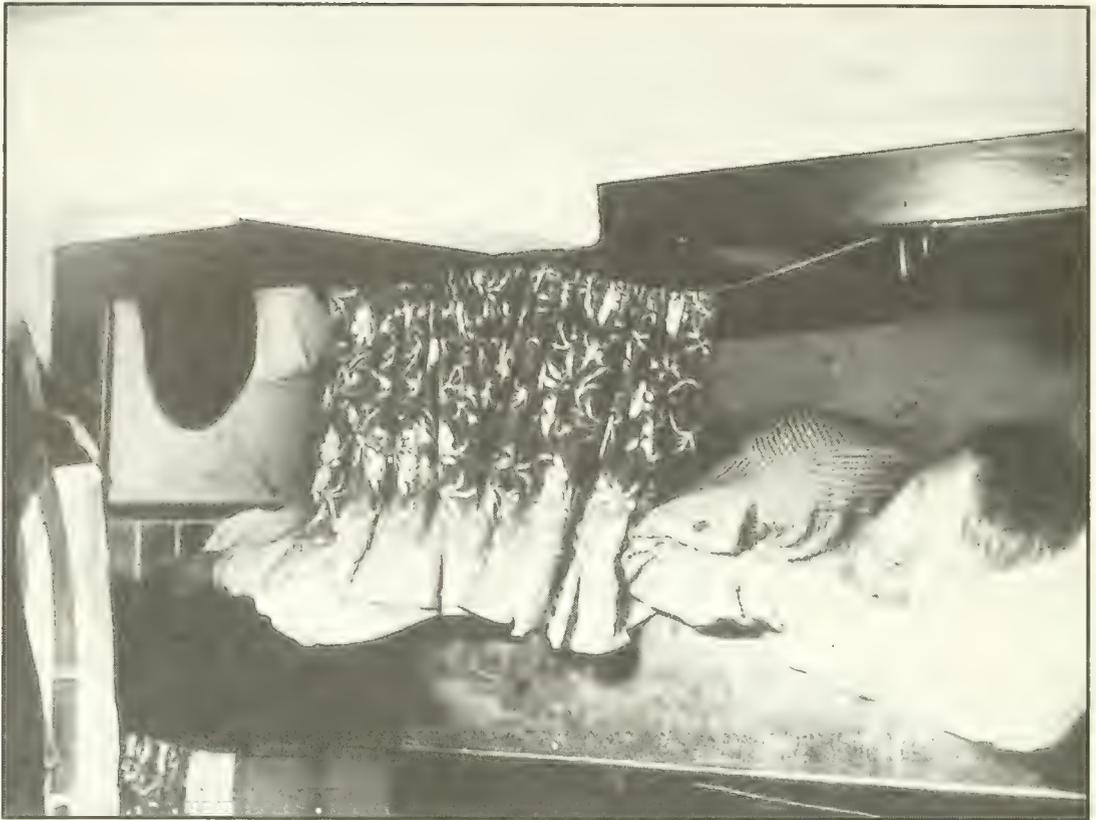
Preamble and Resolution, duly authenticated, to the California Club for transmission by it, with its own papers, to the California Delegation in Congress.

The Academy then listened to a lecture by Dr. W. J. V. Osterhout of the University of California on, "How Plants are Affected by their Surroundings."

In the Council, in response to an invitation from the American Philosophical Society, U. S. Senator George C. Perkins and George W. Dickie were appointed delegates to attend and represent the Academy at the celebration of the Two Hundredth Anniversary of the birth of Benjamin Franklin at Philadelphia on April 17 to 20, 1906. General L. H. Foote reported that the appropriations of the budget for 1906, as recommended by the Council, had been approved and made by the Board of Trustees.

APRIL 2, Dr. John C. Merriam, Professor in the University of California, lectured on "The Evolution of the Elephant." APRIL 16, the accessions to the museum were three hundred and ninety-three mounted butterflies and wasps from California; sixteen hundred and sixty-eight specimens of plants, including many new species, mostly from California but some also from Cuba, Central America, Pennsylvania, Montana and Alaska; three snakes from California; sixty-one land and marine shells from Spain, and forty-one invertebrate fossils from the coal measures of Coos Bay, Oregon and the oil district of Gilroy, California. Additions to the library for March were reported at eleven volumes, two hundred and two parts of volumes, four topographic sheets, and two pamphlets. Harvey R. Wiley, lecturer on Jurisprudence in the University of California, lectured on, "The Law and the Citizen." In the Council, it appeared that U. S. Senator Perkins would be unable to attend the Franklin Celebration at Philadelphia, Dr. Marsden Manson was appointed a delegate in his place. President Molera stated that, at the request of the Royal Academy of Sciences and Arts at Barcelona, Spain, that institution would also be represented at the Franklin Celebration by the California Academy. At the request of Dr. P. deCecchi, a publication of the Academy was ordered to be forwarded to Turin, Italy. A number of applications for exchanges of publications were received from scientific institutions in different states and referred to the publication committee with power to act. Charles Fuchs was granted permission to take his vacation in the early part of May.

Leverett Mills Loomis presented a report that highly gratifying news had been received from the Academy's scientific expedition to the Galapagos Islands. It had sailed from San Francisco in June 1905 and, after stopping at number of islands near the Mexican and Central American coasts, had reached Hood Island, the most southerly of the Galapagos group in September. Since then, island after island had been studied and many thousands of specimens collected. The botanist of the expedition had discovered so many new species of plants that an entirely new aspect was given to the Galapagos flora. The most important accomplishment for botany, however, was the determination of the life zones of the different plants and the relations the plants of the different islands have to one another. The entomologist had gathered a rich harvest of new insects. In the order of beetles alone, he had already doubled the number of species known to the islands. He also, in connection with the



In the Galapagos, 1905-1906: Spacious quarters onboard the Schooner "Academy."
Photo Collection, Department of Herpetology, California Academy of Sciences



In the Galapagos, 1905-1906: "Sailmaker" doing emergency repairs onboard the Schooner "Academy"!
Photo Collection, Department of Herpetology, California Academy of Sciences



In the Galapagos, 1905-1906: A large colony of marine iguana, *Amblyrhynchus cristatus*.
Photo Collection, Department of Herpetology, California Academy of Sciences



In the Galapagos, 1905-1906: Ernest S. King and the gymnastics of collecting a marine iguana.
California Academy of Sciences Special Collections



F. T. Nelson returning from a "pig" hunt on Cocos Island (September 10, 1905)
Photo Collection, Department of Herpetology, California Academy of Sciences



In the Galapagos, 1905-1905: Recording field observations on nesting birds.
Photo Collection, Department of Herpetology, California Academy of Sciences



In the Galapagos, September, 1905: Rollo H. Beck photographing blue-footed boobies.
California Academy of Sciences Special Collections



In the Galapagos, 1905-1906: Joseph Richard Slevin, bearing a small saddleback tortoise.
Photo Collection, Department of Herpetology, California Academy of Sciences

botanist and conchologist, had studied the life zones of the mountain slopes. This investigation was of especial interest on account of the peculiar climatic conditions prevailing there. The currents from the Antarctic, which bathe the shores of the islands, produce there under the equator a temperate climate at sea-level. The geologist had found extensive beds of fossils, which threw much light upon the origin of the strange existing fauna. The ornithologist had secured many rare specimens of birds; among them were eight Galapagos rails, a water-bird discovered by Darwin when he visited those islands in the course of the memorable voyage of the "Beagle." The two specimens of the bird, which he carried to England and are now in the British Museum, were the only ones preserved to science previous to those collected for the Academy.

One of the chief objects contemplated by the expedition was to secure a series of specimens of the giant tortoise, found only on those islands and now verging towards extinction. These huge creatures are survivors from the reptile age of the past geologic times. They have long made the Galapagos famous and, in fact, gave the group its name, the Galapagos being Spanish for tortoise. The early south-sea whalers resorted there for supplies of tortoise meat. As the animals lived for a considerable length of time without food, a cargo of them would insure fresh provision for a number of months. These whalers and the dogs that strayed from their vessels and ran wild, together with the settlers at the sugar plantations on Chatham Island, in time wrought such destruction that the hosts of tortoise described by early navigators have disap-



In the Galapagos, 1901: The fragmented remains of tortoise skeletons that testify to the earlier slaughter of Galapagos tortoises by whalers, settlers, and others seeking oil and meat (photo by Rollo Beck taken during the *Mary Sachs* expedition).

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peared, leaving only a remnant yet to be found. It was formerly supposed that the tortoises on the different islands were of the same kind; but in recent years it has been discovered that each island has its own peculiar species. On several of them the tortoises were practically exterminated before this fact became known; and to what species they belonged has been a subject of much speculation among herpetologists. The thorough search made by the Academy's expedition, however, has resulted in the discovery of two survivors of these tortoises so long supposed to be extinct, on the Jervis Island and the other on Chatham Island.

It was expected that the expedition would return with its treasures about the end of 1906, when the many specimens it collected would be classified and described, and the results presented to the scientific world in a series of monographs to be published by the Academy.



Such was the history of the California Academy of Sciences, briefly sketched from the old records for fifty-three years after its foundation, and such its conditions, its activities, and its prospects at the time of the "Great Disaster" of Wednesday, April 18, 1906, commencing at 5:12 o'clock on the morning of that day, and, on account of its length and persistency of vibration, was the most severe and destructive of all experienced in the State since the American occupation. No part of the shock was much, if any, severer than that of several others; but it lasted, with accumulating motion in superstructures, for the unprecedented period of over a hundred seconds, ending with a apparent twist or rotation of direction. Professor Davidson has furnished the most precise information of the shock in San Francisco in the following language: "Marked time from instant of shock 5h. 12m. 00s., hard shocks to 5h. 13m. 00s., slight decrease to 5h. 13m. 30s., reaches quietude 5h. 14m. 30s. First movement N. and S., the E. and W., ending in confusion." Its immediate effect was to topple over the tops of many chimneys; throw down many ill-constructed brick-walls; produce cracks in many walls that did not tumble; occasioned the fall, either total or partial, of a number of frame buildings with insufficient or decayed foundations, and caused others to slip off of their foundations, or otherwise slide out of position. The cracking and dislocation of chimney-flues and the disarrangement of charged electric wires caused a number of fires to start almost immediately after the shock in different parts of the city, particularly in its lower and more level portions; and the flames spread with great rapidity. Attempts were made to extinguish them, in some instances with success; but it was found that almost all the street hydrants, which had previously supplied the fire department with sufficient water to put out ordinary fires, were empty for the reason, as was soon ascertained, that the main pipes in San Mateo County, through which they were supplied, had been broken; and the only water obtainable was a few inadequate streams from small reservoirs and in locations where pipes full at the time of the shock remained unbroken and were not yet exhausted. Under the circumstances little or nothing could be done, and the flames continued to



A view of the fire engulfing downtown San Francisco following the earthquake of 18 April 1906
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spread uncontrolled and practically uncontrollable. Some ill-directed efforts to stop their spread by the use of explosives were made; but they were futile; and in the course of six or eight hours a very large part of the city south of Market Street, including the front building of the Academy and the combustible portions of the rear building, was a mass of burning ruins and extensive inflagation. The weather was pleasant; a gentle breeze came along the lower levels of the air from the northwest; the sky was clear, and the sun shone bright; but the city was covered, as with a pall, by a dense cloud of smoke about a mile high, illuminated from the raging flames below and filled with burning cinders and ashes which were carried far and wide in the upper atmosphere and scattered in every direction.

Had it not been for the fire, it is not likely that the earthquake would have been regarded as a very great disaster; nor would the citizens in general have been much disturbed. It would have been looked upon as a great revelation of rascally jobbery in some of the architects, contractors and builders; a warning to constructions of high and unbraced chimneys, and an object-lesson against the too common use of mortar without sufficient lime or cement and the employment of mere stilts for the foundations of heavy superstructures; but the actual damages, except in cases of loss of life, would have been repaired in a comparatively short space of time and without any very great cost; and the city life would have gone on without much change. But the

fire ruined and destroyed everything combustible it and its heat could reach. It raged for three days. On Wednesday night, by the heroic efforts of a few firemen, assisted by a number of willing-handed, volunteer citizens, with two streams of water brought from the hill above Jefferson Square, the flames coming up northward from the Hayes' Valley region were prevented from crossing Golden Gate Avenue; but by Thursday afternoon the fire had consumed most of the business portion of the city north of Market Street and came up westward in a wide swath towards Van Ness Avenue. There, on account of the extra width of that avenue, it was resolved to make a determined effort to prevent to flames from crossing. A couple of streams of water, brought from four or five blocks westward and forced forward by relays of engines and long hose lines, were arranged for service. When they were ready and the steadily advancing flames were close at hand, a number of the houses on the east side of the avenue were purposely fired and allowed to burn, in imitation of what is known as "back-firing" on the prairies, while the fire-fighters, consisting chiefly of the young men of the neighborhood who had done such excellent work on Golden Gate Avenue the previous night, devoted their undivided attention to protecting the buildings on the west side of the avenue, particularly for a block or two north and south of Eddy Street. It was a gallant fight, which never can be forgotten by those who witnessed it. As the flames raged with intense fury and almost unsupportable heat on the east side of the avenue, those in charge of the long hose line kept the house-fronts on the west side wet with repeated drenchings. Notwithstanding the width of the avenue was one hundred and twenty-five feet, the houses on the west side, drenched as they were, were continually taking fire at one point or another. Some of the fighters mounted the roof with blankets and buckets of water and beat down or put out some of the starting flames; but wherever the fire got anything like headway, those in charge of the nozzle and hose line promptly advanced to the attack and soon extinguished the threatening blaze. The manner of their action was remarkable. The man or men at the nozzle, who were usually covered with wet sacks or blankets, upon seeing a blaze within a block or two, would cry out in a loud voice, "Lighten up the line," and in an instant from fifty to a hundred willing hands would seize the hose and carry it, following their leaders, to the point of attack. That blaze would no sooner be extinguished than a new blaze would start, perhaps a block away. Again the stentorian voice of "Lighten up the line" would be heard; the willing hands would again take hold of the hose and carry it to the new point of alarm. As they ran from point to point, sometimes for several hundred yards at a time up and down, forwards and backwards, for over an hour, presenting a spectacle that resembled an immense black centipede, with yellow head spouting water, rushing along in large curves like wild, but always to the point of greatest danger. And they won the fight. The flames on the east side of the avenue at last began to dwindle and die out for want of further fuel and the houses there fell into harmless piles of burning rubbish. But the houses on the west side, though all more or less blistered and scorched and some slightly burned, were saved, and with them the western part of the city. Had it not been for this persistent fight or had the flames at that time crossed Van Ness Avenue, there can hardly be a

doubt that practically the entire city would have been burned to the ground and consumed.

Unfortunately, after this gallant fight and success on Van Ness Avenue in the neighborhood of Eddy Street, the fire did, later in the day, cross the avenue at Clay Street, nine blocks north of Eddy, and commenced making its way southward and westward. It raged the whole evening and until after midnight. But the same tactics in fighting it by preventing its crossing Franklin, the next street west of Van Ness, were employed, and, after immense efforts and the burning of five blocks north south of Clay Street between Van Ness and Franklin, the burning there was finally stopped at Sutter Street. But it continued raging northward on the east side of Van Ness nearly all of Friday and smouldering and smoking for many days and in some places even months afterwards. The effects of the fire were not only to level all the frame buildings in the "burnt district"; but alas, by the burning of girders, joists, floor and interior woodwork of brick buildings, to weaken walls and cause them to fall, in many cases completely filling up the streets, many feet deep, with piles of brick and ill-made mortar, steel and iron and other metal work, of all sizes and descriptions used in buildings, fallen and twisted into all conceivable shapes, broken glass, ashes and incombustible refuse of all kinds, which it was impossible for horses and dangerous for adventurous pedestrians to attempt to cross. All the burnt district for mile after mile was a scene of utter desolation and devastation; block after block reduced to a confused but more or less uniform level of debris and rubbish, with here and there chimneys and broken brick walls marking the sites of buildings that had been swept to swift destruction. But, notwithstanding the very general destruction, a number of the well-built edifices, such as the Mint, the Post Office, the United States Appraisers' Building, Montgomery Block, many of the large warehouses, and some other structures, stood practically intact and unharmed, though everything burned around them; which a number of others of the same well-built character, such as the St. Francis Hotel, Flood, Mutual Savings Bank, Spreckels, Crocker, Union Trust Company, Mills, Howard or Kohl and Old Parrott buildings, the new Merchants Exchange, the classic-looking Fairmont Hotel and some few others, stood firm and repairable, though their interiors were more or less burned out. The steel skeleton of the dome of the City Hall still stood, but half the brick and terra cotta work that surrounded it was shaken down by the earthquake; and most of the rest of the immense but ill-constructed building, partly crumbled and almost all burned, lay a huge mass of ruins. All the large buildings along the south side of Market Street, except the Spreckels and Monadnock, were consumed and the walls of most of them fell; but those of the Palace Hotel, though the building was irreparably ruined, still stood erect. The Grand Hotel, Lick House, Occidental Hotel, Russ House all fell. A number of large, tall and unfinished buildings in the neighborhood of Union Square stood, and here and there a steel-framed skyscraper still maintained its position, apparently not much the worse for its experience; but in nearly every direction there was nothing but wreck, not the result of the earthquake but of the fire; and, looking back at the burnt-over hills, they appeared in something like their original contours but covered,

instead of the green grass and chaparral of the olden days, with heaps of rubbish and piles of cinders.

The area of the burnt district, the largest by considerable ever known in any city, consisted of four and one tenth square miles of thickly-built blocks, being equivalent to six times the area of the Great London Fire of 1888. It may be described as embracing nearly everything between two and a half miles of the waterfront from the foot of Fremont Street on the south to the foot of Jones Street on the north and a line commencing at the foot of Jones Street on the north and running thence irregularly southwest to the corner of Van Ness Avenue and Filbert Street; thence southward along Van Ness to Clay, up Clay to Franklin, down Franklin to Sutter, down Sutter to Van Ness, southward again on Van Ness to Golden Gate Avenue, up Golden Gate to Gough; thence across southwest to McAllister and Octavia Streets; thence in an irregular direction southward near Octavia and down to Market and Gough, thence out Market Street to about Dolores and out Dolores to Twentieth; thence south on Twentieth to Mission, including about a block to the south of Twentieth near Valencia; down Mission to Eighteenth; east to Howard, along Howard to Fifteenth, east to Folsom, along Folsom to a little beyond Twelfth and thence to about the corner of Eleventh and Bryant Streets; and thence in an irregular direction between Bryant and Brannan, and in some places going as far south as Townsend, to the water front at the foot of Fremont Street, a block or so north of the Pacific Mail Steamers' Docks. In its longest diameter, nearly north and south, the district measured about three miles and a half in its widest part east and west about two miles and a quarter. Its periphery, roughly estimated, was about ten miles. It contained in population perhaps half the inhabitants of the city. This estimate is based in part upon the fact that the Spring Valley Water Company, which practically supplied all the water used, had on April 17, the day before the calamity, 53,560 customers and that it lost by the fire 23,267, leaving a remainder of 30,293. The ascertained number of persons killed was about three hundred and ninety; and the loss of property was many hundred of millions of dollars, upwards of a hundred millions of which was insured.

As before stated, except the very ill-constructed buildings, the damage by the earthquake was inconsiderable. In the Academy buildings, careful examination on the morning of April 18, after the shock, showed everything in practically good order, except that the open bridges, which connected the front and rear buildings at the sixth floor, being insufficiently supported, fell and crushed the sky-light covering the main entrance to the museum at the second floor. In addition to this, some of the marble slabs of the steel-frame stairway leading from the second to the sixth floor of the rear building, being insufficiently fastened, were thrown out of place, there was a crack in the south wall, next to the Parrott building, at the fourth story. These damages were estimated as not exceeding \$1,000 for the bridge and skylight, \$100 for the broken stairway, and \$100 for the crack in the wall; and besides these there were none, except the inconsiderable breaking of a jar or two or the falling over of a few specimens in the museum.

Within an hour or two after the earthquake, Leverett Mills Loomis, Miss Mary E.



California Academy of Sciences, exterior as viewed from Market Street, following partial cleanup in late 1906 and before complete demolition of the front (Market Street) building in December, 1906. The rear or Museum building is left of center (see also figure, page 473).

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Hyde, Dr. John Van Denburgh, Miss Alice Eastwood and Robert Porter made their appearance and, finding the bridge gone, entered the rear building at the second floor and climbed up the broken stairway to the library, secretary's office and botanical department on the sixth floor as well as some of the curators' rooms on the fifth floor; hastily gathered up all the records which were kept there, a number of documents and manuscripts, including the greater part of the manuscript of this volume, and a number of particularly valuable botanical, entomological, herpetological and other specimens, which they managed to carry out of the building and, by several removals from place to place, finally to save.³⁷⁻² About noon the fire, which by that time was raging

³⁷⁻² Not mentioned by Hittell is that Charles (Carl) Fuchs also came upon the scene, entered the building and saved the Coleoptera types described by G. H. Horn, which he carried to safety (*vide* E. O. Essig, 1931, p. 56).



Museum half (the rear building) of the Academy's Market Street building complex from across the cleared office part (the former front building), as viewed from Market Street. The entrance to the museum was via a bridge which connected through the arched doorway. On the left, the Emporium is in process of construction, and through the narrow opening, also on the left, is a glimpse of the old Society of Pioneer's building.

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around, invaded the Academy property; and in an hour or two the front building was entirely consumed, except granite, sandstone, marble, bricks, mortar and steel or iron work and almost all fell a heap of ruins. Nearly everything combustible in the rear building took fire and was completely destroyed, the library of some fifteen thousand volumes and great accumulations of periodicals and pamphlets and other scientific publications entirely and almost all the collections of over fifty years were burned to ashes; but a large part of the building itself being solidly constructed with reinforced concrete floors, remained practically sound, with plastering and cornices and ornaments chipped, skylights and window glass broken, frames, doors, partitions, shelv-

ing and furniture burned, metal railings twisted, and ugly cracks in some of the outside brick walls; but otherwise solid and strong. It may be added that the front building was insured by nineteen companies for the sum of \$75,000, the back building for \$25,000, and the library and collections for \$50,000, making in all \$150,000. Most of the companies were honest and paid their liabilities in full; some in what may be termed a "picayune" spirit insisted on deductions, and a couple, coming out in bold repudiation, flatly denied liability or obligation, rendering it necessary to arraign them before the bar of justice. The amount of insurance collected by the Academy up to the end of 1906 was \$77,000, leaving \$73,000 still due, of which \$21,000 has since been collected with a fair prospect of collection at least part of the remainder.



Interior of the California Academy of Sciences following the earthquake and fire but after the initial cleanup had begun. Note that the reinforced concrete floors, the first constructed in the United States, did not fail.
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With the great fire there was, of course, an end of the old museum with almost all its collections and of all the Old Library. But as the city presented and is still presenting a spectacle of recovery, recuperation and rehabilitation, hitherto anywhere alas, unexampled, the Academy has not been behind-hand in the work of restoration and advancing far in the building up anew of the institution and the collection of a new, larger and better museum and library. On April 29, 1906, eleven days after the earthquake and fire, a temporary office was rented at No. 1806 Post Street, between Webster and Fillmore, and steps taken for the reorganization of the Academy. Regular business, such as receiving mail, answering letters, taking care of the property, and

rehabilitating of the collections and library, were proceeded without delay. On May 7, the Board of Trustees met at the temporary quarters of the Crocker-Woolworth National Bank on the northwest corner of Clay and Laguna Streets, and appointed an executive committee, which was directed to act for the Board in the management of all the business affairs and temporalities of the Academy. This executive committee consisted of William H. Crocker, president, and J. C. Cebrian, president *pro tem* of the Board, together with E. J. Molera, president of the Academy, and Leverett Mills Loomis, director of the museum. Within a few days afterwards letters began to be received of which the following are interesting examples:

United States Department of Agriculture
Bureau of Biological Survey
Washington, D.C.

May 8, 1906

Mr. Leverett M. Loomis
Director, California Academy of Sciences
San Francisco, California

My dear Mr. Loomis:

Ever since the great calamity I have been hoping to hear some details as to the Academy's losses and prospects, but thus far all I have had has come from Dr. Gilbert. I am anxious to know what the Academy has left to start anew with, and whether it will attempt to rebuild on the old site or go much farther west where the value of the land will not be so enormous.

Just now I have only to say that the Biological Survey will do all in its power to help. We are now endeavoring to make up a complete set of our publications to be sent the Academy's library as soon as any place is available. I assume as a matter of course that your magnificent series of water birds was entirely destroyed.

With best wishes to all,

Very truly yours,
C. Hart Merriam, Smithsonian Institution
Washington, D.C.

May 17, 1906

Dear Sir:

Replying to your communication of the 9th instant, I am authorized to send you, under separate cover by registered mail, a copy of the last International Exchange List of the Smithsonian Institution. The Institution had learned with great regret of the entire destruction of the building, collections and library of the California Academy of Sciences and is prepared at suitable time to aid the California Academy in any way in its power in restoring its own publications which have been lost. Professor F. W. Clarke, a member of the staff of the National Museum and of the United States Geological Survey, stated to me recently that he was prepared to present

to the California Academy a complete set of the Smithsonian Reports. The Institution would also be entirely willing, should you desire it, to relieve you of the labor of appealing to your foreign correspondents and would be glad to issue a circular letter to such institutions as you will indicate on the Exchange List requesting contributions of their publications as far as possible for your Academy, which would then be received by the Exchange Service abroad and transmitted by the Institution free of expense to yourselves. There has been earnest discussion here as to the best method of aiding your Academy to recover from its unfortunate losses. No proposal was made to the Academy up to this time because it was thought that the immediate needs of the people must be looked after first and that we had best await your intimations before taking action.

Again let me repeat in conclusion that this Institution desires to aid the California Academy of Sciences in every way in its power to recover the losses which it has sustained, and that any request that you may make will be complied with if it be at all possible.

Very respectfully yours,
Cyrus Adler, The Academy of Natural Sciences of Philadelphia
Logan Square

May 30, 1906

Mr. J. O'B. Gunn
Corresponding Secretary of the California Academy of Sciences,

Dear Sir:

The Academy of Natural Sciences of Philadelphia sympathizing with the California Academy of Sciences in the affliction resulting from earthquake and fire, as an evidence of appreciation of the work done for the advancement of knowledge during the last fifty-three years, and in admiration of the fine courage which does not succumb to a calamity of even such magnitude, desires to assist in the process of resurrection.

The Council of this Academy has therefore directed that, if required, as complete sets as possible of its publications, together with a collection of duplicate books, be sent to the California Academy as a contribution toward the replacing of its library.

The proposed gift will consist of upwards of eighteen hundred volumes and will be forwarded on receipt of advice as to its acceptability and suggestion as to the best time and mode of transmission.

With hearty wishes for a brilliant future
I remain, on behalf of the Academy,
Yours sincerely,
Edward J. Nolan
Recorder of the Council

On June 1, a building was rented at No. 1812 Gough Street, between California and Sacramento, which afforded more ample and convenient quarters than the rooms on Post Street; and the Gough Street house became and still remains the Academy's temporary abiding place. A hall was provided for meetings and shelving put up for the reception of the few specimens, which had been saved from the fire, and for the extraordinarily large numbers of scientific books and publications and collections of various kinds, which almost immediately commenced to come in as donations and contribution from other societies and from individuals (see Appendix M). The new quarters soon began to fill up; but they were not large enough for the great collections which arrived in November as the result of the Academy's expedition to the Galapagos Islands; and for the reception and temporary keeping of these, until a new and adequate building shall be provided, a large ware-room on the second floor of the Academy's rear building on Market Street, which so well resisted the earthquake and fire, was partitioned off and prepared; and there they were stored. In the meanwhile the work of cleaning up the ruins and removing the debris of the Market Street buildings commenced and has progressed with satisfactory rapidity. It was intended



1812 Gough Street

Temporary headquarters of the California Academy of Sciences, including the Academy's offices, library, and ornithological collections. Reptiles, amphibians, and other collections were temporarily housed at 345 Sansome Street.

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The "new" library of the Academy, temporarily located at 1812 Gough Street. The rapid recovery of the library was the result of the extraordinary outpouring of good will and publications from individuals and institutions worldwide (see Appendix M for details.).
California Academy of Sciences Special Collections (N2214)

for a while to erect a new building in front and repair the rear one; but it has since been determined to clear the entire lot and cover it with a magnificent multistory, Class A No. 1, steel and re-enforced concrete, business structure, with stores below and offices above. It is to cost \$400,000; and it has already been leased as a whole for business purposes for a term of thirty years and at a rent for the first five years of \$5,000 per month and thereafter a sum to be fixed by re-evaluation. At the same time it is expected, with great and apparently well-founded confidence, that a new edifice of classic architecture and a strength to resist for ages the accidents of time will be provided for the museum library, collections, and scientific work of the Academy in some other and more appropriate quarter of the *New San Francisco*, – but the history of all this must remain for some future writer.

SEPTEMBER 3, the Academy met, for the first time after the Great Disaster, at its temporary headquarters at 1812 Gough Street, between Sacramento and California. The New Museum started with the contribution of a California scorpion by Joseph W. Hobson; an important and valuable collection of insects from the Orient by Dr. J. C. Thompson, U.S.N.; over a thousand California plants by Dr. F. E. Blaisdell; a yellow-billed tropic bird from the Bermudas by Harvey W. Henshaw and nine land birds from South Carolina by Arthur T. Wayne; eight California land shells by W. G. W. Harford, and a collection of Pacific Coast shells by F. L. Brittan. The New Library was started with three hundred and forty-three bound volumes, some nine

hundred and sixty-six unbound volumes, eight hundred and twenty-three parts of volumes, and some fifty pamphlets. Among the contributors (see also Appendix M) were Dr. David Starr Jordan, Dr. Hurst, Charles Keeler, J. C. Cebrian, Leverett M. Loomis, Johnson and Pillsbury, Ransom Pratt, C. C. Riedy, U. S. Bureau of Biological Survey, Bureau of American Ethnology, Library of Congress, Missouri Botanical Garden, Connecticut Academy of Sciences, Wisconsin Natural History Society, Colorado Scientific Society, Elisha Mitchell Scientific Society, Brooklyn Institute, American Anthropologist, State-Horticultural Commission of California, Portland (Maine) Society of Natural History. Leverett M. Loomis proposed an amendment to Article VI, Section 1, of the constitution increasing the initiation fee for resident and associate members from \$2.50 to \$5.00, which was accepted and referred to the Council. Several of the large number of letters received from individuals and scientific bodies throughout the United States and Europe, expressing sympathy for the great losses which the Academy had sustained, and accompanied with donations to the New Museum and library, were read. SEPTEMBER 17, the proposed amendment to the Constitution, proposed at the previous meeting, was reported back with approval from the Council; approved by the Academy, and ordered to be submitted to vote at the approaching annual election. On motion of John R. Scupham a committee was appointed for the purpose of taking measures on the part of the Academy to bring the question of the adoption of the metric system by the United States Government before Congress. The committee as named consisted of E. J. Molera, John R. Scupham, J. C. Cebrian and Alpheus Bull. The death of Warren B. Ewer, a resident member of the Academy, on September 9, 1906, was announced. In the Council, a communication was received from the principal of the California School of Mechanical Arts inviting the Academy to be represented at the Celebration of Founder's Day, September 21, 1906. On motion a committee was appointed to attend the celebration at the Lick School in response to the invitation and report at the next meeting of the Academy. Those appointed were General L. H. Foote, Otto von Geldern, Theodore H. Hittell and Leverett Mills Loomis.

OCTOBER 1, among the accessions to the museum were over fifteen hundred insects from the Orient, also a small collection of rare specimens from Durango, Mexico; over two hundred reptiles and amphibians from Guam, the Philippine Islands, China, and California; a large collection of Pacific Coast shells; a number of Indian stone implements, several vertebrate fossils from California, and a bat and three fishes from China. Two hundred and forty-two volumes, and over eight hundred parts of volumes and pamphlets were added to the library. Among contributors were R. E. C. Stearns, the Smithsonian Institution, S. W. Holladay, Buffalo Society of Natural History, P. Nyssman, Dr. L.M.F. Wanger, Biological Bulletin, Fred L. Button, Davenport Academy of Sciences, Staten Island Association of Arts and Sciences, W. Junk, University of Colorado, E. J. Molera, Illinois State Laboratory of Natural History and F. M. Anderson. Theodore H. Hittell, of the special committee appointed by the Council to represent the Academy at the anniversary exercise of the California School of Mechanical Arts on September 21, and to take steps for the future

proper observance of September 21 as the day on which James Lick executed his great Deed of Donation, presented and read a report. It expressed great interest in the progress and proficiency manifested by the School of Mechanical Arts, the orderly behavior of its students and especially the remarkable enthusiasm exhibited by them in their work. It presented, in a prominent manner, the practical working of Mr. Lick's far-seeing philanthropy. He devoted his well-earned wealth not only to the cultivation of science, the most exalted of human pursuits, but also to the application of it to the everyday acts of life; and the absorbing interest of the pupils of the California School of Mechanical Arts in their labors were proofs of the wisdom and excellence of Mr. Lick's prevision. Almost all kinds of mechanical work were taught and learned by the pupils, including patternmaking, moulding, casting, forging, iron and brass work of nearly every description, machine making, architecture, carpentry and joinery, ship-building, wood-carving, drawing, industrial chemistry, together with mathematical and scientific instruction as to the strength of materials, heat calculations, hydrostatics and hydraulics, laws of steam and gases, electrical knowledge and theoretical mechanics; and for the girls cooking, dress making, millinery and the important arts of making the best out of the least. As an example of what was being done, among other specimens of good work, were mentioned the plans of a new steam propeller, designed and drawn by one of the pupils with all its machinery minutely represented and scaled off, together with appended calculations of what it would accomplish. It seemed not impossible that among the young workers there might be future Fultons, perhaps Franklins.

The committee was forcibly impressed, as by an object-lesson brought home by actual results, with the breadth of mind and sagacity of foresight that attracted Mr. Lick in making his great donations. While he properly placed Science first, he did not forget the application of it by educating mechanics and artificers. The more his bequests are studied and the greater the insight gained of the objects and purposes contemplated by him, the more is the mind impressed with the real greatness of the man. Of all the many cases in which men have devoted great wealth to public purposes there was not one, considering all the circumstances, that could compare in the genuine spirit of benevolence and beneficence and the wisdom of its distribution with that of this Grand Old California. In this last act of his long and laborious life, in which he gave the results of his life's toil and, as it were, his life itself, for the benefit of his fellow man, he seemed to have risen above the frailties of human nature and stood forth as a model for respect and admiration. Impressed with their views the committee recommended the adoption of the following resolution as an expression of the sentiments of the Academy.

Resolved, That the California Academy of Sciences heartily favors the annual observance of September Twenty-First as a day that should be marked with appropriate expressions of respect and honor to the memory of James Lick.

Resolved, That a copy of this report and resolution be transmitted by the Secretary to the California School of Mechanical Arts. On motion the report was approved and the resolution adopted, and they were ordered to be spread upon the Minutes.

OCTOBER 15, Leverett Mills Loomis reported the latest advices from the Acad-

emy's expedition to the Galapagos Islands, to the effect that it had been eminently successful, that all were well, and that its return was expected within a very short time. In the Council, Professor Frederick G. Hesse presented his resignation of membership, and it was accepted. NOVEMBER 19, Henry T. Bowie, Lewis P. Hobart, Richard M. Tobin, Judge Charles W. Slack, Alexander F. Morrison, Lewis Polk, S. A. Barrett, Frank Medina, and Arthur W. Foster, Sr. were elected resident members. On motion of Mr. Loomis, a unanimous vote of thanks was tendered the Academy of Sciences of Philadelphia for a magnificent donation of about fifteen hundred volumes of scientific books. At a joint meeting of Council and Board of Trustees, a committee to nominate officers for 1907 was selected and consisted of Ransom Pratt, Herman Kower, William Greer Harrison, W. G. W. Harford and A. L. Kroeber.

DECEMBER 3, Leverett Mills Loomis and others made remarks of congratulation upon the safe return of the Academy's expedition to the Galapagos Islands in the Schooner "Academy," which came into year 1907. The following persons were nominated: E. J. Molera, president; Alpheus Bull, first vice-president; Otto von Geldern, second vice-president; J. O'B. Gunn, corresponding secretary; Joseph W. Hobson, recording secretary; Lucius H. Foote, treasurer; Louis Falkenau, librarian; Leverett Mills Loomis, director of the museum; William S. Tevis, Daniel E. Hayes, William H. Crocker, Charles W. Slack, J. C. Cebrian, George C. Perkins, and Joseph D. Grant, trustees.



Temporary storage for the Galapagos collections in a walled-off section of the old Museum building of the Market Street complex, December 1906. Photo probably by Rollo Beck.
California Academy of Sciences Special Collections

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APPENDICES

APPENDIX A

HISTORIC SKETCH OF THE CALIFORNIA ACADEMY OF SCIENCES^{A.1}

By Theodore Henry Hittell

The California Academy of Sciences is today, fifty years after its foundation, one of the most permanent, as well as one of the most beneficent, institutions on the Pacific Coast. It has taken, and for years has maintained, a prominent place among the learned societies of the United States and of the world. There can be no doubt that, as science or in other words truth, which is its synonym, is destined to become more and more the chief interest and study of mankind, so institutions, devoted to its cultivation, will become more and more influential and important. Even now, if we ask what is the true glory of any enlightened country, such as England for example, no truly intelligent man will answer that it is her empire, her army and navy, or her manufactures and commerce; but the reply will be: her learned men and what they have accomplished. It was well said nearly a hundred years ago that Shakespeare's English birth was of more worth to England than all her imperial navy and it may now be said that her production of Darwin and her other scientific men, who have opened up boundless realms of new truth, is her chief claim in these latter-days to the admiration and gratitude of the human race.

In view of the unquestionable fact that science is thus not only of the greatest concern to all manner of men but is becoming more and more recognized as such, and its study becoming more and more acknowledged as the most important interest of civilization, we may congratulate ourselves that we here in California, which but little more than fifty years ago was the wildest and remotest part of the United States

^{A 1} This essay was prepared by Hittell for presentation at the May 18, 1903 Semi-Centennial celebration of the founding of the California Academy of Sciences. It is a verbatim transcription of Hittell's handwritten manuscript.

have advanced so far as we have, and that we are now in a position to move forward in the great career of knowledge, fully abreast of any other part of our country and with progress, we hope, equal to that of any other part of the world. We occupy an advantageous position on the great western bulge of our continent, at a point destined to become, if it has not already become, the center of the Western World; and all signs indicate a brilliant future of prosperous usefulness. Such being the case, standing as we do upon such vantage ground, though our chief attention must be directed to what is next to be done and how it is to be done, it will not be useless nor uninteresting to cast a brief glance over our past history and the early struggles through which our Academy has passed to reach its present high position.

Among the more scholarly of the famous old founders of our Golden State, there were a number, who on arriving upon the Pacific Coast took a lively interest in the new aspect of the country and the strange objects presented on every side around them. Individual studies were commenced and various information gathered; and doubtless there was some talk of combined efforts and the formation of a society for harvesting and garnering up the rich sheaves of new knowledge that lay open in every direction. But there was nothing definite or practical of this kind done until the fourth day of April, 1853. On the evening of that day seven San Francisco gentlemen, who described themselves as "friendly to the organization of an association for the development of the natural sciences," met by agreement at the office of Lewis W. Sloat on the west side of Montgomery Street, between Sacramento and Commercial. These gentlemen were Dr. Andrew Randall, Dr. Henry Gibbons, Dr. Albert Kellogg, Col. Thomas J. Nevins, Dr. John B. Trask, Dr. Charles Farris and Mr. Lewis W. Sloat. Randall, Gibbons, Kellogg, Trask, and Farris were doctors of medicine; Nevins was agent of the American Sunday School Union and also attorney-at-law; and Sloat, a nephew of Commodore John D. Sloat, who had come out to this country with his uncle in the sloop-of-war Savannah, and was present with him at the raising of the American flag at Monterey in 1846, was a real-estate broker, notary public, and commissioner of deeds.

After what was called "a free conversation and the interchange of views and sentiments bearing upon the object contemplated" Dr. Randall was called to the chair and Mr. Sloat appointed secretary. It was then formally resolved to be expedient and necessary to organize an association for the promotion of natural science and that the name and style of such organization should be "The California Academy of Natural Sciences." It was next resolved that a committee of three should be appointed by the chair to draft a constitution and report the same with suggestions and remarks at a future meeting. The chair appointed as such a committee, Col. Thomas J. Nevins, Dr. Henry Gibbons and Mr. Lewis W. Sloat.

At the next meeting held at the same place on April 11, 1853 – at which another physician, Dr. T. L. Andrews, and another attorney-at-law and journalist, Mr. Edwin R. Campbell, appeared – the draft of a constitution was presented, and also a written report. In this report the committee, or perhaps it may be more proper to say Col. Nevins, for the committee, said that "in the examination of the subject submitted to

them, they had become deeply impressed with the importance of the measure proposed in its bearing upon the interests of Natural Science not only on this coast but in all the civilized world.

“Natural History” – continued the report – “in its various departments, as illustrating the principles of Science, has within the last half century attracted the attention of the scientific world; and our own countrymen have shared largely in the general enthusiasm, which is from year to year becoming more general and absorbing. Scientific associations have been organized in many of the older States, whose investigations and labors have brought to light many of the previously hidden mysteries of nature and have contributed immensely to the progress of the age in the practical application of the natural laws to the purposes of agriculture, commerce and the useful arts. These developments have contributed in no small degree to the elevation of our country in the scale of national importance until she has become the envy and terror of despots everywhere. They have opened to us avenues of wealth and national aggrandizement and placed in our hands the means and facilities for diffusing the principles and blessings of our institutions to the ends of the earth.”

After this refreshing burst of patriotic sentiment, the report briefly referred to what had been done in the interest of science in the other States and concluded as follows: “We have on this coast a virgin soil with new characteristics and attributes, which have not been subjected to a critical scientific examination. Sufficient, however, meets the eye of the naturalist to assure him that this is a field of richer promise in the department of Natural History in all its variety than has previously been discovered. It is due to science; it is due to California, to her sister States, and to the scientific world that early measures be adopted for a thorough survey of every portion of the State and the collection of a cabinet of her rare and rich productions.”

The meeting then took up, read and discussed the constitution, section by section, and, after correction, recommitted it for engrossment. At the same meeting a committee was appointed to draft a set of by-laws; another to draw up an address or circular for publication “detailing the objects of the association and specifying the subjects of collection and investigation, and soliciting the cooperation of all interested in the objects of the association”; and another to publish the report of the committee on organization.

The original constitution, thus presented on April 11, 1853, was not finally adopted until May 16; but in the meanwhile several other meetings were held. At one of them held April 18, by-laws were presented, discussed and recommitted for correction and engrossment; and at the same meeting a number of gentlemen were proposed as corresponding members, including James C. Swan and Captain C. J. W. Russell of Shoalwater Bay, Washington Territory. At a meeting on April 25, a start was given to the cabinet by the donation by Capt. Nakum Haynes of a quantity of marine shells and coral from the South Pacific Islands and a *cassis* from the West Indies. Samuel A. Hastings also presented an otter-skin, bows, arrows and quiver, small baskets, a bone drinking-cup, a mountain squirrel skin and a gray-fox skin, obtained by him from the Rogue River Indians.

The next important meeting, and the one at which the California Academy of Sciences may be said to have been founded by the adoption of the constitution, took place on Monday, May 16, 1853, at the office of Col. T. J. Nevins at what was then No. 174- $\frac{1}{2}$ and is now No. 622 Clay Street, between Montgomery and Kearney, which had by that time become and for a number of years continued to be its meeting-place. As a preliminary at this meeting a list of names was presented; and it was agreed that the gentlemen so named should be considered, and might become, resident members by signing the constitution and paying the membership fee, without further requirement. These names, omitting titles, were Andrew Randall, Henry Gibbons, Wm. P. Gibbons, L. W. Sloat, T. J. Nevins, E. R. Campbell, T. L. Andrews, A. B. Stout, Charles Farris, Leander Ransom, James Nooney, John B. Trask, Joshua P. Haven, David Chambers, Ebenezer Knight, A. Kellogg, S. H. Willey, S. Blakeslee, O. M. Wozencraft, James D. Whelpley, S. D. Simonds, B. Brierly, Wm. Speer, Samuel F. Elliott, H. H. Toland, L. Lanszweert and J. H. Foster.

Of the twenty-seven names thus presented three at least were those of well-known clergymen. It is a matter of tradition that the names of these gentlemen were handed in, without consulting them. However this may have been, one of them soon afterward withdrew his name and declined to act, and none of them, with possibly one exception, ever became an active member. It therefore looked as if there was, or was going to be, a conflict between Science and Religion in California; but in after years gentlemen of the cloth thought better of science and a number, though not as many as ought, joined the Academy.

The constitution, adopted at this meeting of May 16, 1853, was expressly drawn up under and in conformity with an Act of Legislature of the State, entitled "An Act concerning Corporations," passed April 22, 1850. In it the association was called "The California Academy of Natural Sciences" and its object was declared to be "the investigation and development of natural science, the collection of a cabinet of specimens and a library to embrace the standard and current works of Natural History and Natural Science, together with such choice miscellaneous literature as may be contributed by the friends and patrons of the Institution." It provided that "scientific gentlemen may be received as resident members, honorary members, or corresponding members," by a two-thirds vote at any stated meeting; but requiring previous proposition by a member. Donors were to be called contributing members. An initiation fee was required of \$10, and monthly dues of \$2. Life members were to pay \$500. The first annual meeting was to be held on the first Monday of January, 1854, and annual meetings thereafter on the first Monday of every year, which meeting might be "adjourned from time to time, but not beyond the second Monday of January, for closing up unfinished business."

There were to be weekly meetings. The officers were to consist of a president, a first vice-president, a second vice-president, treasurer, corresponding secretary, recording secretary, librarian, and three or more curators. The president and two vice-presidents were to constitute the board of trustees. The duties of these different officers were prescribed. The curators, who were to appoint their own chairman and

secretary and keep a record of their proceedings, were to have charge of the cabinet and catalogue the specimens, and give the names of the donors. Standing committees of three or more were to be elected to take charge of the respective departments of Library, Finance, Publication, and Proceedings; but each member of any such committee could only be elected at a separate balloting. An interesting provision was that at least one scientific lecture was to be given annually on each of the several departments of Natural Science, which was to be written out in full by the lecturer on paper of uniform size to be furnished by the recording secretary at the expense of the association, to the end that they should be bound in volumes and placed in the Library.

At the same meeting, or in the course of the following week, twelve of the gentlemen, who had been named as members, signed the constitution; and at the succeeding meeting of May 23, an election of officers was held which resulted in the choice of Dr. Andrew Randall as president; Dr. Henry Gibbons, first vice-president; Col. Thomas J. Nevins, second vice-president; Dr. Arthur B. Stout, treasurer; Dr. William P. Gibbons, corresponding secretary, Lewis W. Sloat, recording secretary; Thomas J. Nevins, librarian, and Dr. Albert Kellogg, Edwin R. Campbell and Dr. Henry Gibbons, curators. A start was made in the election of standing committees, of which the chairmen became Leander Ransom for the Library; Thomas J. Nevins for Publication; Joshua P. Haven for Finance, and Thomas J. Nevins for Proceedings. By-laws were also adopted at the same meeting, providing that stated meetings should be held weekly on Monday evenings; that proceedings should be conducted in accordance with the usual parliamentary practice, and formulating an order of business. Dr. Kellogg made remarks upon a "plant common in the country, supposed to belong to the genus *Echinosystis*"; and Dr. Randall presented specimens of granite from China, granite from Monterey, bitumen from Santa Barbara, cinnabar from near the Mission Dolores, and carbonate of lime from the Sanchez Rancho in what is now San Mateo, but was then San Francisco County.

At the third meeting thereafter, held June 13, the first election for new members took place, when Alfred Higbee was chosen a resident, and Isaac Lea an honorary member. At the same meeting Dr. Wm. P. Gibbons exhibited specimens of the viviparous perch of California and gave notice that he would present a paper on the subject. On June 20, the publication committee reported that it had had a thousand copies of a circular printed at a cost of \$50, for which it presented the bill. This circular, consisting of a single sheet in small type, of four duodecimo pages, was intended to call public attention to the Academy and its objects, and to give general instructions of how to prepare specimens for scientific examination and forward them. At the same time it was ordered that the recording secretary should procure the incorporation of the Academy, and that the constitution, by-laws and proceedings should be published.

On June 27 Thomas J. Nevins, William Speer and Albert Kellogg, who had been appointed a committee on a seal for the association, were clothed with full power to design and procure the engraving of such seal; and at the same time the recording

secretary, through Col. Nevins, reported that he had procured the execution, acknowledgment and recording of the necessary certificate, whereby the association was legally incorporated. This certificate, which recited the adoption and signing of the constitution on May 16 and the election of the trustees on May 23, was signed in proper form by Dr. Randall as president and judge of election in presence of Lewis W. Sloat. It was acknowledged by Sloat before E. V. Joice, Notary Public, and on the same June 27, 1853, filed for record in the San Francisco County Court.

Thus was launched at a very note-worthy period in the history of our City and State, under interesting and in some respects amusing circumstances, what we are in all seriousness disposed to think one of the most important and valuable institutions in California. It was indeed, as has been said, at a very remarkable period in the history of our City and State. The early flush times of California were not yet entirely over and San Francisco was still in a "boom" of excitement and speculation. The City then had about fifty thousand inhabitants and a large floating population passing through it to the mines and returning thence with long buckskin bags full of chunky nuggets and glittering dust. Bricklayers, stonemasons, ship-carpenters and caulkers were getting \$10 a day, four or five times the ordinary wages of the Eastern States; house-carpenters, blacksmiths, watchmakers and jewellers, \$8 a day; printers from \$10 to \$15 a day. There were twelve daily newspaper and eight tri-weeklies or weeklies. There were five American theaters, besides a French, a Spanish, a German, and a Chinese one; numerous musical, concert and dance halls; two race-courses, and uncountable gambling establishments. The commonest shops rented at from \$200 to \$400 and stores of any pretention at from \$500 to \$1,000 per month. Female servants received from \$50 to \$75 a month; firewood cost \$15 a cord; coal \$50 a ton; fresh butter \$1 a pound; fresh eggs \$1.25 per dozen; turkeys \$6 each, and chickens \$2.50 to \$3 a piece. Every man, who could do anything and was not too lazy or too vicious to work, found plenty to do; and money was abundant, with a million or more of new gold coming in every week from the Sierra foothills.

It certainly speaks well for the underlying, fundamental character of the San Francisco population, in those days and in the midst of such surroundings, that there were so many men amongst them who not only took an interest in science but who were also willing to make so many sacrifices, as they did in its behalf. It was only their faith that they were doing good work and their abiding belief that they were pursuing the right path that enabled the founders of the Academy to persist in their labors through years of difficulty and disappointment. Notwithstanding the flush times and the abundance of money in 1853, there was substantially none for the Academy. Then, as now, scientific men were not money-makers; and the general public took no interest in and paid no attention to their beneficent work. It was therefore only with very inadequate means that the association was kept alive, and enough money collected to preserve the organization and prevent it from being turned homeless into the street. But it was born to live, and it manfully struggled on. The first moneys paid in were initiation fees, which up to June 23, 1853, amounted to only \$50, just sufficient to pay for the printing of the circular. By August 1, about \$50

more had been paid in; and then the ominous words, "No money received at this meeting," or "No cash received," or at last the shorter, though quite as expressive, phrase "No cash," which had already been used several times, began to make their appearance in the minutes with alarming frequency.

There is reason to believe that the early minutes were not kept, or at least not written up, with proper care; and doubtless there was more money paid in or handed to the treasurer and disbursed by him than appear upon the record; but at all events it was barely sufficient to keep the Academy alive. Its room on Clay Street was small and inadequate; the lights used were tallow candles and few of them, and the furniture of the cheapest description. And yet there the old founders continued to meet regularly every Monday evening, week after week, and month after month, and year after year. Scientific papers were read and scientific discussions carried on. With all the disadvantages and all the drawbacks the sacred fire was kept aglow, and the work went bravely on. Some efforts to procure help were made from time to time. On August 1, 1853, on motion of Dr. Albert Kellogg, it was "*Resolved*, as the sense of this society, that we highly approve of the aid of females in every department of natural science, and that we earnestly invite their cooperation." But it was not for a number of year that the ladies accepted the invitation thus so gallantly held out to them.

On September 19, 1853, Lewis W. Sloat resigned his office of recording secretary and Col. Thomas J. Nevins, who was already second vice-president, trustee, librarian, chairman of the committee on publication and chairman of the committee on proceedings was elected to fill his place. From this date on for a considerable time, and for some time previous, the minutes are in Nevins's handwriting; and he seems to have been the inventor of the curt entry "No cash." Towards the end of the year, December 19, there is an entry: "Monthly dues of T. J. Nevins remitted in consideration of lights and fuel furnished by him for use of Academy." At the same time it appears, notwithstanding the apparently very straitened condition of the treasury, that expenses were met, and probably some of the members quietly helped pay them. As early as July 18, 1853, Dr. Randall, the president, who was a man of business affairs as well as scientific proclivities, had offered a reward of \$50 apiece for two best essays on trees and plants suitable for cultivation in California, and particularly with reference to their adaptability to form wind-breaks, stop sand drifts, and guard against encroachments and damages by waves and floods.

The first annual meeting was held on January 2, 1854; but at that meeting the subject of awarding the premiums offered by Dr. Randall and the reading of the essays so engrossed the attention and time of the members that the annual election had to be postponed until January 5, at which time the old officers were re-elected with the exception that Leander Ransom was chosen second vice-president in place of Thomas J. Nevins, Thomas, J. Nevins treasurer in place of A. B. Stout, and Hiram G. Bloomer recording secretary in place of Thomas J. Nevins. About a dozen new members had been elected before the end of 1853, and in 1854 a number more joined, including several very active and efficient ones, such as Dr. William O. Ayres and Dr. H. H.

Behr. On March 27, 1854, a committee, consisting of W. P. Gibbons, Kellogg and Behr, was appointed to prepare for publication and abstract of the transactions of the Academy. Subsequently, on May 8, another committee, consisting of Nevins and Ransom, was appointed to correspond with the editors of the *Pioneer Magazine* on the subject of publishing the "Transactions"; but on May 22 they reported that they had not been able to effect a satisfactory arrangement. Notwithstanding the difficulty, thus indicated, to find a publisher, it was on the same May 22, on motion of Dr. H. Gibbons, "Resolved that the standing publication committee be requested to prepare a brief history of the origin of the Academy as found in the early minutes, suitable for publication in the *Proceedings*."

On May 29 the standing publication committee reported that the letter press of 500 copies of the Transaction of the Academy of one hundred pages, royal octavo, 1500 ems to the page, would cost about \$300 and the 500 copies of single page lithographic plates would cost about \$900. The committee was thereupon instructed to open a subscription for a fund of \$2500 to pay the expense of publication. A subscription was subsequently opened, the price of the proposed publication being fixed at \$5 per copy for the first number; but the project did not meet with encouragement and seems to have been quietly dropped; and it was not until September, 1854, that a proof sheet of the first regular publication of the *Proceedings* of the Academy was struck off. This was in a weekly religious newspaper called "The Pacific," which undertook to publish all the proceedings at a comparatively trifling expense. And it was in that journal – in reference to which it may be observed that Religion in California thus took Science by the hand and supported her early steps, (which was a very handsome thing for her to do!) – that the earliest *Proceedings* of the Academy were published.

In the meanwhile what seemed at the time to be a bright ray of sunshine for the struggling institution appeared in the announcement by Dr. Trask at the meeting of July 2, 1854, that certain proprietors of Clinton (now a part of East Oakland in Alameda County) offered to donate to the Academy grounds for a Botanical Garden. A committee was appointed to investigate the subject; and it reported that Messrs. Chipman and Aughinbaugh, the proprietors referred to, offered to give the Academy ten acres of land in the rear of the projected new City of Clinton, or a less number of acres within the proposed city limits, for the purpose indicated. For several months it was fondly expected that the Academy would be thus enriched but, upon further investigation, it appeared that, while the maintenance of a Botanical Garden in Alameda County might be a great gain to the prospective City of Clinton, it would be a millstone around the neck of the struggling Academy, which was barely able to keep its head above water as it was; and the proposed magnificent donation was respectfully declined with thanks for the offer.

Some small amount of money from monthly dues and from initiation fees of new members came in from time to time; but the treasury continued in a state of chronic depletion. On September 4, 1854, Col. Nevins, at whose office on Clay Street the meetings were still held, presented a receipt in full for the rent of office and furniture,

storage of library and specimens and stationery used from April 18, 1853, to July 31, 1854. He considered it, as he said a gift of at least \$300 to the Academy; and the Academy in return tendered to him its thanks for his liberal donation. On January 6, 1855, at the annual meeting Col. Nevins, as treasurer, reported the receipts for the previous year at \$441.00 and the expenditures at \$461.95, leaving a deficit of \$20.95 for which the Academy was indebted to him. It was very evident that the institution was not in a condition to maintain a Botanical Garden or indulge in any expenses that were not absolutely indispensable. And yet it continued the work for which it was organized with exemplary persistence and astonishing vigor. Its library consisted of nearly a hundred volumes of standard books, which were in constant use, and its cabinet of specimens, which had been increased by 1100 received during the preceding year, was in reasonably fair condition. It held its meetings regularly every Monday evening, at which there was good attendance; and it was rare that matters of great interest were not brought up and discussed, frequently something about new plants by Dr. Kellogg or something about new fish by Dr. Ayres, but many of the other members contributed papers or introduced subjects which manifested that the objects of the society were kept steadily in view, were being enthusiastically pursued, and were in the best of hands.

But financial affairs did not improve. By the beginning of 1855 the old "flush times" of California were over. It was early in that year the Adams & Co., Page Bacon & Co. and numerous other banking concerns went to the wall and involved the community in great losses. A sort of general bankruptcy stared everybody in the face. Even the little dribblets that had been flowing with difficulty into the treasury of the Academy became more and more attenuated. At the first meeting in 1855 it was found necessary to reduce the monthly dues from \$2 to \$1, and soon afterwards a committee had to be appointed for the collection of even those amounts. Very few new members joined, while unavoidable expenses still had to be met. In April, 1855, Palmer, Cook & Co. donated the room rent for one year. Towards the end of that year, on motion of Nevins, it was resolved to ask the Legislature of the State to make an annual appropriation for five years to aid the Academy. But, as was to have been expected, the appeal was in vain, the Legislature being busy with politics and appropriation bills of an entirely different character. At the annual meeting of 1856 Col. Nevins, as treasurer, reported the receipts of the previous year at \$641 and the disbursements at \$672.70, leaving a deficit due him of \$25.70.

The year of 1856 opened with a few changes in the constitution and particularly a reduction of the cost of life-membership from \$500, which nobody had been willing to pay, to \$100. Under this new arrangement in February, 1856, Joseph C. Palmer and Charles W. Cook, who had already donated the rent, contributed \$100 each and became the first life-members of the Academy. And it may be added that for several succeeding years they allowed the Academy to occupy its room free of rent, thus very materially helping the institution along. At the beginning of 1856 Dr. Randall, who had hitherto served as president, found it necessary to give his undivided attention to his large business affairs, which on account of the failure of the banks and the general

financial depression had become complicated, and withdrew from that office; and Leander Ransom was elected in his place. A few months afterwards James P. Casey assassinated James King of William; and the Vigilance Committee of 1856, one the most significant social movements in the history of California, organized and commenced its great work of cleaning the City of its low-lived scoundrels. It was in the very midst of its Herculean labors when Joseph Hetherington, a man of business capacity but unbridled passions, on account of a debt which Dr. Randall owed but could not immediately pay, openly attacked and killed him. The result, as might have been expected by any one that had the remotest knowledge of the spirit and earnestness of the Vigilance Committee was that Hetherington was seized, tried, condemned and shortly afterwards executed by it in the presence of the entire population of San Francisco; and the members of the Academy of Sciences in the meantime (July 27, 1856) were called upon to turn out in a body and take their places in the long funeral procession of their first president.

The records of the Academy for the next few years are very imperfect. There was not during those years, and for some ten years altogether, a more peaceable, orderly or better-governed city in the United States, or for that matter in the world, than San Francisco, thanks to the Vigilance Committee and the old Peoples' Party that grew out of it. But the business depression continued – caused partly by the failure of the placer mines to pour out the same unlimited amounts of gold as in former days; partly by the want of confidence in financial transactions resulting as inevitable and long-continued effects of the breaking of the banks and the wide-spread insolvency produced thereby; and partly by the drawing away of population, first by William Walker's filibustering raids in Nicaragua and afterwards by the Fraser River Excitement in British Columbia. Real estate went down to a very low figure and merchandize, except hard-tack, pork and beans and other goldrush or filibuster supplies, became a drug in the market. But, notwithstanding all these various discouragements that appalled the business community, our California scientists, who apparently had little or nothing in the way of wealth to lose, kept on at their work. Some time in the early part of 1857, however, their meetings, instead of being held every Monday, were restricted to the first and third Mondays of every month. In the latter part of 1862 the project of a course of lectures for the benefit of the Academy was thought of; but it did not yield any money. By that time the ownership of the Phoenix Block on Clay Street, where the Academy met, had passed from Palmer, Cook & Co. to Pioche, Bayerque & Co. to whom for a few months rent was paid, but soon, like their liberal predecessors, recognized the financial straits of the institution and the difficulty it experienced in keeping a roof over its head; and in the end they too, like Palmer, Cook & Co., being impressed with the good work done and the value of the Academy to the Community, not only remitted the rent but Mr. Pioche and Mr. Bayerque joined it as life-members and added materially to its means.

But the lack of sufficient funds to properly carry on the institution still continued, and it seemed as if it would certainly have to go under. In the beginning of 1866 another attempt was made to obtain aid from the Legislature; but with the same zero

result as in 1856, and for the same reasons. The scientific work in the meanwhile continued to go on with the same enthusiasm as from the start but the meeting room became too small and inconvenient and the library, cabinet and collections were growing too large to be properly kept in such limited quarters. Various propositions were made to box up the properties and store them, at one time in the upper hall of the Lincoln School Building and at another time in any safe place that could be procured. In April, 1866, an attempt was made to form a connection with the Mechanics' Institute. But as that also proved impracticable, it was at length resolved to hire rooms in the fourth story of Donohoe's building on the southeast corner of Montgomery and Sacramento Streets; and to that place the Academy moved, several of the members and especially Prof. J. D. Whitney, R. E. C. Stearns, Dr. James Blake, Wm. H. Dall, William Ashburner and Louis Janin contributing the amounts necessary to fit them up. But these new rooms were soon found to be inconvenient and inadequate; and the Academy moved back to 622 Clay Street, where it managed to secure better quarters than it had previously had; and there it remained until the beginning of 1874. By that time its membership had increased so largely and its collections grown to such proportions that it was thought proper to rent and move into the old First Congregational Church building on the Southwest corner of California and Dupont Streets where it remained for seventeen years and until this building, in the most prominent and desirable locality in the City, was prepared for it and occupied in the beginning of 1891.

In 1868 the constitution was amended, adopting the name of "The California Academy of Sciences," leaving out the word "Natural" of the old title, and making a few changes in other respects. By the middle of that year (July 20, 1868), Mr. Edward Bosqui, the treasurer, reported that the Academy was in debt over \$500. Soon after this announcement a motion was made by Dr. Stout to assess each member \$5 to pay off the indebtedness; but the motion was "laid over until the next meeting," and it appears to have been laid over for an indefinite number of meetings. But the deficit was finally made up; and at the annual meeting of 1870 Mr. Elisha Brooks, then treasurer, reported "that the Academy was free from the burden of debt for the first time." A new brighter day had at last dawned. At the annual meeting of 1871 Dr. James Blake, the president, was enabled to say that "Within the last two or three years a change has evidently taken place in the community as regards scientific culture. The increased attention given to science in modern education and the recognition of the value of scientific labor by government has not failed to react beneficially upon the Academy. During the year just past thirty-five new members have joined the institution, and the collections have been rapidly increased. While in the library only 59 new works were received in 1868, and 189 in 1869, the number of new works added to the Library in 1870 was 364."

At the same time it was found advisable to reincorporate under the amended laws of the State, and in May 1871, with this object in view, a new constitution was adopted, which however differs very little from the previous one, except in respect to the important and responsible duties of the new Board of Trustees, for which seven

prominent gentlemen were regularly elected; and under their charge the reorganization was properly effected. There was a new impetus given to the affairs of the society; many new members, including the first citizens of San Francisco, a number of them as life-members, gave in their names and were elected; and at the annual meeting of 1873 Mr. Brooks was enabled to report a balance in the treasury of \$1568.43 and at the annual meeting of 1874 a balance of \$4562.72.

The early struggles of the California Academy of Sciences were now substantially over; its dark days were gone; its future was assured. But it is always to be remembered that the chief reason for this great change in the condition of our affairs was the fact that among the 472 members, which the Academy numbered at the annual meeting of 1874, appeared the name of our great patron James Lick. This extraordinary man, to whom we owe almost all that we possess, this prince of benefactors, the munificence of whose philanthropic donations was only equalled by the good judgment and the spontaneous, unsolicited and unostentatious manner of making them, – became a life member on February 17, 1873, and at the same time he gave us this magnificent property, our now permanent abiding place, “in consideration of the desire he had to promote the diffusion of science and the prosperity and perpetuity of the Academy.”

APPENDIX B

The Letters of Alice Eastwood and Leverett Mills Loomis to Edward William Nelson, May 7-June 7, 1906 and one by Alice Eastwood to J. N. Rose dated May 2, 1907

On April 18, 1906, a devastating earthquake struck the San Francisco Bay area. Measuring an estimated 8.6 on the Richter Scale, directly and indirectly it resulted in staggering losses in both lives and property. Much has been written about the earthquake and its aftermath, and published pictures of the havoc wrought by the earthquake and ensuing fire tell tales of tragedy scarcely imaginable to those who have not weathered like cataclysmic natural catastrophes.

The California Academy of Sciences suffered. Its two buildings, built on property in downtown San Francisco on Market Street deeded to it by James Lick in the late 1870s and opened as a public museum in 1891, were lost as were most of the Academy's collections, library, and records. Although oral tradition, passed down from curator to curator over the past 85 years, preserved some stories about the immediate impact of the earthquake on the Academy, the absence of a written record covering those first few hours after the shock hit the city created undocumented heroines and heros, sometimes at the expense of those not fortunate enough to have their advocates in high places.

Recently, in addition to the comments by Theodore Hittell (see pages 467-475), several letters have turned up that shed light on this critical moment in the life of the Academy. In one letter, written on May 7, a scant three weeks after the earthquake, Alice Eastwood, Academy Curator of Botany, gives a first-hand account of what went on immediately following the earthquake and of the heroic efforts of those who saved what they could from the mayhem created by the collapse and fire that led to the loss of the West's premier research museum. Written the same day but quite independently, the letter by Leverett Mills Loomis, then Director of the Academy, presents additional information and insights on the events that transpired within hours following the first shocks and before the Academy was finally engulfed in flames.

These letters were brought to our attention by William Cox, Assistant Archivist, Smithsonian Institution Archives, and are reprinted here in their entirety with the permission of the Smithsonian Archives. The originals of these letters, two written by Alice Eastwood and two by Leverette Mills Loomis, all to Edward William Nelson, between May 7, and June 4, 1906, may be referenced in Smithsonian Institution Archives, RU 7364, Edward William Nelson and Edward Alphonso Goldman Collection, Box 4, Folder 2 (Eastwood) and Box 7, Folder 1 (Loomis).

Readers should be aware that lightly-censored versions of two of these letters, both dated May 7, 1906, one each by Alice Eastwood and Leverett Mills Loomis, were published in *Science* magazine on 25 May 1906 (NS, vol. 23, pp. 824-826) in which the anonymous author (E. W. Nelson) announced the extent of the devastation



Alice Eastwood (1905)
California Academy of Sciences
Special Collections



Edward William Nelson (1926)
California Academy of Sciences
Special Collections

and made a plea to the scientific community to provide assistance to restore the Academy as a viable scientific institution.

In addition to these four letters, a fifth, written by Alice Eastwood to Joseph Nelson Rose on May 2, 1907, one year after the earthquake, reveals the depths of her despair and personal concerns with respect to the future of the botany department at the Academy (Letter #5, p. 210; original in SIArchives, RU 221 {US National Museum, Division of Plants, 1886-1928}, Box 9; Folder, Alice Eastwood).

Letter #1: Alice Eastwood to Edward William Nelson, May 7, 1906

2421 Ridge Road, Berkeley, Cal.
May 7, 1906.

My dear Mr. Nelson:

Your letter was a surprise to me and gave me pleasure that you thought to write to me at this time to express your sympathy.

I do not feel the loss to be mine but it is a great loss to the scientific world and an irreparable loss to California. My own destroyed work I do not lament, for it was a joy to me while I did it and I can still have the same joy in starting it again. The botanists at the Univ. of Calif. have given me the use of their library and collections and even a room which for the present I can call mine.

The kindness of my friends has been great. I did not know that I had so many or that their affection for me was so warm and sincere. I feel how very fortunate I am; not at all like an unfortunate who has lost all her personal possessions and home.

To me came the chance to care for what was saved from the ruin of the Academy and with the help of my devoted friends I was able to do it. Nobody knew where a safe place was to be; for it seemed as if the whole city must go.

Here is my story in which you may be interested.

The earthquake didn't frighten me as it was felt less where I live than in other parts of the city. There were a few broken dishes but only one that I prized. After cleaning up the mess, getting my breakfast, etc. I went down to the Acad. I could not get in. The store next door was open and they were taking things out and I knew there was a door of communication with the front of the building. It was as still as death. I had to climb over the demolished marble staircase at the entrance of the museum but found the stairs going up the front building all right. When I reached the top a yawning chasm stretched between the two buildings as the bridge had been thrown down. I tried several doors but everyone seemed to have deserted the place.

{page 2} I got out again and walked up and down Market St. There were streams of people going down and others coming up, some with bundles others dragging trunks along the sidewalk. Everywhere buildings were in ruins. Presently Robert Porter came along and called to me and when I told him my trouble he came back with me but the door was still locked. We went to the back and the fire was on Mission St. and the police were driving people from their houses. We again entered by the store door and when we came to the front hall here we found Mr. Loomis, Mr. von Geldern, Gen'l Foote, Mrs. Newell, and John Carlson. Miss. Hyde was in the library getting out the records etc. Porter pulled me up the ruins of the marble staircase and we entered the museum the door of which was now open. The marble staircase leading up to the top was in ruins and we went up chiefly by holding on to the iron railing and putting our feet between the rungs. Porter helped me tie up the plant types and we lowered them to the floor of the museum by ropes and strings tied together. Not a book was I able to save nor a single thing of my own except my Zeiss lens without which I would feel helpless. We got all the things to the street and then it seemed as if we might have to leave them. The building next door was on fire and the military were in command and nobody was allowed on the street. I rushed across to the safe deposit opposite where I have a box to implore them to take the things. There was a line of men a block long and my place would be at the end so I dashed back with the permission of the officer in charge. Porter then went and came back with the word that an expressman on the corner of Stockton & Ellis would take them but we had to carry them over as no vehicles were allowed on the street. I asked the man how much it would be and he said "a high price". I possessed \$14 and feared that it might be more, when he said "three". I almost fell of the seat. I paid him four and took all the things except a few to my place of residence, thinking {page 3} it as safe as any. In the afternoon I went down to reconnoitre and see what the Academy looked like. The back building stood, the staircase was still there, or rather the banisters but everything within seemed burned up. The poor people were crowded in Union Square from which later they had to go and the Chinese were swarming out of their homes laden with their possessions. The fire was threatening from two directions and I decided to move the "Academy" to Russian Hill that evening. With the help of friends this was done though everything had to be carried. The plants were the heaviest and largest bundles. There were some boxes of insects, some bottles of reptiles which Dr. Vandenberg [*sic*] had saved, the heavy record books of the Acad., and several things

that I didn't know about. I don't know if there were any types in the bird collection but apparently none were saved.^{B.1} They were not in my care. It was hard work. I packed my own things when I returned to my home and laid down to rest but not to sleep. It was bright enough to read by the red glow in the sky and it might be necessary to leave at a minute's notice. Only what one could carry could be saved for there was no chance to hire any kind of a conveyance and the charges were extortionate when by chance, there might be an opportunity. The poor people lined up against both sides of the street, temporarily safe. In the early morning families went by, the children each one carrying something and trudging along without a murmur. Nobody seemed to be complaining or sorrowful. The thought of saving themselves or those dear to them and their scanty possessions dominated all. The sound of the trunks being dragged along I can never forget. This seemed the only groan that the ruined city seemed to make. I took ~~Aeady~~ my things up to Russian Hill next morning and in the afternoon was able to have them, "the Academy," removed to Fort Mason where they were put in the care of Mrs. Hahn whose husband is a Captain there. {page 4} I felt easy at last; for it seemed the safest place in the city and returned to Russian Hill. Mr. John Salem Howard, the architect of the Greek Theatre invited me to take refuge in his home and I was glad to accept. I am still here but hope to be settled in a place that I can call home before long. You will be amused at what I saved. My very best clothes, underware for changes, my mother's bible [*sic*], the family photo. album, a little and original New England Primer, my type writer [*sic*], my revolver for protection in case I had to sleep out, four Navajo blankets, a pillow and eiderdown quilt. All my pictures and books gone and many treasures that I highly prized; but I regret nothing for I am rich in friends and things seem of small account. I have since moved the Acad. things back to Russian Hill as it was saved by the great effort of the few people who live there. My only regret is that I left for Berkeley Thursday evening instead of staying to help them; but I never dreamed it was possible to save it. It is an experience that I am not sorry to have had if it could have been without the terrible loss. There is not a reference library left in San Francisco. I am afraid that in the rush of rebuilding the city, these essential but apparently immaterial things will be neglected.

I am beginning already to recollect and intend to go to type localities as much as possible and shall not hesitate to beg hospitality of my friends. I expect to have very little aid from the Acad. but have a tiny income of my own and can get along I feel sure. The Bot. Dept. has a fund of \$5000. of its very own besides. I feel sure that the Board of Trustees will not permit Loomis to divert all the funds to his own {page 5} particular ends. The Acad. has resources though most of its present income is cut off. \$175,000 insurance, mortgage on Santa Catalina Isl. (I don't know how much) and Chas. Crocker fund. I don't think any of its funds were in other property in San Francisco. It is not at all ruined. Besides, it has the vessel that is now at the Galapagos Islands.

^{B.1} As pointed out earlier (see footnote 37.2), no mention is made either by Hittell or by Alice Eastwood of the presence of Charles (Carl) Fuchs who saved some of the insect types, mostly the Coleoptera types described by G. H. Horn.

I am writing in detail as I intend this for my other friends, especially the Merriams, who are in Washington.

With grateful appreciation,
Sincerely your friend,
[signed] Alice Eastwood

The Hittells lost nine houses but their home was not burned.

Letter #2: Leverett Mills Loomis to Edward William Nelson, May 7, 1906

California Academy of Sciences
San Francisco, Cal., May 7, 1906

My dear Mr. Nelson:

I thank you for your kind letter.

My father and myself passed through the earthquake safely. He said "I do not like the earthquake, but I will be patient."

I got down to the Academy at about 7 a.m., and found the bridge connecting the two buildings gone and the museum stairs badly wrecked. I managed to climb up to the top floor and got all the records together and began to get them down when Miss Hyde came to my aid. Together we saved all the records. Miss Hyde also saved the ms. of Mr. Hittell's history of the Academy. Later Dr. Van Denburgh came and got out most of the reptile types. Then Miss Eastwood came with a friend and saved the greater part of botany types. Miss Hyde also saved most of the insect types. All the time the fires started by the earthquake were closing in on the Academy.

{page 2} The Pioneer building and the Emporium (both buildings joined the Academy) were burning when I paid my visit to the Department of Ornithology. As a starter for the bird collection I selected the types of *Oceanodroma macrodactyla*, and as the beginning of the bird library I took your favorite Des Meers. As I wanted to be the first donor to the Academy's new ornithological library, I put Brown's illustrations under my arm as I passed the store-room. So you see we made a beginning before the end had come.

The work accomplished by the Galapagos Expedition has exceeded our most sanguine expectations — among the treasures are a series of Darwin's Rail and tortoises from islands where they were long supposed to be extinct.

The Galapagos collections will form the foundations of our new museum of the greater Academy. Our plan of action is fully worked out.

The library is the hardest thing to replace; the books will come slowly, but they will come.

The fire burned out the "Renton," and my friend Dr. Van Denburgh housed us for ten days. Have found good quarters, and I am now finishing the reorganization.

Sincerely yours,
[signed] Leverett Mills Loomis

Letter #3: Alice Eastwood to Edward William Nelson, May 22, 1906

2421 Ridge Road, Berkeley, Cal.

May 22, 1906.

My dear Mr. Nelson:

Your very helpful letter was received yesterday and gave me fresh courage and cheer.

I went over to S.F. yesterday to see William Crocker, the President of the Board of Trustees, to read him your letter and ask his authorization to have the donations sent to the place in Berkeley where I have taken two rooms. He said to go ahead and seemed to catch fire at the idea.

Now, you may do first what you want with my letter for the sake of the cause and I know that you use good judgment. I fear that the "I's" were rather many, and you might cut some out.

Mr. Crocker also told me that the salaries would not be cut off, as I feared but would have to be reduced.

When one has resolved on nothing, a very little will seem a great deal and all will help me start the herbarium and library again.

Things can be sent to me at 2705 Hearst Avenue, Berkeley. I am in Geo. Hansen's house.

{page 2} My dear friend, your kindness and sympathy affect me deeply and I thank you with all my heart,

[signed] Alice Eastwood

P.S. Since writing this it has occurred to me that it would be well to have only botanical material sent to my address. I would not perhaps have place for the rest and it might embarrass me in other ways also. You might write to Mr. Loomis about other things. A letter addressed Cal. Acad. of Sciences will reach him at 1806 Post St. S.F. I do not want botanical stuff sent there as I cannot attend to it while I can at my own place and with the use of the library and herbarium of the Univ. of Calif. I think that I wrote you that Prof. Setchell had most hospitably put everything at my service and had given me the use of a room. Please put that in the article you write.^{B.2} I am writing this P.S. on the boat and my pen is joggled. I am on my way to S.F. to complete the list of plants saved which I began yesterday.

Yours, A.E.

Letter #4: Leverett Mills Loomis to Edward William Nelson, June 4, 1906

California Academy of Sciences
San Francisco, Cal., June 4, 1906
1812 Gough St.

^{B.2} *Science*, 1906, N.S. vol. 23, no. 595, pp. 824-826.

My dear Mr. Nelson:-

Kindly pardon my long delay in answering your letter of May 15.

A smallpox quarantine, insurance matters, and the removal of the Academy to more permanent quarters have occupied my time.

“Science” for May 25 came to hand this morning. I thank you for your appeal on behalf of the Academy. I am sorry you did not have something better from me than the hasty scrawl, written in a few spare moments under the pressure of business affairs. Probably {page 2} it is best that it was so, for it would have been impossible to give fully the plans for the Academy without mentioning important business matters now pending, which can not be made public at this time.

If the plans of the Executive Committee are realized, the museum will be located in a public reservation and an income building will be erected on the Market Street lot.^{B.3}

The Academy has secured fine temporary quarters, and we have ample room for books and specimens. In short, we are ready to receive everything now — “while the tear is still in the eye.”

We will get Wells, Fargo, and Co. to enlarge our frank, which is now limited to packages of twenty pounds and under.

We appreciate your kind offices with the Smithsonian. Miss Hyde {page 3} had written to them previous to the reception of your letter, and we have received offers of assistance from them.

These have been days that have proved the metal of men — proved what they really are. They have proved that you are a true friend to the Academy.

My father has passed through the earthquake, fire, and smallpox without harm, and enjoys his books as of old.

With the best wishes for your welfare, I remain

Sincerely yours,

[signed] Leverett Mills Loomis

Letter #5: Alice Eastwood to Joseph Nelson Rose, May 2, 1907

Del Norte Co. Cal.

May 2, 1907

My dear Dr. Rose:

Your letter of April 22 was forwarded to me here where I have come on a short botanical trip. I am greatly obliged to you for your offer of specimens but there is no place to put them nor any provision for their care so at present they would be an encumbrance rather than a help.

I am not at all sanguine about the future of the botanical department of the

^{B.3} The Academy negotiated with the City and County of San Francisco to locate its new research facilities, library, and public museum in Golden Gate Park. The first of its seven-building complex opened to the public in 1915. On the Market Street lot, it erected the *Commercial Building*, which secured the Academy a steady, if somewhat unpredictable, income from leases until the property was sold in the mid-1980s.

Academy; for those who are in charge act as if they were hostile to it and me and give me no help whatever. I even had a bill sent {page 2} me for [membership] dues not long ago, for the first time since I have been connected. It is all so uncertain that for the present, it is best for you as well as for me to do nothing and plan nothing.

The money was given me for this trip and I am here studying the manzanitas, trying to locate Howell's species but without success. What will become of my own collections I do not know, perhaps you may get some of them.

This letter may sound discouraging but it is not so. Do you know where I can get Bentham & Hooker's *Genera Plantarum*? I would like to get it second hand, if possible.

{page 3} The Academy's types are in the vaults of the Crocker Bank, quite inaccessible. Those specimens of ours which you have would be put in the same place, so you will do the Acad. a favor if you will keep them awhile longer.^{B,4}

Yours sincerely,
[signed] Alice Eastwood
2705 Hearst Ave.,
Berkeley, Cal.

^{B,4} It is not clear why the type specimens, at least the botanical specimens, were kept in the Crocker Bank vaults, or why botanical specimens returned on loan would end up there. And, it is equally not obvious what caused the alarm bells to ring for Alice Eastwood. Based on what correspondence we have seen, it seems quite clear that she and the Academy's director, Leverett Loomis, were not on the best of terms. But there is nothing in the records to suggest that the botanical collections were in jeopardy, any more than those of any of the other collections. As an aside observation, with the return of the Galapagos expedition and the collections amassed by it, the greatest concern must have been for its security and for preparation. Alice Eastwood was not especially interested in the Galapagos flora, and this may have exacerbated an already fragile relationship with the Academy's administration (see last paragraph in Letter #1 above). For instance, with respect to Herpetology, which we take as a case example, Joseph Slevin, then assistant in that department, observed, "On the morning of the disaster Dr. Van Denburgh hurried to the museum to see if the building was in danger. Finding the fire spreading rapidly, he made his way to the department with all speed, his mind being set on saving the type specimens. He succeeded in saving ten of these, three miscellaneous specimens, as well as the department's catalog and Jan's Iconographie. These were housed in his home outside the fire limit and were kept there until the Academy again secured permanent quarters.

"The expedition to the Galapagos Islands did not return until November 29, 1906, bringing back 4,506 specimens [the count of reptiles only {Eds.}] with which to start a new collection. The housing of the Galapagos material [which also included a large collection of plants, insects, and shells {Eds.}] proved a problem owing to the damage done the previous April. However, the director of the Academy at that time, Mr. Leverett Mills Loomis, had a portion of a floor in the damaged building walled off before the return of the expedition, and the department was installed here until it became necessary to tear down the wreck of the building [see photo, p. 481].

"When the demolition of the building was about to take place (in early 1907) the department moved to a vacant store on Turk Street, near Market Street. This move permitted the erection of temporary shelving, and with the purchase of glassware it became possible to begin sorting, labeling, and cataloging the Galapagos collections." (in Slevin and Leviton, 1956, *Proc. Calif. Acad. Sci.*, ser. 4, 28(14):530.)

APPENDIX C

HONORARY MEMBERS OF THE ACADEMY: 1853-1906

(Name [* indicates initially a resident member; † honorary life member, based on longevity and/or service to the Academy], date of election as honorary member, principal residence at time of election [if known])

AGASSIZ	Alexander	Emmanuel Rodolphe	01/03/88	Cambridge, MA	United States
AGASSIZ	Jean	Louis Rodolphe	02/13/54	Cambridge, MA	United States
ALCOCK	Alfred	William	01/05/03	Calcutta	India
ALLEN	Joel	Asaph	01/04/92	New York, NY	United States
BACHE	Alexander	Dallas	10/03/53	Washington, DC	United States
BAIRD	Spencer	Fullerton	01/22/55	Washington, DC	United States
BALFOUR ^{C.1}	Edward	Green	10/17/59	Madras	India
BEHR*†	Hans	Hermann	01/05/79	San Francisco, CA	United States
BLOOMER*	Hiram	George	01/15/72	San Francisco, CA	United States
BONAPARTE	Charles	Lucien	07/20/56	Paris	France
BREWER*	William	Henry	01/04/92	New Haven, CT	United States
BRIDGES	Robert		06/20/53	Philadelphia, PA	United States
BROOKS	William	Keith	01/03/88	Baltimore, MD	United States
BUNSEN	Robert	Wilhelm	01/03/70	Heidelberg	Germany
BURBANK	Luther		01/03/05	Santa Rosa, CA	United States
CHAPER	Maurice		01/03/88	Paris	France
COMSTOCK	John	Henry	01/05/03	Ithaca, NY	United States
COPE	Edward	Drinker	01/03/88	Philadelphia, PA	United States
CORY	Charles	Barney	01/03/88	Chicago, IL	United States
COSSON	Ernest-Saint-Ch S.		01/03/88	Paris	France
COUES	Elliott		01/03/88	Washington, DC	United States
CRÉPIN	François		01/03/88		Belgium
CRESSON	Ezra	Townsend	01/03/88	Philadelphia, PA	United States
CROCKER	Margaret	Eleanor	01/03/88	Sacramento, CA	United States
CURRAN*†	Mary	Katharine	01/05/85	San Francisco, CA	United States
DALL*	William	Healey	11/02/74	Washington, DC	United States
DANA	James	Dwight	01/03/70	New Haven, CT	United States
DANIELSSEN	D.	C.	01/03/88		Norway
DARLINGTON	William		08/01/53	Westchester, PA	United States
DARWIN	Charles	Robert	01/02/72	Downs	England
DE CANDOLLE	Alphonse	Louis-Pierre	01/03/88	Geneva	Switzerland
DE VRIES	Hugo	Marie	01/02/06	Amsterdam	Netherlands
DELAFIELD	Joseph		06/20/53	New York, NY	United States
DUTTON	Clarence	Edward	01/03/88	Englewood, NJ	United States
EDWARDS*†	George	C.	01/06/96	San Francisco, CA	United States
EHRENBERG	Christian	Gottfried	01/02/72	Berlin	Germany
EISEN*†	Gustavus	Augustus	01/02/83	San Francisco, CA	United States
ENGELMANN	George		01/03/70	St. Louis, MO	United States
FARLOW	William	Gilson	01/03/88	Cambridge, MA	United States
GILBERT*†	Charles	Henry	01/02/00	Stanford, CA	United States
GILL	Theodore	Nicholas	01/05/03	Washington, DC	United States
GIRARD	Charles	Frédéric	01/08/55	Washington, DC	United States
GOODALE	George	Lincoln	01/04/92	Cambridge, MA	United States
GOODE	George	Brown	01/03/88	Washington, DC	United States
GOODSIR	John		10/17/59	Edinburgh	Scotland

^{C.1} See footnote 4.4.

GRAY	Asa		03/23/57	Cambridge, MA	United States
GREVILLE	Robert	Kaye	10/17/59	Murryfield	Scotland
GÜNTHER	Albert Charles	Ludwig Gotthilf	01/05/03	London	England
HARKNESS*†	Harvey	Willson	01.07/84	San Francisco, CA	United States
HAYDEN	Ferdinand	Vandiveer	01/02/82	Philadelphia, PA	United States
HECTOR	James (Sir)		01/03/88		Scotland
HELMHOLTZ	Hermann Ludwig	Ferdinand von	01/03/70	Berlin	Germany
HENRY	Joseph		09/19/53	Washington, DC	United States
HILGARD*	Eugene	Woldemar	01/02/00	Berkeley, CA	United States
HITTELL*†	Theodore	Henry	01/05/03	San Francisco, CA	United States
HOOKER	William	Jackson	05/12/56	London (Kew)	England
HOOKER	Joseph	Dalton	01/03/70	London (Kew)	England
HORN	George	Henry	01/03/88	Philadelphia, PA	United States
HOWARD	Leland	Osslan	01/05/03	Washington, DC	United States
HUMBOLDT	Alexander von		04/06/57	Berlin	Germany
HUXLEY	Thomas	Henry	01/03/70	London	England
JORDAN*†	David	Starr	01/03/98	Stanford, CA	United States
KEELER*†	Charles	A.	01/06/02	Stanford, CA	United States
KELVIN	William	Thompson	01/02/00	Glasgow	Scotland
LANGLEY	Samuel	Pierpont	01/03/88	Washington, DC	United States
LANKESTER	Edwin	Ray	01/02/06	London	England
LEA	Isaac		06/13/53	Philadelphia, PA	United States
LECONTE*†	John		01/03/88	Berkeley, CA	United States
LECONTE*†	Joseph		01/03/88	Berkeley, CA	United States
LEFÈVRE	Théodore		01/03/88	Brussels	Belgium
LEIDY	Joseph		01/03/88	Philadelphia, PA	United States
LORQUIN*†	Ernest	F.	01/05/85	San Francisco, CA	United States
LOVERING	Joseph		01/03/88	Cambridge, MA	United States
MAURY	Matthew	F.	08/01/53	Washington, DC	United States
MEDLICOTT	Henry	Benedict	01/03/88	Calcutta	India
MERRIAM	Clinton	Hart	01/05/03	Washington, DC	United States
MILNE-EDWARDS	Henri		01/03/70	Paris	France
MITSUKURI	Kakichi		01/05/03	Tokyo	Japan
MUELLER	Ferdinand von		10/19/63	Melbourne	Australia
NEWTON	Alfred		01/05/03	Cambridge, MA	England
OSBORN	Henry	Fairfield	01/05/03	New York, NY	United States
OWEN	David	Dale	07/18/53	New Harmony, IN	United States
PACKARD	Alpheus	Spring	01/03/88	Salem, MA	United States
PEIRCE	Benjamin		01/03/70	Cambridge, MA	United States
PHILIPPI	Rudolpho	Amandus	09/19/64	Santiago	Chile
PICKERING	Charles		06/20/53	Boston, MA	United States
POWELL	John	Wesley	01/02/82	Washington, DC	United States
PUTNAM	Frederic	Ward	01/05/03	New York, NY	United States
QUETELET	Lambert	Adolphe Jacques	07/28/56	Brussels	Belgium
REGEL	Eduard	August von	01/03/88		Germany
RIDGEWAY	Robert		01/05/03	Washington, DC	United States
RILEY	Charles	Valentine	01/03/88	Washington, DC	United States
RITTER*†	William	Emerson	01/02/00	Berkeley, CA	United States
RIXFORD*†	Gulian	Pickering	01/06/02	Berkeley, CA	United States
SACCARDO	Pier-Andrea		01/05/85	Padua	Italy
SARS	Georg		01/03/88	Christiana	Norway
SAUSSURE	Henri	Louis Frederic	01/03/88	Geneva	Switzerland
SCLATER	Philip	Lutley	01/05/03	London	England
SHARPE	Richard	Bowdler	01/05/03	London	England

SILLIMAN, Sr	Benjamin		07/18/53	New Haven, CT	United States
SOLMS-LAUBACH	Hermann	Graf zu	01/04/92	Strassburg ^{C.2}	Germany
STEINDACHNER	Franz		01/05/03	Vienna	Austria
STEJNEGER	Leonhard		01/05/03	Washington, DC	United States
STOLL	Otto		01/04/92	Zurich	Switzerland
STORER	David	Humphreys	06/26/54	Boston, MA	United States
TORREY	John		03/23/57	New York, NY	United States
TRAGNAIR	Ramsey	H.	01/05/03	Edinburgh	Scotland
VASLIT* [†]	Frank	A.	01/06/96	San Francisco, CA	United States
VERRILL	Addison	Emery	01/03/88	Washington, DC	United States
VILLADA	Don Manuel		01/02/06	Mexico City	Mexico
WALCOTT	Charles	Doolittle	01/05/03	Washington, DC	United States
WALKER ^{C.3}	Francis	Amasa	01/03/88	Cambridge, MA	United States
WATSON	Sereno		01/04/92	Cambridge, MA	United States
WHITNEY*	Josiah	Dwight	01/04/69	Cambridge, MA	United States
WHITTLESEY	Charles		07/18/53	Cleveland, OH	United States
WILSON	Edmund	Beecher	01/05/03	New York, NY	United States
WYMAN	Jeffries		01/03/70	Boston, MA	United States
YALE* [†]	Charles	Gregory	01/07/84	San Francisco, CA	United States

^{C.2} Strassburg, formerly part of Germany but now France (Strasbourg).

^{C.3} According to Essig (1931, *History of Entomology*, pp. 789-790), the English entomologist Francis Walker "was elected an honorary member of the California Academy of Sciences, January 3, 1883." Curiously, Essig's own biographical sketch of Walker shows that he was born at "Southgate, England, July 31, 1809, and died at Wanstead, England, October 5, 1874," nine years before he was, according to Essig, elected an honorary member. Essig erred inasmuch as it was not the entomologist, Francis Walker but the American economist and former president of the Massachusetts Institute of Technology, who was elected an honorary member on January 3, 1888. As an aside, in 1883, the Academy held its first meeting of the year, its annual [business] meeting on Tuesday, January 2 (*q.v.*), at which time only one person, Dr. Gustavus Augustus Eisen, was elected an honorary life member.

APPENDIX D

Comments by Charles B. Turrill on the visit of Professor Louis Agassiz, extracted from an unpublished typescript of a paper^{D.1} he read at the meeting of the California Academy of Sciences, Wednesday evening, August 21, 1918 titled "The Early Days of the Academy"

Come with me, for it was my privilege to be present that night of September 2d, 1872. We ascended the narrow stairs on Clay street below Kearny, one flight is steep and straight, the second steep and circular. Tonight the gas is lit in the halls. The candle, which had been frequently placed on the upper landing to guide our steps up the winding way, is discarded. Passing along the upper hall, we glance into the library room, some ten feet square, well stocked with important reports and scientific books. We enter the assembly room, about fifteen feet by forty. Along the sides are cases containing specimens. Across the front end stands a table. Behind it sits the President, Professor George Davidson. All chairs are occupied. The room is packed. Near the President sit strangers in our midst. We are surprised at the great attendance, especially of San Francisco's most noted people.

Professor Davidson calls for order and states that, unless there is objection, the regular business will be suspended. In a few well chosen words, he voices the Academy's welcome to an honored guest, an honorary member almost from its founding, and introduces America's most noted scientist, Professor Louis Agassiz.

I shall never forget that night. Good Dr. Kellogg and rugged Dr. Henry Gibbons who were near me were the only survivors of the seven founders. They had seen their pet grow from nothing. They had bid a last farewell to many a coworker. They had welcomed hundreds of new recruits. They [alone] could grasp the full import of the words Agassiz uttered.

From the published account of that speech, let us quote but these words:

It gives me very great pleasure to be among you this evening, and I can assure you, that as long as I live I shall be proud to have met such a reception at your hands as has been tendered me this evening. Twenty years ago, when your Academy was founded, I longed to come across the continent, and perhaps to stimulate and encourage those who were struggling in their efforts to organize a scientific body in a community which was then entirely engaged in gathering gold. My reverence for the Academy of Sciences of California has been growing since I have seen, in your published proceedings, that in a city which is so entirely absorbed in business, you have raised the standard of intellectual culture; and as I have devoted my entire life, without regard to anything else, to the promotion of knowledge, I have felt that you are doing a good thing, not only for

^{D.1} Turrill's paper contains much traditional Academy lore that is not factual. For instance, Turrill refers to "That bright April Sunday" when the first meeting of Academy founders was held. Unfortunately, April 4, 1853 fell on a Monday, not Sunday. Turrill also refers to "Dr. Andrew Randall" as having come to California "as a gunner on the *U.S.S. Portsmouth* in 1847." Randall was neither an M.D. nor was he on board the *Portsmouth*; and the flag was raised by John Montgomery at Yerba Buena on July 9, 1846 (and by Commodore John Sloat on July 7, 1846 at Monterey) not 1847. In a later portion of the manuscript, Turrill refers to "Mr. Bond, Assistant Secretary of Smithsonian Institution," in a direct quote from the Academy's *Minute Books*. "Mr. Bond" is actually Spencer Fullerton Baird, but in this instance the fault is not Turrill's inasmuch as it is recorded as Mr. Bond in the handwritten minutes. Turrill's recollection and description of the Agassiz visit are probably more reliable because he was on the scene, and it clearly left an indelible impression. The original manuscript of Turrill's comments is in the Archives of the Academy.

the City of San Francisco, not only for the State of California, but for the United States, as a great Empire, and a power among nations; for you showed by your zeal, among the difficulties which surround you, that you meant, even if you did not succeed to the full extent that you desired, to keep up the spirit which leads forward in intellectual growth. Now, I hold that it is your mission to show to the western part of this continent that without intellectual growth there is no greatness for the State.

APPENDIX E

(Proposal by Josiah Dwight Whitney, Director of the California State Geological Survey, 1860-1872, for a State Museum to be administered by the California Academy of Natural Sciences)

Outline of a Plan for the disposal and care of the Specimens collected by the State Geological Survey of CALIFORNIA

"In order to provide for the safe keeping of the specimens collected by the State Survey in every department of Natural History, and to place them where they will not only be kept in order, under the charge of responsible persons, but added to after the close of the Survey, and made available for the purposes of scientific and popular education, it is proposed that the following plan be adopted -

"The collections shall be divided into two portions one of which shall be deposited in charge of the State Agricultural Society at Sacramento, the other confided to the care of the California Academy of Natural Sciences, at San Francisco, under the conditions and in the manner substantially as follows:

"The State Agricultural Society shall receive a full set of the plants, soils, and other specimens illustrating the agricultural resources of the State; also a set of the rocks, minerals and ores, exhibiting its geological structure and mineral wealth. These shall be arranged in the hall of the Society, in a room or rooms provided for that purpose and fitted with cases by the Society. The arranging and labeling of the specimens shall be done by the geological corps.

"The remainder of the specimens collected on the Survey shall be deposited in a building to be erected at San Francisco and called the "State Museum" This building shall be erected by private funds subscribed by the citizens of San Francisco and the State in general, aided by an equal amount furnished by the Legislature. The Governor, the President of the Academy, and the State Geologist shall constitute the committee to take charge of the erection of the building, purchase a suitable lot of land, and make the other necessary arrangements.

"The plans for a fire-proof building considered suitable for the purpose will be prepared during the summer, and an estimate of its cost given, as furnished by a reliable architect. The general idea, as far as elaborated is to put up a brick building on a 50-vara (137 feet) lot; the building to be about 80 by 40 feet, with a basement story, in which will be rooms for preparing specimens, for the custodian, and one large one for a library and place of meeting of the Academy. (See plan of basement story accompanying this sheet). Above, it is proposed to have a large hall about 36 feet high, surrounded by galleries dividing it into three stories. The floor of the hall will be occupied by flat cases and large specimens; the galleries will be filled with upright cases for the various specimens in all departments.

"During the continuance of the Geological Survey, the building, after it is sufficiently near completion to be used, may be occupied, as far as required, for the purposes of the Geological Survey; and, as the survey progresses, the collections made by the geological corps, together with such as may at that time be in the possession of the Academy, or such of them as may be deemed of sufficient value, shall be arranged in the building, which may be opened to the public, at such time and under such conditions as shall be deemed proper by the Committee above specified.

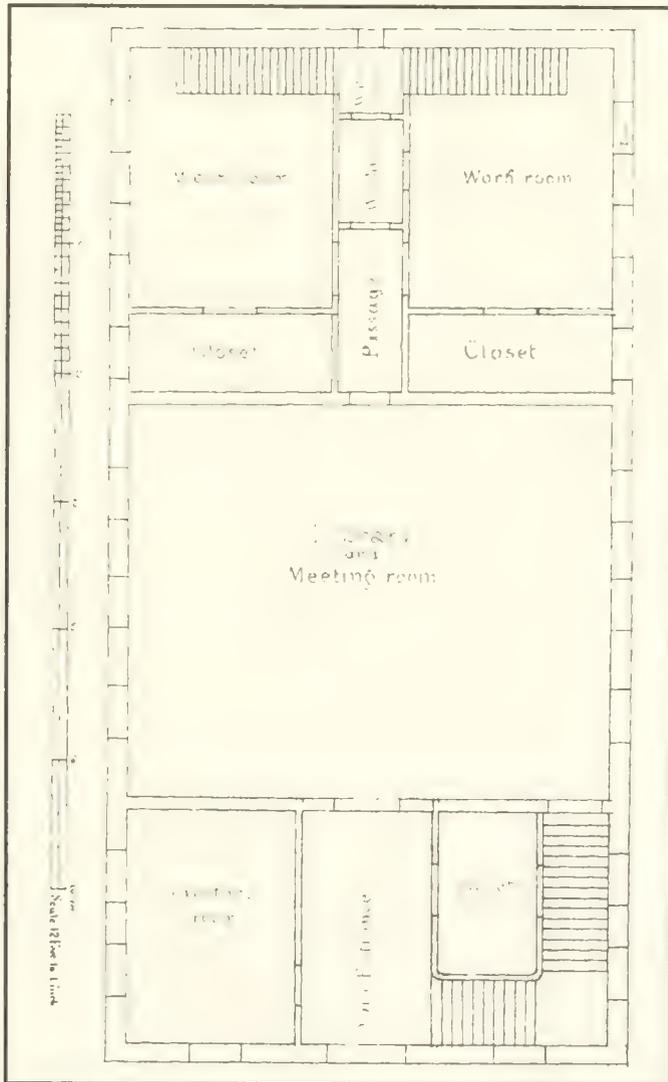
"At the close of the Geological Survey, the building shall be delivered over to the charge and custody of the Academy of Natural Sciences, to be used by them as a place of meeting, and for all the purposes required by the Academy, and it shall be the duty of the Academy to keep the collections in order, to make such additions to them as they may be able to, and to make

the whole museum available as far as possible, and as is consistent with its safety, for the purposes of scientific and popular education.

“The whole building and collections shall be subject to a yearly examination and Report by a Board of Visitors, consisting of the Governor, the State Superintendent of Public Instruction, and the President of the Academy, who shall make an annual Report to the Legislature on the condition of the building and collections, and the museum in which they have been kept during the year.

“The Legislature will be asked to make an annual appropriation of \$ _____ to pay the expenses of taking care of the building and collections, which shall be expended under the direction of the Academy.

“The duplicate specimens not required for exhibitions in the Museum may be used at the discretion of the State Geologist for exchanges with other Museums and Societies of Natural History, or in such way as shall best promote the interests of science and the welfare of the State.” (Smithsonian Institution Archives, Record Unit 52 [Assistant Secretary {Spencer Fullerton Baird}, 1850-1877; Incoming Correspondence, vol. 24, p. 292 *et seq.*].)



APPENDIX F

Reception Held for the Officers of the *Jeannette* and the Bennett Exploring Expedition
From the *Minute Books* of the California Academy of Sciences,
Aug. 3rd 1874 to Nov. 15th 1880, pages 235-237

June 16th 1879

A special meeting of the Academy was held for the purpose of giving a reception to Lieutenant De Long and the officers of the Bennett Exploring Expedition to the North Pole. A large number of ladies & gentlemen were present. Dr. H. W. Harkness, Vice President of the Academy presiding.

The following members of the Expedition were present. Lieut. G. W. De Long, U.S.N. Commander; Lieut. C. W. Chipp, Executive Officer; Lieut. W. Dannenhower, Navigator; G. W. Melville, Chief Engineer; J. W. Ambler, Passed Assistant Surgeon; Jerome J. Collins, Meteorologist and Special Correspondent of the N.Y. Herald; and R. S. Newcomb, Naturalist.

A paper on "Arctic Discovery" by Dr. A. B. Stout initiated the exercises of the evening.

Dr. Harkness then introduced Lieut. De Long to the audience, when he addressed them as follows:

When the officers of this Expedition were invited to attend this meeting, I answered that nothing would give us greater pleasure, but we hoped to be excused from taking any part in the discussions until after our return from the Arctic regions. This amicable peculiarity of ours, it seems is not to be tolerated, however unfit I am to reply with any degree of propriety to the very kind expressions of your wishes. As for this particular expedition, there is nothing much to say. It has been made possible by the liberality and enterprise of a single individual, and he had placed it in charge of the officers of the Navy, and by an Act of Congress it has been awarded official sanction. It is peculiar in another way, for it is the first to attempt to reach the North Pole by going through Behrings Straits. Other vessels and Expeditions for the relief of Sir John Franklin have gone through this Strait, but this will be the first practical Arctic Expedition to attempt this route to the Pole. We expect to undergo the same trials and embarrassments as other polar explorers have met with.

We shall begin our work at the 71st parallel of latitude. Beyond this, all is unknown, and we shall first determine whether there is land, ice, or sea. You will excuse us from further outlining our work until our return, when nothing will give us greater pleasure than to tell you all we have done.

Dr. H. Behr and Mr. J. P. Moore were called on by the President and briefly responded. Dr. Behr giving a short outline of the probable features of Arctic Flora and Mr. Moore expressing the hope that discoveries of great importance to microscopists might be made.

Mr. Charles Wolcott Brooks, being called upon, responded on behalf of the Ethnological Section of the Academy. In offering his word of kind encouragement, he remarked that men who use obstacles as chipping-stones to success, are apt to win; and he but expressed the wish of all Ethnologists that Lieut. De Long and his brave comrades should overcome all barriers that the Frost King might interpose as obstacles to their success. After giving reasons, at some length, why a Polar Continent may exist, he concluded as follows:

In the quiet stillness of their long winter evenings we trust they may occasionally think of their California friends, whose hearts go with them. Individual happiness depends so largely upon the quality of human thought that we feel, after meeting our brave guests face to face that when far away among the auk and fulmar and silent pelicans of the still more silent North, though limited in number to a comparatively small but trusty bunch, they will have ample company when surrounded by the multitude of grand and noble thoughts their perilous but most interesting expedition will inspire.

Therefore, on behalf of men of science throughout America and I may safely say throughout the world, we bid them one and all God speed -- success and a safe return, with all the good results their souls may crave.

William Bradford, the well-known artist, was called on for some remarks by the chair, and said that he could not but feel proud at the daring shown by the members of this expedition, for they knew that in attempting to reach the northern regions by the way of Behrings Straits they were liable to be carried from home instead of towards it, should they be cast away or their vessel become wedged in by the ice fields. This was the experience of all who had attempted the route, while those on the other side, by way of Baffins Bay and Greenland, in case of accident, were hourly drifted towards home and relief. He closed with a fervent hope that they might be spared to return in health, and their efforts crowned with success.

Mr. Jerome J. Collins a member of the expedition said that he went in a double capacity, that of a specialist in meteorology and a representative of the Press. He should specially investigate the (????) of storms above the latitude of 60°. From the Equator to this point the researches of science had pretty thoroughly established the rules governing them; but above this point all was uncertain. He and his companions were satisfied with their leader, and nothing should be left undone on the part of any one connected with the party to make the result of the Expedition of great value.

APPENDIX G

TABLE 1. Member attendance at Academy meetings, 1853-1883

Weekly meetings were held during the period 1853 and 1859, biweekly or monthly from 1860 to 1862, and biweekly from 1863 through 1883 *et seq.*. Numbers are for "regular" meetings only; attendance at special meetings are not included, such as the Agassiz addresses {A} on September 2 and September 25, 1872, the reception for the crew of the *Jeannette* {J}, or the special address by Edward D. Cope {C}. Blanks spaces or those with "nd" indicate attendance was not recorded by the Recording Secretary for that meeting. (Key: x/x = Weekly meetings; c = meeting cancelled; x? = complete count not available, minimum number present shown; x+y = members plus visitors; x++ = members plus several visitors, otherwise not counted)

Year	Month																								
	January	February	March	April	May	June	July	August	September	October	November	December													
1853				7/7	8/6	c/8	6/6	5/7	6/7	5/9	9/7	5/5	9/4/5	3?/5	4/4	5+1/ 3+4	3+1/6	7+1/ 10	9+1/ 8+2	8/8+1					
1854	7/ 10+2/ 6+3	9+1/ 6+3/ 9+1	9+1 8+3	7+3/4 8+1	5+2/ 12/8	5/6+2 8+1	7+1/ 8+1	5+3/ 8+1	5+1/7 4+1	6+1/6 4+1	5+3/8	9/ 11+3	4/8	6+1/8	12/7	7+3/ 9+3	7+1/ 8/4?	nd	5/5?/ 7?	4?/3? 5?/6	5/5/6				
1855	m/13/5 8/8	10/ 9+1/ 10	8/7	7/7	8/7	7/7	11/12 10+1	11+3/ 5	10+2/ 8	8+1/6 9	7/6/ 9	7/9	6/7	6/7	7/7	8+3/ 6+2	8+2/ 7/3	5+1/ 5+1	7/7+1	7+4/6	5/5/5				
1856	15+1/ 12+2	13+3/ 9+1/ 11+1	9+3/ 9+1	9/6? 9/12	11/12 10+1	11+3/ 8+2	6/9	5/8+2 8+2	11+3/ nd	4+1/ 3/nd	6/1? 7+1	4/6/ 7+1	7+2/ 5+1	7+1/9	10/7+ 1/5	4/9	6/2	7+2/ nd	4/2	6+1/4	4/7				
1857	7/nd																								
1858																									
1859																									
1860																									
1861																									
1862																									
1863	12	11	14	14	15	9	10	7	11	9	10	6	12	12	11	11	11	7	7	6	12	6	10	7	
1864	15	12+4	11	13	12+4	11	10	9	11	14	9	11	7	9	11	3	9	7	8	7	nd	7	7	nd	
1865	12	12	nd	10	12	12	9	7	10	8	11	9	8	10	9	9	8	7	7	5	8	8	nd	7+1	6
1866	12	8	5	9	11	12	5	5	8	12	11	13	10+1	12+2	20	12	12+1	10	14	15	14	13	19	12	
1867	29	23	28	25	29	26	32	33	32	29	25	20	20	25	23	20	12	12	23	23	30	26	35	37	

DATA UNAVAILABLE

TABLE 1 (continued). Member attendance at Academy meetings, 1853-1883

Year	Month											
	January	February	March	April	May	June	July	August	September	October	November	December
1868	33	23	35									
1869	20	14	20	20	15	nd	18	20	25	22	16	15
1870	30	25	22				12	15	17	14	16	14
1871	25	nd	20	25	20	25	nd		25	nd		30
1872	26	25	nd	24	17	23	10	24	20	19	40	22
1873	38	40	nd	43	38	30	35	40	nd	23	30	21
1874	64	30	48	49	66	40	50	nd	50	53	45	46
1875	50	17	45	18	18	22	65	50	62	50	25	24
1876	37	30	21	19	38	40	nd	nd	32	21	37	14
1877	15	19	40	19	40	30	nd	20	20	20	15	15
1878	21	nd	18	24	30	30	30	nd	26	20	24	29
1879	nd	35	55	30	nd	32	45	34	19	24	18	J ²
1880	43	12	27	27	nd	nd	26	27	nd	25	23	15
1881	33	nd	28	24	23	nd	72 ⁴	16	36	68	R ⁵	60
1882	33	90	55	40	60	55	50	70	25	120	nd	25
1883	31	95	40	nd	44	nd	nd	nd	25	nd	38	84
									16	16	30	42
									20	25	40	22
									30	31	29	18
									26	26	18	28
									24/ A ¹	29	31	30
									26	31	29	28
									43	45	42	30
									33	45	42	30
									47	43	45	30
									40	28	20	20
									35	25	19	19
									52	22	10	10
									16	16	18	18
									nd	nd	18	nd
									25	36	15	20
									38	nd	18	nd
									28	32	45	40
									C ³	nd	40	45
									15	15	22	22
									12	nd	nd	?
									45	28	90	40
									40	100	35	120
									30	20	25	45
									42	40	40	22

¹ (A) Louis Agassiz and the Hassler Expedition

² (J) Lieut. George Washington De Long and the officers of the *Jeannette* (Bennett Exploring Expedition)

³ (C) Edward Drinker Cope

⁴ There is no accounting for the sudden spurt in member attendance at the biweekly meetings, but it happens again in late May, in June and in early November in 1881 and in May, October, and November in 1882. Even so, attendance is erratic and numbers range unpredictably from the low mid-20s to low 100s; this pattern continues for several years though it becomes more difficult to follow because member attendance is less frequently recorded in the minutes.

⁵ (R) Attendance at the reception for Lieut. Berry and the officers of the *Rodgers* was not recorded but said to have been large.

APPENDIX H

Memorial to Theodore Henry Hittell

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I

IN MEMORIAM: THEODORE HENRY HITTELL¹

Born April 5, 1830—Died February 23, 1917

The California Academy of Sciences was bereaved of one of its most illustrious members in the death of Mr. Theodore Henry Hittell, February 23, 1917. He would have been 87 years old in two months. For nearly 30 years he had been an uncompromisingly loyal and assiduous member of the Academy, and in the future history of this institution, the value of his personal attachment and fidelity will grow ever clearer and stronger.

What a span of life was his! He was born April 5, 1830, and it is true to fact to say that the world has traveled farther since that year than during all its previous recorded history. In 1830 the echoes of the battle of Waterloo had hardly died away. Napoleon had been dead scarcely nine years. Charles X was King of France, but the Fates had decreed that within the next few months he was to give way to Louis Philippe. William IV this year succeeded George IV as King of England, and Victoria's memorable reign was to begin seven years later. The United States had but fairly started in the second half century of its experiment as a Republic. Andrew Jackson was President and the brewing of Nullification in South Carolina was raising the shadow of the coming Rebellion over States' Rights and Slavery. Railroads were in their infancy. The

¹ Read at the regular monthly meeting of the California Academy of Sciences, August 15, 1917.



Theodore A. Hittell

first practical locomotive to run in America was delivered the previous year; and the first American locomotive was made in the year 1830.

Gauged by the tremendous sweep of Science since that period, it is fair to say that Science was then just starting on its real career. It will probably not be disputed that the age of Darwin is a sharp dividing line between ancient and modern science. Present methods of research and generalization are now so commonplace that the older limited, narrow systems seem to belong to the distant dark ages. And yet in the year 1830, Charles Darwin was an undergraduate in Cambridge University, which he had entered in prospect of being a clergyman. He was now becoming fascinated with natural science, and his history-making voyage in the "Beagle" was to begin the following year.

What was to become Hittell's beloved California, was in 1830 but an obscure province of Mexico, known as Alta California. Its northern boundary was San Francisco Bay. The Missions were already withering under the threatened blow of Secularization. There were about 30,000 Indians here, who were reduced in a few years to 10,000. The white people were few and almost wholly Spaniards. The mode of life of the Spaniards was, in description, charming. It had an ease, a hospitality, a gaiety unequalled. There was but little industry beyond the raising of cattle, which were killed in immense numbers for their hides which were sold to the occasional sailing vessels which came to the Coast. It was not until four years later that Richard H. Dana was to start on that voyage from Boston to California, which called forth *Two Years Before the Mast*, a book which W. Clark Russell has termed "the greatest sea-book that was ever written in any language." John A. Sutter did not come to California until 1839. San Francisco was not. Yerba Buena was the bay "which came up to Montgomery Street" and was very seldom visited by sailing vessels. There was a dilapidated Presidio, and several miles distant was the already waning Dolores Mission. The major portion of California was a vast desert for the greater part of the year. The Sierra Nevada Mountains were but little known, and most of the civilization was on or near the Coast. There was but one Custom House, which was situated at Monterey. The coast was bleak and repelling, though relieved in the spring

season by a few oases of green. "On the whole coast of California, there was not a light house, a beacon, or a buoy, and the charts were made up from old and disconnected surveys by British, Russian and Mexican voyagers." At that time, California, except for a short season, was substantially a vast, forbidding, unlovely waste. Its possibilities were not suspected. It awaited the magic touch of Anglo Saxon civilization.

It was on April 5, in this year of 1830, that Theodore H. Hittell was born, in Marietta, Lancaster County, Pennsylvania. As would naturally be expected of one of his strong and versatile character, his ancestors were sturdy, thrifty and solid people. His paternal great grandfather, Peter Hittel, was a Protestant, brought up in Rhenish Bavaria, and driven into exile by religious persecution. He, with a brother, escaped into Holland, thence coming to America in 1720, and settled down in Upper Milford Township, in Lehigh County, Pennsylvania, where he passed the remainder of his life as a farmer. He was successful, progressive and energetic, and was a forceful, and useful member of the community.

Peter's son, Nicholas Hittel, the grandfather of Theodore, remained on the farm in Upper Milford Township. He was a man of prodigious physical strength, and was an industrious and successful farmer, and, it is said, came to be regarded by his neighbors as a sage. He married Susanna de Vesqueau, or Wesco, as the family name was later called. Her father, Francis de Vesqueau, was a French Huguenot, and was driven by religious persecution from his home in Alsace, and came by way of Holland to Pennsylvania. He and his two sons served in the American Revolution, Francis being in the Second Battalion, Second Company of Northampton County, Pennsylvania. Nicholas Hittel also served in the American Revolution in the Northampton County Militia, from 1778 to 1782. The family of Nicholas and Susanna consisted of eleven children.

Jacob Hittel was the eighth son and the last child of Nicholas. He was the father of Theodore and was as remarkable a man as his son. He was brought up as a farmer's boy, and at fifteen years of age, he could speak only in Pennsylvania German. He hungered for an education and began attendance at an English school. This was three miles and a half from his home, and he walked to school and back every day, whatever

the weather or the condition of the roads. When sixteen years old, he walked to Philadelphia, a distance of forty-seven and a half miles, to go to a better school. He found a good family where he worked each half day for his board, and went to school the other half day. He bought an English dictionary, which he studied incessantly. In carrying out his steadfast purpose, he would work and save until he had accumulated a small sum of money; then he would devote himself to school until the money was exhausted. Thus, by intense industry and unremitting frugality, he acquired a good English education. When he was twenty years old, he decided to become a physician, and began studying in the office of Drs. Benjamin and James Green, at Quakerstown, Pennsylvania. The next year, he entered the College of Physicians and Surgeons at Philadelphia, but at the end of two years his funds were exhausted. In those days, it was the custom of medical students, if they so desired and felt competent, to enter upon practice before final graduation; and therefore, in his twenty-third year, the young doctor opened an office at Segersville, Lehigh County. This same year he married Catherine Shertzer, of Millerstown. Her ancestors came from Germany, and settled in Pennsylvania, and were successful and influential people. Catherine Shertzer became the mother of Theodore Hittell. She lived to be over ninety years old. She was an unusual woman, of great personal charm and intellectual gifts, and her son always spoke of her with a keenness of appreciation that denoted the greatest of affection.

The newly married couple settled down in Segersville, where, due to his energy and ability, supplemented by the popularity of his accomplished wife, Jacob Hittell gained at once a large practice; so that in less than a year, he had accumulated enough money for his final year in the Philadelphia college. Thus, when about twenty-four years old, he received his medical diploma from what was then perhaps the most prominent institution of its kind in the United States.

After practicing in several small towns in that region, he removed, in 1825, to Marietta, in Lancaster County. Remaining there five years, he was attracted by the prospects of success in Ohio, Indiana and Illinois. These states were then becoming a magnet, like California in later times. The fertility of soil, beauty of scenery and cheapness of public lands were drawing

many pioneers to this "new West." Therefore, in 1831, Dr. Jacob Hittell started for Illinois with his wife and three children; but because of the health of his youngest child, Theodore, he changed the destination, and settled in the famous Miami Valley, at Trenton, Ohio. From the beginning he was successful and his increasing practice induced him to remove to the more important town of Hamilton, about ten miles distant, and a few miles north of Cincinnati. This became the permanent family home, and so remained for thirty-four years. Here Dr. Jacob Hittell's professional skill, activity in business investments and energy in public matters made him a very prominent and influential citizen. Realizing his own tremendous difficulties in obtaining an education, he took a special interest in the public school and the Female Academy at Hamilton, and assisted and encouraged his children in obtaining a good education.

Thus, though born in Pennsylvania, Theodore Hittell's conscious life began in Hamilton, Ohio, he being only a year old at the time of the family removal. At the earliest possible age he was sent to school, because it was an understood rule in the family that each child was to be given the best education attainable in the country, and should be obliged, unless prevented by sickness, to keep on steadily at work in acquiring it. The boy was "father of the man," and his studies were characterized by great industry and thoroughness. All his life, he made it a rule to carry out to a finish what he had once begun, and to do everything in the very best manner it was possible for him to do it. Concentration on the work in hand and carrying it to completeness were among the most marked secrets of his success in life. He early became a "prize pupil" in algebra, geometry and trigonometry. He was handy with tools and very ingenious; he also worked in his father's drug store, where he learned considerable about the technical parts of the business. At about fifteen years of age he was sent to a Catholic school, then to a select school to study Latin and Greek. Meantime he had read many books, and all of them he "chewed and digested." His boyhood was pleasant and happy, and very busy. Though absorbed in his work, none turned to amusement and recreation with more zest than he.

In 1845, at the age of fifteen years, he entered Oxford College, afterwards known as Miami University. Here he had the usual studies of Latin and Greek, and mathematics. Characteristically he applied himself devotedly to his books, and became especially proficient in mathematics. He joined a literary society, but as he had no idea of ever becoming a public speaker, his activity was confined to written addresses on literary subjects. He read indefatigably, especially history and biography. He left the college because of the students' "snowball rebellion" against the faculty, which rebellion virtually caused the temporary ruin of the institution.

From there he went to Center College, at Danville, Kentucky, where he stayed during his junior year. He was not satisfied with the educational advantages of the institution and determined to go to Yale College, where he achieved the unusual distinction of gaining admittance to the senior class of Yale from the junior class of a small western college; due largely to his proficiency in mathematics and originality in working out theorems and problems. In 1849 he graduated from Yale College with the degree of Bachelor of Arts.

He was now nineteen years of age. In the following year he began reading law in the office of Charles Fox, at Cincinnati, and was admitted to the Ohio bar in 1852.

He had now earned and won a good education and admission to the profession of the law. He was in his twenty-third year, in perfect health, with an upright and incorruptible character, a widely varied and valuable experience, and a trained and industrious mind. For several years he practiced law at Hamilton, Ohio, but the life became irksome to him. His father, and all of his ancestors, were pioneers, and the call of his inheritance was strong in his veins. His brother John had come to California in 1849, and Theodore could no longer resist the lure of the Golden West. On October 5, 1855, he came from New York to San Francisco by way of the Isthmus of Panama. Thus, in her early history, did California feverishly dig her gold, which was her supposed only treasure, and send it to the East, to be rewarded by the return of far more priceless treasures—resolute, virile citizens.

Upon reaching San Francisco, Mr. Hittell plunged into the life of one of the strangest, busiest and most romantic cities

on the face of the earth. Twenty years before, Yerba Buena was not even a village, and had no existence. Nine years before, Yerba Buena had started on its career and had two hundred people. Eight years previously, the name was changed to San Francisco. The discovery of gold created a city almost overnight, and San Francisco now had a population of 50,000. Five great fires had successively destroyed it, but the buildings were now more numerous and enduring than ever. In such a seething mass of gold seekers, adventurers and real pioneers there were inevitably mingled much lawlessness and crime. At least a hundred murders had been committed in the previous year without a single execution. It was not safe to walk the streets after dark, while by day and night incendiarism and burglary were common. Allied with this individual crime was political corruption. Though the city had been partially purged by the Vigilance Committee of 1851, the baser elements were again in control. As usual in modern times, the good men did not vote and the bad men never failed to vote. In his *History of California* Hittell phrased the situation thus: "There probably had never been in the United States a deeper depth of political degradation reached than in San Francisco in 1854 and 1855." In spite of bad government and prevalent crime, nothing was able to prevent the town from forging ahead. The golden stream from the mines, the dawning realization of the immensely varied agricultural resources of the State, the first fruits of foreign commerce, revealed to the sagacious eyes of the pioneers the splendid destiny of this city and State. These good citizens could not yet control the development of the civic and material resources; but they were dazzled by the vision of the future, and hopefully consecrated their souls and energies to the building up of the new community.

When he started for California from the East, Mr. Hittell intended to go to the mines. As soon as he reached San Francisco, and saw its activities and gauged its prospects, he was easily convinced by his advisers that this city should be the theatre of his future career. Though a thoroughly educated lawyer, he seems at first to have avoided the practice of his profession, and with his literary tastes and training he naturally gravitated towards the newspaper business. The

financial failures of the year before, and the speculative transactions of each busy and exciting day, resulted in an immense amount of litigation. News from the outside world was scant, and except for world events of sensational magnitude the people depended for their news on local happenings and the developments of the courts. In consequence, the local editors of the newspapers were of unique importance, and the court news was greatly sought after by the public. Mr. Hittell began by reporting law news for a German paper published in San Francisco. His previous training now became of great value. The accuracy of his reports, the inclusion of all of the essential points of a judge's decision, the fidelity to facts, soon attracted the attention of the editor of the "Bulletin." This paper was founded by James King of William in the latter part of 1855, and by its fearlessness in attacking criminals and dishonest men in public life, and by its decency and vigor, in a short time reached the distinction of being the leading newspaper in the city. Mr. Hittell soon became the law reporter for the Bulletin and was such at the time of the assassination of James King of William and the revival of the famous Vigilance Committee in 1856. Though not personally a member of the Vigilance Committee, he was their staunch supporter, their reliable chronicler. He logically became the local editor of the Bulletin, which was a position of great responsibility and importance during these stirring times. He prided himself upon the accuracy of his columns, and no news was printed that was not true and trustworthy.

He retained his connection with the Bulletin until 1860. The rising tide of disunion had brought California actively into the national contest. In the State were many of Southern birth or with Southern sympathies, of great energy, resources and influence. Mighty and successful efforts were made to keep California in the Union. These were the historic days of Baker, Broderick and Starr King. For a year previous and during the first part of Lincoln's campaign, Mr. Hittell was the local editor of the San Francisco Times. He was very patriotic in sentiment, an ardent Union man, and gave valiant service for the cause of human liberty.

During this period, on June 12, 1858, he married Miss Elise Christine Wiehe. She was the daughter of Dr. Carl

Wiehe, of Goedens, in the northeast corner of Germany. Dr. Wiehe was chief surgeon on the staff of Field Marshal Blücher, and was present at the battle of Waterloo. The daughter left Germany on account of the events of 1848, and came to California on a sailing vessel by way of Cape Horn. It is said that she trimmed and introduced the first Christmas tree in San Francisco. After her marriage, she took much interest in Science, and with Mrs. Brandegee and Miss Rita Haggan was among the first women members of the California Academy of Sciences. She was one of the founders of the San Francisco Foundling Asylum. She also founded the Silk Culture Society of California. She actively urged the establishment of manual training schools. She was one of the pioneers in advocating the organizing of a museum in San Francisco. She was interested in the preservation of the Indian picture writings found in California, and wrote an article on the subject for "Science" magazine. Her last published article was on Pasteur, in "Science." She died in 1900.

Mr. and Mrs. Hittell had four children, of whom three are now living: Catherine Hermanna, Charles Jacob and Franklin Theodore. They were all born at the old home at 726 Folsom street, in this city.

It was in a great measure due to the solicitations of his wife that Mr. Hittell decided to re-enter the practice of the law. In 1861 he joined the San Francisco bar, and in 1862 he formed a partnership with Elisha Cook that lasted for five years. He devoted himself to civil law, and only once in his legal career tried a criminal case. Upon one occasion he was asked by John B. Felton to prepare a brief, and the document was so clear and cogent that Mr. Felton immediately offered him a partnership, which was promptly accepted. This partnership lasted until Mr. Felton's death in 1877.

John B. Felton was one of the ablest lawyers in the history of the State. He was a type of that period, one might say almost a product of his day and of San Francisco in the sixties. He collected vast amounts in fees, but spent his income with princely lavishness. He had astonishing ingenuity in applying the principles of law, and great quickness and exactness of observation. His brilliancy at the bar, prodigality of

living, versatility as a public speaker, remarkable wit and excessive generosity are among the traditions of this city and State. But with all this he was not a man of extraordinary industry in detail; therefore to be associated with a man of the dogged diligence and legal resource and exactness of Mr. Hittell was the opportunity of a lifetime. In turn, to have such a legal associate as Mr. Felton was the opportunity of a lifetime for Mr. Hittell. Each supplemented and was invaluable to the other. Mr. Hittell wrote the briefs and mainly conducted the office business. He was a model of careful industry, and of powerful and logical statement. While he personally was not largely in the public eye during this period, he gained a reputation as a lawyer of great reliability and singular skill.

Mr. Hittell was associated with a number of cases famous in the legal history of California. Conspicuous among these were the Lick Trust case, the Montgomery avenue case, the Dupont street case, the case involving the title to the lands near the ocean beach of San Francisco, and the famous San Pablo land case. In the ocean beach case he settled the title to the lands out among the sand dunes, and by a compromise between the claimants and the city of San Francisco, secured a deed for one thousand acres of land to the city which is now comprised in Golden Gate Park. The great San Pablo land case was technically known as Emeric against Alvarado. It began in 1868, and after twenty-seven years of dogged, persistent fighting, he won his case in 1895. The land titles involved were in Contra Costa county, especially in and about Richmond, and this noted case forever settled the earlier titles to every piece of property in the city of Richmond. This case gave him a position as a distinguished authority in the inextricably complicated question of land titles in California. Due to the earlier ambiguous Spanish land grants, followed by the equally ambiguous Mexican land grants in California, the titles were universally tangled, almost beyond settlement; and Mr. Hittell's work went greatly beyond the adjustment of his particular litigation. The winning of this suit brought him much legal fame, for it alone was enough to establish his position as an eminent lawyer. His other noted lawsuits evidenced the same shrewdness and ingenuity and unflagging pertinacity.

When the Constitution of California was adopted in 1879, Mr. Hittell became greatly interested in State politics. He was elected as State Senator from San Francisco and served during 1880-82. The legislature was flooded by bills of all kinds evoked by the spirit of the sand-lot agitation, and by the new Constitution. Because of his sane and balanced character, aided by his wide legal attainments, he was a moving force in the Senate, and performed notable and valuable service for his State. Many an ill-considered or iniquitous piece of legislation went into oblivion through his shrewd and sagacious opposition. He re-drafted the entire Code of Civil Procedure to conform to the new Constitution, and his work was adopted in preference to that presented by the regularly appointed commissioners. He was always a tremendous worker, and a high authority says of him that "the greater part of the statutes of 1880 was his work."

After the close of his Senatorial career, he again devoted himself to the practice of law. Even as late as 1906, he acted as attorney for his old clients.

His legal practice brought him much honor and a large fortune. The last twenty years of his life were devoted mainly to his writing. The astonishing vigor of his mind and body lasted to the end. By systematic temperance in living he possessed perfect health through his whole life. His principal exercise was walking. He often came down town from his home on Turk street above Van Ness avenue, but rarely took a street car. As late as his eighty-seventh year he occasionally walked from his home to the Cliff House, a distance of six and a half miles. He had no final illness. Five days before his death, he took to his bed because of physical weakness; and the evening before his death, with a mind as clear as ever, he told his physician that he was feeling well. He passed away peacefully and without pain,

"Like one who wraps the drapery of his couch
About him, and lies down to pleasant dreams."

Though the practice of law was his chosen profession, the writing of books was his chief love. From the amount produced, one might think that he lived always with a pen in his hand. Of law books alone, he was a voluminous author, and

his written contributions to law literature were substantial and of high value. As a matter of record, his law books are given herewith:

The Civil Practice Act of the State of California was published in 1863; later edition, 1868.

In 1865, *The General Laws of California*, two volumes; a fourth edition, two volumes in one, in 1872. This work had a particularly wide reputation, one authority saying that "it was the most comprehensive and valuable law book ever published in California."

In 1876, *The Codes and Statutes of the State of California*, two volumes in one. A supplement, in one volume, was published in 1880.

He was also the author of *Reports of Cases Determined in the Supreme Court of the State of Nevada*, six volumes, 1868-74.

At this late date, and to the lay mind, the enumeration of the dry titles of old law books furnishes small indication of his real achievement. Such works require minute exactness, conciseness, clearness and a highly trained intellect. These qualities Mr. Hittell brought to bear in his legal writing. His books became indispensable parts of every attorney's office. He was regarded as a trustworthy authority in certain branches of civil law, and he was frequently quoted in our courts and even in the Supreme Court of the United States.

Though a prolific author of law books, Mr. Hittell's dearest occupation was writing books of general literature, but principally of history. His legal activities accounted for a life filled with strenuous labor; but his tireless pen was incessantly busy, and brought forth fruits in other fields, sufficient for the career of most hard working men.

His first published book was *The Adventures of James Capen Adams*, printed in 1860. While local editor of the *Bulletin*, he was one day attracted by an animal show which was holding in a basement on Clay, near Liedesdorff street. Among the live animals were three grizzly bears, named Samson, Ben Franklin and Lady Washington. Samson was of enormous size and was said to weigh fifteen hundred pounds. He was captured when grown, and, though not wild, was untamed, and kept in a cage. The other two grizzlies were

captured when cubs and had been tamed by the owner. Mr. Hittell noticed that the fur was worn off the backs of the tame bears and was amazed to learn that they had been used in the mountains as pack animals and that the owner rode them when necessary. It did not take Mr. Hittell long to become very well acquainted with the owner, whose name was James Capen Adams, a hunter who had spent years in the Sierra Nevada mountains. Adams had passed through such curious and fascinating experiences that Mr. Hittell determined to write a book about such an unusual bear hunter. In consequence, for a year and a half, by tacit arrangement, the author visited the animal show each afternoon after the newspaper went to press, and listened to the hunter's tale. These conversations he embodied in one of the best bear books ever written. It was published in San Francisco and also in Boston in 1860, but due to the Civil War it was not widely distributed. The book contained 370 pages, was illustrated by a number of wood cuts by Charles Nahl and had a brown cloth cover.

And now comes an odd and interesting sequel. Half a century later, in 1909, Charles Scribner's Sons published a notable book called *The Grizzly Bear*, by William H. Wright. Its author was born in New Hampshire. In his preface he makes the following remarkable statement:

"I have often seen in the newspapers and magazines replies of various persons of note to the question, 'What book has exerted the greatest influence on your life?' Most of these answers I notice are rather hazy, but if I had ever been asked to reply to this question, I should have been able to answer without any hesitation. And my answer would have been, 'The Adventures of James Capen Adams, Grizzly Bear Hunter of California.'"

As a result of Wright's book, Scribner's got into communication with Mr. Hittell, and in 1911, they issued a second edition of the James Capen Adams book, exactly in the original form, as to type, illustrations and old brown cloth cover, with an introduction and postscript added by the author.

In 1872 he published a criticism of Goethe's *Faust*. It contained forty-six pages and was bound in paper covers. It was

a serious attempt to interpret the great poem which has been a puzzle to leading critics for over a century. The review displayed much acumen. It was written with more than ordinary care, and furnishes a fascinating introduction to the study of one of the greatest of literary works.

Stephen J. Field, after an eminently successful legal career in California, became Justice of the Supreme Court of the United States. Around his picturesque experiences clustered many of the exciting episodes in the history of the State. The Sharon will case, involving Sarah Althea Hill and former Chief Justice Terry, culminated in the shooting of Judge Terry by U. S. Marshal Neagle, at Lathrop, Cal., while Neagle was acting as guard over Judge Field under instructions from the United States Department of Justice. This tragic event caused a great sensation throughout the United States, while California was for the time in a turmoil of discussion over the event and the causes that led up to it. Judge Field was constantly importuned by his friends to write the story of his dramatic life, and at length he dictated his reminiscences to Mr. Hittell. This was in 1877. Judge Field decided to issue the book privately, for distribution to his friends only. In 1893 a second edition was printed for private distribution, but the book was never officially published. It is not generally known that Mr. Hittell wrote these reminiscences, although it could easily be inferred by a careful reader; because on page 108, edition 1893, occurs the following sentence: "Here my narrative of 'Personal Experiences' must for the present end. I could have given you, Mr. Hittell, more interesting matter." The volume is entitled *Personal Reminiscences in California*, and besides the dictated portions and an article from the Sacramento Union on the career of Judge Field, includes an elaborate statement of the Sharon litigation and the sensational events that focused in the death of Judge Terry, written by George C. Gorham, a personal friend of Judge Field, and for many years Secretary of the United States Senate. It is a book of absorbing interest and is now very rare.

It was during his law partnership with Mr. Felton, and in the most exacting period of his legal career, in 1871, that Mr. Hittell began the stupendous work of writing his *History*

of California. His experiences of six years as a San Francisco editor and his delving into historical records in connection with his law work, had revealed to him the wealth of material for an amazing story. It was practically a virgin field. Though up to that time there had been a number of books on certain picturesque phases of San Francisco and California, there had not yet appeared an orderly, continuous and comprehensive record of the great drama of the discovery, settlement and development of this State. His literary imagination leaped at the visioned opportunity.

The principal material for the early history of the State was buried in that immense and practically undigested mass of documents known as the "Archives of California." These were in manuscript, mostly in Spanish, a very few in English, German and Russian. Soon after California was admitted as a State, the vital value of these early documents was seen, both in reference to the complex land titles and also as historical records. They consisted of letters, proclamations, Mexican and Spanish official orders and various memoranda. At length, by order of the United States Government, they were collected and bound. Though there was an attempt to segregate them into convenient classifications, it was a difficult if not an impossible task. In consequence, documents germane to a given subject would be found in widely scattered volumes, which made the gathering of material much more complicated and vexatious.

These "Archives of California" comprised nearly three hundred bound volumes of about 800 pages each and contained about 250,000 written pages. They were in the office of the U. S. Surveyor General in the U. S. Treasury Building, on Commercial street. In the great fire of 1906 the larger portion was burned, but many of the documents can possibly be restored due to the Spanish system of preservation. Some certified copies are now in Mexico or Spain, and some may be found in the British Museum and various libraries in this country.

For historical purposes the Archives were absolutely indispensable, and in them Mr. Hittell found a great part of the material for the early period. As a rule, the chirography was good, though in many instances the ink had faded. Since

coming to California, Mr. Hittell had learned more or less Spanish and he now cultivated a further acquaintance with the language until he could read it with considerable ease. For several years he almost daily visited the office of the Surveyor General, and carefully copied the necessary original documents. At his home now are thousands of pages of these copies, which should prove to be of much value to the future student of history.

After fourteen years of gigantic toil, in 1885 he published the first two volumes; and twelve years later, in 1897, the last two volumes. At that period there were few stenographers—scarcely any outside of the courts—and no typewriting machines. Every word was written by himself in long hand. He had no clerk, assistant or amanuensis. His voluminous notes were in Spanish, German and French, as well as English.

The work was hailed with high acclamations by all classes. It is a monument to the author's painstaking genius, and considering the period in which it was written, it is a master work. It abounds in noble passages of oftentimes eloquent English. It is detailed, and yet in proper perspective. The early portion was drawn directly from original, official but unpublished sources. The later portion was even more valuable and interesting, for the author was a keen, trained observer of the events written about, and often a participator in them. And yet his determination to be impartial was so strong that the reader would have difficulty in believing that the author was an eye-witness and often an actor in the scenes described. Inevitably, where current happenings are told, people have diverging opinions. Many persons may have differed from his conclusions, but there were few to deny that the work was a dignified, accurate account of the State from its earliest beginnings, and a weighty and valuable contribution to history. It is a veritable mine of fact and reference. Since then, and especially of late years, has arisen the school of scientific historians, and much attention is at present being given to a minute study of California history, especially from the archives in Spain and Mexico; and therefore the writing of Pacific Coast history is now on a firm and satisfactory basis. When Mr. Hittell wrote, the knowledge

of California was fragmentary and untrustworthy. He docketed the facts, set them forth in an intelligible and vastly interesting manner, and, upon a large canvas, is indubitably the pioneer of the true historians of his beloved State.

At the time of the San Francisco fire in 1906 the plates of the history were in Oakland and thus escaped destruction. Shortly afterwards they were removed to Mountain View, near Palo Alto, where they met their fate in a fire. The books are fast becoming rare.

As a historian and as a contemporary, Mr. Hittell was always an admirer of George Bancroft, whose *History of the United States* was for years the leading authority, and who as Secretary of the Navy under President Polk, had an active if not a predominant official part in the acquisition of California by the United States. It was a labor of love and gratitude to write a memorial address of *George Bancroft and His Services to California*, which was delivered May 12, 1891, before the California Historical Society.

In 1898 was published Book I of a *Brief History of California* by Mr. Hittell, with an introduction by Professor Richard D. Faulkner, principal of the Franklin Grammar School of San Francisco. It contained sixty-eight printed pages and was devoted to the Discovery and Early Voyages. From Professor Faulkner's introduction, the plan was evidently to publish a complete history of the State, as a school text book, in twelve small volumes, which later would be published in a single volume. For reasons not known, the plan was not prosecuted further than the first volume. The style of this little book is charming as well as simple and instructive, and it is a matter of regret that the series was not continued to completion.

Mr. Hittell wrote a comprehensive, detailed history of the Academy, styled a *Historic Account of the California Academy of Sciences, 1853—1903*. As the dates indicate, the intention was to close with the proceedings of the semi-centennial meeting of May 18, 1903. It was written up to that time, and was in the hands of the Academy authorities for publication, and about a fourth part of it was in type at the time of the great fire, April 18, 19 and 20, 1906. The printed pages, the type of which had been set up, and some twenty

pages of the manuscript, were consumed. The remainder of the manuscript was in the Academy building on Market street and was fortunately saved and removed to a place of safety. With this partial manuscript and the proofs already in hand, the complete history was restored. The beginning of the reconstruction of the Academy, immediately following the fire, made it apparent that the closing period of the epoch was not at the semi-centennial year of 1903, but more appropriately rather the year 1906. The author, therefore, brought it down to the end of 1906. Since that time it has not been possible to print the history, and it is now awaiting a time when the money shall be available for its publication. The manuscript contains 374 pages. Much of it is in Mr. Hittell's best style. His unusual skill in assembling and digesting details, his laborious patience in studying the original sources, his experience as a historian on a larger scale, gave him especial qualifications for the task. Some of the records of the Academy were destroyed in the great fire; others were to be found in different documents and written books; here all are combined in a fascinating story accurately and methodically set forth. Here will be found the amazingly romantic tale of James Lick's wonderful benefactions. Because of Mr. Hittell's personal acquaintance with the men who made the Academy's history, he could write with authority. No one else can, or ever will, tell the story so well and so reliably. The Academy, as a historic institution, deserves that such an authentic record should be published; and it is to be hoped that the near future will bring out this history in printed form.

In his miscellaneous reading, Mr. Hittell became interested in Hawaii, and it was not long before his indefatigable pen began a *History of the Hawaiian Islands*. He had never been in those enchanted isles, and at his age he shrank from undertaking an ocean voyage. But he collected practically all the literature extant upon the subject, and, beginning in about 1905, he labored upon this work for seven years. The result is embodied in 1563 pages of closely written manuscript, with a Table of Contents of 172 pages. The work has not been published. It is the most comprehensive history of these islands which has yet been written.

He next wrote a history of the Miami Valley, in Ohio. This was the home of his boyhood, and the pioneer period there and the thrilling tales of the Indians had always held a great fascination for him. The manuscript is closely written, and comprises 112 pages. The copy, or second draft, was finished January 18, 1915.

At the time Mr. Hittell arrived in San Francisco in 1855, and for the next five years, much space was occupied in the California newspapers by accounts of the sensational doings of William Walker, the filibuster. This city was the home of Walker and the starting place of his expeditions to Nicaragua. In his History of California, the author gave many pages to Walker, and in his late life he wrote a *Historical Account of Walker the Filibuster*. It was finished in 1915. As it has not been published, it is in manuscript form only, and comprises 284 pages, besides 33 pages of Table of Contents, and 19 pages of Index. It is an accurate but vivid account of one of the most noted and eventful adventurers since the days of Captain Kidd.

When he was 85 years old, Mr. Hittell began writing his autobiography. He persevered at this task to the end of his life. As was natural for one of his great age, his recollections dwelt with especial fondness upon the days of his youth and young manhood. *The Reminiscences* were written for his immediate family, and therefore he took especial pains to revive the memory of his ancestors in America, both on his father's and his mother's side. The verification of dates and the confirmation of family traditions consumed much time; and in consequence the work proceeded slowly. According to his universal custom, he wrote everything himself in long hand; his first draft was carefully copied, corrected and indexed; so that his entire manuscript was written twice. His methodical manner of working enabled him to cover much ground, so that by the end of 1916 he had produced in corrected form 270 legal cap pages of writing. Considerably more had been written as a first draft. His last entry was dated nineteen days before his death. Nevertheless, he had progressed no further than the end of his college education. It is an irreplaceable loss that he did not write of his life in California, where his real career was lived. He saw so much

that was dramatic, he was a part of so much history, that he could have produced a picture of incomparable value and interest. As far as it was written, the Reminiscences contain many delightful passages, particularly those descriptive of the home life in Ohio, three-quarters of a century ago, a period now forever past.

In addition to papers delivered before the Academy of Sciences, which will be mentioned later, Mr. Hittell published or delivered the following, which are given here as a matter of record:

Theodore D. Judah. The Engineer of the Central Pacific Railroad. 30 pp. Delivered at Stanford University, February 21, 1896.

The Discovery of Humboldt Bay. 40 pp. Read before the Society of California Pioneers, April 9, 1889.

How Yosemite Was Discovered. 33 pp. Read before the Society of California Pioneers, January 8, 1890.

The Place in History of the California Pioneers. 8 typewritten pp.

The Big Bonanza. Published in "Land of Sunshine," September and October, 1899.

Geographical Peculiarities of California. Published in "Land of Sunshine."

Observations on the New Constitution. Published in "Overland Monthly," January, 1883.

On the Tip Top of the United States. Published in "Sunset Magazine," February, 1903. This was a description of his climbing to the summit of Mount Whitney, June 23, 1902, when he was over seventy-two years old.

Considering the career and the character of James Lick, his benefactions were an unparalleled deed of philanthropy. With the disposition of Lick's property, Mr. Hittell was closely associated. His partner, Mr. Felton, and himself, were Lick's attorneys through the long period of legal complications, and Mr. Hittell became not only Lick's reliable legal counsel but his trusted personal adviser. When Lick was preparing his Trust Deed which disposed of all of his vast property, Mr. Hittell suggested that he make the California Academy of Sciences and the Society of California Pioneers his residuary legatees. Mr. Lick thought the proceeding un-

necessary, remarking that he was now giving away all of his property, and there was nothing left. Mr. Hittell observed that it usually required considerable time to settle up an estate, and that there might be something left over after all the specific gifts were paid. James Lick followed this advice, and his Trust Deed, after naming the specific gifts, divided the residue into equal proportion between the California Academy of Sciences and the Society of California Pioneers. On September 28, 1875, the Academy accepted the Lick deed, and October 2, 1876, the death of James Lick was announced. As predicted, when the estate was settled, there was a residue, which, owing to the tremendous rise in the value of real estate and the careful management of the trustees, amounted to over \$1,100,000, of which half was received by the Academy. This institution is thus indebted to Mr. Hittell for his influence and his suggestion for a vast fortune, which made possible many years of active and efficient service in the cause of Science.

In September, 1906, a special committee was appointed by the Council of the Academy to represent the Academy at the anniversary exercises of the California School of Mechanical Arts, to take steps for the future proper observance of September 21st as the day on which James Lick executed his donation. At a meeting held October 1, 1906, Mr. Hittell, representing the committee, presented and read a report. It included such an eloquent recognition of Mr. Lick's philanthropy that it seems appropriate here to quote the following paragraph:

"The more his [Mr. Lick's] bequests are studied and the greater the insight gained of the objects and purposes contemplated by him, the more is the mind impressed with the real greatness of the man. Of all the many cases in which men have devoted great wealth to public purposes, there was not one, considering all the circumstances, that could compare in the genuine spirit of benevolence and beneficence and the wisdom of its distribution with that of this grand old Californian. In this last act of his long and laborious life, in which he gave the results of his life's toil, and, as it were, his life

itself for the benefit of his fellow man, he seemed to have risen above the frailties of human nature and stood forth as a model for respect and admiration."

The Academy of Sciences is indebted to Mr. Hittell for another important benefit, which grew out of a voluntary service he was faithfully performing. It has been noted that at the time of the great fire of 1906 his History of the Academy had been completed to the year 1903. Although the greater part of the books of record of the Academy were saved on that historical morning, those of the Board of Trustees were destroyed. These contained, among other things, the accounts of expenditure for the construction of the building on Market street. The only available if not the sole evidence of these accounts was the copies which had been taken for the object of writing the Academy history; and they were used for this purpose in the negotiations and settlements with the insurance companies, thus proving of great value.

It was on September 5, 1887, that Mr. Hittell became a member of the California Academy of Sciences. On January 5, 1903, he became a life member. He identified himself with its interests and seldom missed either a regular or special meeting when it was in his power to attend. In addition to the regularity of his attendance, he wrote and presented the following papers:

Sutro's New Water Power. 4 pp. Read October 15, 1888.

Memorial on the Death of Professor John LeConte. 4 pp. Read June 1, 1891.

The Acorn and the Oak. 19 pp. Read February 4, 1889.

Change of Level in the San Francisco Peninsula. 5 pp. Read December 16, 1888.

Oysters in San Francisco Bay. 15 pp. Read November 6, 1893.

Remarks on the Alameda Shell-Mound and Indian Medicine Tube. 14 pp. Read October 15, 1894.

The Last of the Yosemitees. 34 pp. Read April 9, 1890.

Pioneers in Death Valley. 25 pp. Read November 3, 1902.

Historic Sketch of the California Academy of Sciences. Read at the Semi-Centennial Anniversary, May 18, 1903.

Dr. George Chismore. 11 typewritten pages. Dated March 5, 1906.

Memorial in Remembrance of General Lucius Harwood Foote. 6 typewritten pages. Dated July 7, 1913.

He also wrote memorials on Dr. H. W. Harkness and Mr. William Alvord, which were printed by the Academy.

He was elected a member of the board of trustees of the Academy on January 4, 1909, and served until his resignation on January 18, 1915. Thus, from the time he was nearly seventy-nine years of age until he was nearly eighty-five, he was active as a trustee, and the records will show that in that entire period of service he attended every meeting of the board but one, or possibly two.

In the Academy campaign of 1904 for the State Constitutional Amendment exempting the Academy from taxation, he took an active part. To every newspaper in California that opposed the amendment he wrote letters of argument and explanation, and indubitably his cogent statements had a sensible effect upon the attitude of the press.

When the time came for pressing the plan to move the Academy of Sciences to Golden Gate Park, it was Mr. Hittell who drew up the amendment to the city charter, which was unanimously accepted *in toto* by the Board of Supervisors, and passed by a very large majority of the vote of the people in 1910.

And thus, in all ways, he gave evidence of his acute, personal interest in the Academy. He was as loyal to this institution as a true patriot is to the country of his allegiance.

Besides being a life member of the Academy, he was an honorary member of the Society of California Pioneers. He belonged to no other organizations.

Theodore Hittell was a man of much versatility of talent. Among the principal assets to which he owed his various achievements were perfect health and the ability for long-sustained, arduous work. He was rarely if ever ill during his long life. He carried on for extended periods the equivalent of the work of two men, as this record of his life has demonstrated. Though it is probable that the definition of genius as being a capacity for taking infinite pains will not explain the astounding manifestations of real genius, it is

unquestionably true that this ability can lift talent above its normal level and make it super-efficient in its results. Mr. Hittell possessed great patience, and an immense capacity for taking pains. Possibly these were the dominant notes in his character.

It was this genius for details that made him a painter of considerable skill. His early love of drawing was born at his mother's knee. Later he attracted a good deal of local attention for his pen and ink drawings. He soon flowered into oil painting, which became one of the principal amusements of his early life. In those days painting in oil was complicated by the necessity of grinding his own colors; but he became almost infatuated with oil painting, and some of his productions are still in existence. At Yale College he gained a reputation as a cartoonist and his sketches were well known and very popular.

Like most writers, he also wrote poetry. In his earlier life he translated a number of poems from the German. In the issue of September, 1903, *Sunset Magazine* published his poem entitled *A Blackfoot Burial*. The same magazine, in June-July, 1906, printed his *Phoenix Redivivus*, written to celebrate the arising of San Francisco after the fire and earthquake of that year. In April, 1907, the same magazine printed his poem, *Reconstruction*, devoted to the same subject.

He was familiar with a number of modern languages, and could read with ease German, Spanish, French, and also to some extent Italian and Portuguese. He never attempted to speak in any foreign language but German.

Mr. Hittell was a true Democrat of the sturdy and outspoken American type. When in college he did not join a Greek letter society because he thought these organizations were undemocratic. His hatred of despotism was never hidden under a bushel, but constantly burst forth in his writings and conversation.

He was a man of unswerving integrity of character, veracity of speech and sense of justice. He was tenacious, sometimes obstinate, in his attachment to his convictions; and where a question of right was concerned, he was immovable. When he was a young student he fell under the spell of Thomas Carlyle. Only a few weeks before his death he said

to the writer of these lines: "Whatever I may have of integrity of character, I owe to Carlyle. I became acquainted with his writings early in my life, and he has had the greatest influence over me of any man who ever wrote." Mr. Hittell was also sensibly molded by Carlyle's gospel of work; few men ever carried out so conscientiously the doctrine of unremitting, strenuous toil. Thus may we account for achievements in a single lifetime seldom exceeded in extent and excellence combined. He enjoyed his life to the full, and he had the proud consciousness of success in almost everything he undertook.

In his latest years, outside of his interest in the Academy, he was a spectator rather than a participant in public activities. In consequence, his opinions were not modified through actual friction with events, and he did not, from the standpoint of the present, keep up with the startling changes in modern methods and beliefs. To the unthinking or unimaginative, he was of the old school, of a past era, of ancient viewpoints. So, too, may we all, as the years draw to the end, be regarded by the rising generation as old-fashioned in principle and as unprogressive; and so, too, may we, in return, look upon the latest generation as too radical, unchristian, or even immoral. It is the way of all time. The new crowds out the old, and is in turn crowded out by the still newer. Each may be right in the light of his own time; for one day differeth from another in glory and in the shadows which it casts.

G. W. DICKIE,
LEVERETT MILLS LOOMIS,
RANSOM PRATT,
Committee.

APPENDIX I

CALIFORNIA ACADEMY

OF

NATURAL SCIENCES.

C I R C U L A R .

SAN FRANCISCO:

PRINTED FOR THE ACADEMY BY F. A. BONNARD, DISPATCH OFFICE,
CORNER OF LEIDESDORFF AND COMMERCIAL STREETS.

1853.

C I R C U L A R

OF THE

CALIFORNIA ACADEMY OF NATURAL SCIENCES.

SIR :—

An Association has been formed in this city, under the above title, the objects of which as its name imports, are the collection of specimens and the investigation of all matters pertaining to Natural Science in the State of California and on the Pacific coast, and the adjacent island region.

Its design embraces—

1. The collection of a Library of scientific works.
2. The collection of specimens of Geological formations, including quartz and associated rocks from the various quartz mines, with facts in relation to the same, the various fossils, ores and other minerals, soils, clay, &c., for examination and analysis.
3. The collection of Botanical specimens, embracing agricultural products, the various plants, woods, flowers, seeds, fruits, &c., belonging to this department.
4. The collection of specimens in the Animal kingdom,—beasts, birds, fishes, shells, reptiles, insects, &c.
5. Specimens of the productions of Art, by the native islanders and Indian tribes, illustrating their ingenuity, manners and customs.
6. Meteorological observations, embracing currents and tides, in addition to the history of the weather.
7. Exchanges of specimens with other scientific associations and individuals, throughout the world.
8. Lectures and publications on scientific subjects.

In these several departments, no portion of the world presents a richer or more inviting field than that embraced in the region here designated ; heretofore but partially explored, and abounding in the most diversified and interesting productions, it is reasonable that scientific men in other lands should direct their attention to California, and

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claim of our citizens, a proper investigation of the ample field which Providence spreads out before us. Not only are the industrial and pecuniary interests of the State involved in our enterprize, but also the social and moral improvement of her people, and her reputation in the eyes of an expectant world.

It is not to the few that we appeal for assistance ; but it is hoped and expected that every individual who desires to promote the interests of California, and the cause of science, will contribute his aid, by forwarding specimens, and communicating facts in relation to the departments above defined. Every one has it in his power to do this, to a greater or less extent. Let no one then withhold his aid under the impression that what he may contribute will be of no consequence. A single specimen may on examination be found to add a new and important discovery to Natural Science.

Appended to this, will be found directions for preparing and transmitting specimens and other matters, to which your particular attention is requested.

By order of the Association,

Respectfully, Yours, &c.

W. P. GIBBONS,

Cor. Secretary, 163 Clay Street.

SAN FRANCISCO, June, 1853.

I N S T R U C T I O N S

FOR

PREPARING AND TRANSMITTING SPECIMENS.

MINERALS.—Care should be taken to obtain the best specimens of a mineral or rock, that the locality will afford.

They should be selected, if possible, from one to six pounds in weight, and where the same mineral exhibits different appearances, several specimens should be obtained. Two specimens of the same kind of minerals should always be packed.

The label of each specimen should designate its locality, and any interesting fact which may exist in connection with its history should be noted.

Each mineral, with its label, should be wrapped in paper.

Small and delicate specimens, such as contain fine crystals, or a crystalline surface, should be wrapped in cotton wool, and laid in a pill box. If pasteboard boxes are not to be had, wrap them in several folds of paper.

Minerals, after being protected in the manner here stated, should be carefully and closely stowed in a box, so that they may not rub against each other, and the lid nailed securely on, previous to being sent to their destination.

PLANTS.—The collector of plants needs only a few quires of the coarsest brown paper, newspapers, &c. In travelling, as the specimens are gathered, they may be placed in a portfolio of this paper, or crown of the hat, until reaching home. Then spread them out carefully on paper, preserving the natural shape, place one upon the other with several sheets between each, (either loose, or better, stitched together,) and place the pile between two boards, subject to pressure—if grasses, moderate. A *tin box* keeps them fresh for several days, and is useful for collecting *Land Shells*, a part of a botanist's duty. Keep the papers dry by the sun, or a fire at night—*change them often* to keep the color and prevent mould. Some plants, especially those with compound leaves, may be scalded to prevent shedding—avoid immersing the blossoms.

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Provide a plenty of ready made seed papers ; they are useful for collecting mosses and minute plants, as well as seeds. We fold a strip of paper triangularly, or as the American flag is folded, or as boys fold their fourth of July paper crackers, i. e., turn the left corner to the right margin, fold again, still parallel with the right margin, thence left, and so again parallel with the left, and then right, and cut off diagonally for a lappet to tuck in. No string or paste is needed, and it is both secure and expeditious. The gardeners' method may be adopted. Many seeds, fruits, and juicy plants, cannot be put in the herbarium ; being irregular, they break smaller plants and cause mouldiness. Number them to correspond with their specimen, and wrap in a separate piece of paper, and keep them in the saddle-bags. To expedite labelling, have slips of cards with a string attached ; note the color of flowers, soil, locality, i. e., woods, field or mountain, wet or dry, date, annual, biennial, or perennial, &c., and tie the label to the specimen.

It is desirable to have the whole plant, but if too large, and only sections be preserved, secure the top, fruit, and flower, centre, and especially the root leaves, with a few from different parts of trees and shrubs, choose twigs if the flowers appear first, note the height, preserve also in due time the full grown leaf and fruit. *Umbelliferous* plants i. e., those like Fennel, Parsley, &c., and the great grass like genus *Carex*, should be gathered when the seeds are fully grown, but before they are so ripe as to scatter ; it is well also to preserve them in blossom, for then the leaves are most perfect. At sea be careful to avoid salt water ; dry the papers at the galley, examine frequently, and brush off the mould with a feather.

Collect everything you meet ; common *weeds* are the most interesting ; avoid, therefore, the usual error of searching for rare and beautiful plants ; note every use or fact, with the common names of each. When stems are thickly set with leaves some may be removed, so as to preserve and exhibit the remainder more perfect. A vertical section of the bark and cross section of the wood, from a moderate sized branch are of great use, also thin sections of seed vessels. Roots and fruits should be preserved. Marine plants and aquatic vegetables of stagnant pools are carefully washed in fresh water, and partially dried by the application of spare paper before placing in the portfolio.

Dissections are very useful to display the minute organs upon which generic distinctions depend, i. e., the calyx, corolla, stamens, immature capsular sections ; and in compound flowers, i. e., helianthus, or sunflower, &c., the aigrette, chaff, seed, receptacle, &c. ; lay them on slips of fine paper an inch wide by two long, smeared with fish glue or the white of an egg ; they generally moisten it sufficiently by their juices, and by the drying process remain adherent.

SHELLS.—As soon after gathering as is possible, place the shells in a deep vessel and pour upon them boiling fresh water, taking care to cover them with it ; let them remain until quite cold, then pick out the animal with a sharp pointed instrument or hook, rinse in fresh water, dry with a soft towel and pack carefully in cotton. Care should be taken to preserve the operculum or lid of univalves, and pack it with the shell. The valves of bivalves should be brought together and a bit of thread passed round them ; care should be taken not to break the hinge.

INSECTS.—Hard winged insects, such as beetles, are best killed and preserved by putting them in a tin box, which is to be immersed about half its depth in boiling water; place them face to face and wrap a little tow around them. Other insects may be preserved by passing a pin through the back, and pinning them in boxes made of soft wood or lined with cork; throw a little powdered camphor or arsenic in the box, close it and pitch the seams. Moths and butterflies may be secured by taking a piece of stiff card or the like, from half to three quarters of an inch wide, and in length corresponding with the expansion of the wings of the specimen; pass a pin through the card, equi-distant from the ends and sides, and then through the body of the insect into a piece of board, cork, &c., then carefully press down the card upon the insect, keeping the wings expanded. When in the field, insects after being secured may be stuck upon the hat.

FISHES.—Lay the fish, which should be fresh, on its side, and cut out the gills with a pair of scissors; then fill up the cavity with tow, to prevent blood or moisture from flowing out. When this is done, with a damp sponge carefully wipe the sides of the fish, raise the fins, and gently extend them. Then cut two pieces of paper the shape of each fin, but a little larger; rub a solution of gum arabic on one of the pieces, then place it under the fin, and spread it out; press the corresponding piece on the top, where it will adhere, and drying in a few minutes, will keep the parts extended. Take a piece of thin silk, or gauze paper, and neatly cover one side of the fish. The natural gluten which covers the scales, will cause it to adhere firmly. It will presently dry and form a strong case, by which the scales will be preserved in their natural position, while you take off the skin. After the first coat is dry, you can apply one or two more, if necessary, using gum water to the papers. When they are thoroughly dry, turn the fish on a soft cloth, with the uncovered side upwards; open it with sharp scissors, from the tail to near the nose, along the lateral line, cutting open the cheek to enable you to clean the flesh from the cheek of the opposite side under the bone; for unless this be done, and the cavity be filled with tow or cotton, it will inevitably shrink. To detach the skin from the flesh, begin at the head and work downwards, using a sharp knife in clearing the flesh from the skin, cutting off the fin-bone with scissors. Take away from the skin as much matter as possible, and dust it with powdered arsenic. Stuff the skin to its proper dimensions, with tow or cotton, and sew up the opening with a needle and thread. In a few days it will dry, when the papers may be taken off by damping them with a sponge. Cover in tow and pack in boxes. Serpents may be managed in the same way, or preserved in spirits.

BIRDS.—In taking off the skins of birds, care should be had to prevent their being soiled by blood or fat. Should they be so soiled, clean the plumage with a sponge and warm water. The sooner the animal is prepared after it is cold, the better. The bird should be laid on a clean cloth, and the mouth opened and cleansed with tow, from all saliva or other matter that might soil the plumage; it should then be filled with tow, and a little tow should be wrapped round the beak to prevent the escape of any moisture: then make an incision under the wing, longitudinally, sufficiently large to admit the passage of the body: then pull

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the skin gently up, so as to admit the finger, or a small blunt instrument, to pass as far up as the back. Separate the wing by cutting through the bone which connects it with the body: continue the separation of the skin towards the head and tail; cut off the thighs, and as the body is removed, divide the tail from it; then turn the skin over the body, separating the other thigh and wing as before directed: then, if the animal be large, take a piece of cord, about a yard long, one end of which make fast to a convenient place for suspension; then with a noose fasten it round the body, so that it may be turned in any direction. Continue the operation, turning the skin over the neck and head, till the back part of the skull is laid bare; remove the carcass entirely, by cutting it off close to the skull; the brain must be removed through the opening near the neck, by introducing a gouge or the handle of a spoon, or piece of bent wire; cut away the tongue, and as much as possible of the flesh of the head and mouth: remove the eyes whole by the inside; for this purpose, break the small bones that separate the top of the mouth from the eyes, then pressing the skin of the neck that lies over the eye, so as to force the globe inwards; introduce the handle of a tea-spoon, by which it may be pulled away without bursting. Rub every part with dry arsenic; hang it up for a few days to dry; pack up the skins, smooth and flat on each other; place them in boxes, with camphor, having the seams done over with pitch.

QUADRUPEDS—are preserved as birds. Observe to make the opening in the belly, when skinning them.

LABELLING.—Great care should be taken to label all specimens of Natural History, being particular to give the locality in all cases.

DIRECTIONS.—Address or mark any boxes of specimens designed for the Academy, as follows:—

“California Academy of Natural Sciences, care of Messrs. Adams & Co., San Francisco, California.”

Boxes of specimens may also be sent to Messrs. Adams & Co., *New York City*, who will forward them to the Academy.

Letters may be addressed to “Dr. W. P. Gibbons, Corresponding Secretary of the California Academy of Natural Sciences, San Francisco, California.”

	L. W. SLOAT, T. E. ANDREWS, A. RANDALL, A. SKELLOGG, J. B. TRASK	}	COMMITTEE.
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APPENDIX J

MINUTE BOOKS OF THE MEETINGS OF THE CALIFORNIA ACADEMY OF SCIENCES 1853-1906

(Now kept in the Lucie Stern Rare Book Room, Library of the Academy)

The manuscript minute books of most of the meetings of the California Academy of Sciences were saved from the fire that engulfed the Academy complex shortly after the earthquake of April 18, 1906. The Academy's librarian, Mrs. Hyde, and Director, Mr. Loomis, were primarily responsible for rescuing these volumes. For the first few years of its existence, all business of the Academy was transacted during the regular weekly meetings of its members. Only later, in the late 1860s, did the Trustees and then the Council hold separate meetings, although both reported to the membership at regular member meetings, especially when they sought a broad consensus for actions planned to avoid unnecessary disagreements and possible member disapproval at a later date.

Minute Books of Member (Stated) Meetings

Minute Book, Apr. 4th, 1853 - Aug. 20th, 1866 (tagged "Council")

Minute Book, March 1866 - Dec. 1867

Minute Book, Jan. 6th, 1868 - Jan. 2nd, 1872

Stated Minutes, Jan. 1872 - July 1874

Stated Minutes, Aug. 1874 - Nov. 1880

Stated Minutes, Dec. 1880 - Dec. 1890

Stated Minutes, Jan. 1891 - Nov. 1904

Stated Minutes, Dec. 1904 - 1914

Regular Minutes, Nov. 1891 - Feb. 1894 and Rough Draft [Minutes], 1891-1904.

Rough Draft [Minutes], Jan. 1857 - Nov. 1864

Miscellaneous (unbound), Minutes and Papers, 1877-1885

Minute Books of Meetings of the Council

Jan. 1868 - Dec. 1870

Aug. 1874 - Nov. 1878

February 18, 1881 - November 24, 1883

January 3, 1884 - January 15, 1887

Jan. 1887 - Aug. 1890

Aug. 1890 - June 1903

July 1903 - May 1914

Minute Books of Meetings of the Board of Trustees

June 1871 - April 1874

Sept. 12, 1874 - June 2, 1879

Minute Books of Committees and Sections

Botanical Section

Minutes, 1877

Publications Committee

1888 - 1904

1904 - 1917

Membership Record Book

Compiled from primary and secondary sources during the late 1890s to 1914 and covering the period 1854-1914.

APPENDIX K

Comparison of page 1 and plate 3 from original (1854) (see pages 554 and 556) and reprint (1873) (see pages 555 and 557) editions of Volume One of the

PROCEEDINGS
OF THE
CALIFORNIA ACADEMY OF NATURAL SCIENCES

PROCEEDINGS
OF THE
CALIFORNIA ACADEMY OF NATURAL SCIENCES.

VOL. 1.

SAN FRANCISCO.

1854.

SEPT. 4th, 1854.

Dr. A. Kellogg in the chair:

Mr. W. J. Steene, by the Ed. of the *Pacific*, presented a curious specimen of cabbage, grown on the Sacramento bottoms, which, instead of a head formed of leaves in the usual manner, has a globular head formed by an enlargement of the top of the main stock, five inches in diameter, and weighing some two pounds or more, perfectly sound, with a thin rind, and of the consistency of the inner portion of a common cabbage stump. It has the shape and appearance of a round, field turnip, except that it has perfectly formed cabbage leaves on its sides and top, occurring at intervals, as on the ordinary cabbagestock.

Dr. Kellogg exhibited a drawing and specimens of a plant from the sea shore and salt marshes of the Bay of San Francisco, the *Fragaria grandifolia*. This plant is often coated with crystals of salt, which has given it the common name of Salt-weed. It is a low herb, very much branched, the limbs opposite, with dense clusters of somewhat wedged-shaped leaves folded back or rolled up; within these, are umbosomed small pink flowers—stamens usually 6, pistils 3.

Dr. Ayres presented descriptions of the following species of fish, believed to be new:

Labrus pulcher, Ayres. This species, one of the finest of our fishes, makes its appearance in

the market about the first of August, and continues in season till nearly the close of February. They are sold by the fishermen under the name of Blackfish, and are also not unfrequently called Sheepshead.—Specimens are often seen weighing six to eight pounds. My description is taken from one sixteen and a half inches in length, weighing two pounds and a half.

Form very similar to that of *Tautoga Americana*. Greatest depth one-fourth the total length. Length of the head, five inches and one-fourth. Frenum protuberant, especially in large individuals, from an accumulation of fat immediately above the eyes.

Lips thick, loose and fleshy.

Teeth on the intermaxillaries and in the lower jaw alike—consisting externally of a single row, stout and conical, of which the two anterior pairs are much larger than the others and project forward; within this external row is a band of blunt, rounded teeth, not arranged in regular rows, scarcely projecting above the membranes. No teeth on the palatine bones or the vomer. Teeth on the pharyngeals merely flat, tessellated tubercles; on the interior pharyngeal, a few of the anterior ones are distinct, conical.

Edges of the operculum and preoperculum destitute of spines or serrations. Scales deeply imbedded, not conspicuous, elongated subquadrangular, covering the body, the operculum, and the sub-operculum: extending but slightly on the verticle fins.

The rays of all the fins are enveloped in a thickened, partially opaque membrane.

The spinous portion of the dorsal fin is four inches and four-tenths in length; the spines are stout and strong, and one is continued by a fleshy prolongation one to two-fifths of an inch in extent; thus making the height of this portion

PROCEEDINGS
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[TAKEN FROM THE SOCIETY'S RECORDS.]

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Dr. Kellogg exhibited a drawing and specimens of a plant from the sea shore and salt marshes of the Bay of San Francisco, the *Frankenian grandifolia*. This plant is often coated with crystals of salt, which has given it the common name of Salt-weed. It is a low herb very much branched, the limbs opposite, with dense clusters of somewhat wedged-shaped leaves folded back or rolled up; within these, are unbosomed small pink flowers—stamens usually 6, pistils 3.

Dr. Ayres presented descriptions of the following species of fish, believed to be new :

Labrus pulcher.—Ayres. This species, one of the finest of our fishes, makes its appearance in the market about the first of August,

and continues in season till nearly the close of February. They are sold by the fishermen under the name of Blackfish, and are also not unfrequently called Sheephead. Specimens are often seen weighing six to eight pounds. My description is taken from one sixteen and a half inches in length, weighing two pounds and a half.

Form very similar to that of *Tautoga Americana*. Greatest depth one-fourth the total length. Length of the head, five inches and one-fourth. Forehead protuberant, especially in large individuals, from an accumulation of fat immediately above the eyes.

Lips thick, loose and fleshy.

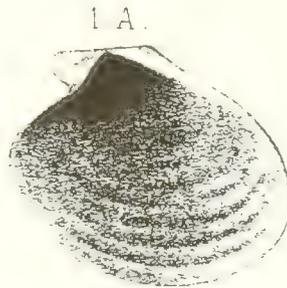
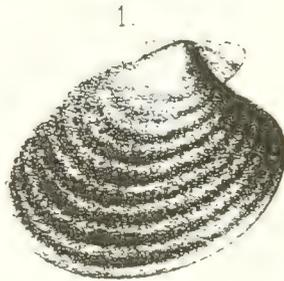
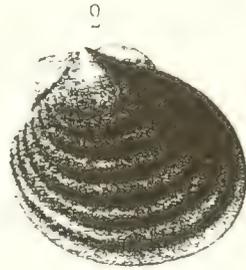
Teeth on the intermaxillaries and in the lower jaw alike—consisting externally of a single row, stout and conical, of which the two anterior pairs are much larger than the others and project forward; within this external row is a band of blunt, rounded teeth, not arranged in regular rows, scarcely projecting above the membranes. No teeth on the palatine bones or the vomer. Teeth on the pharyngeals merely flat, tessellated tubercles; on the inferior pharyngeal, a few of the anterior ones are distinct, conical.

Edges of the *operculum* and *preoperculum* destitute of spines or serrations. *Scales* deeply imbedded, not conspicuous, elongated subquadrangular, covering the body, the operculum, and the sub-operculum; extending but slightly on the vertical line.

The rays of all the fins are enveloped in a thickened, partially opaque membrane.

The spinous portion of the dorsal fin is four inches and four-tenths in length; the spines are stout and strong, and one is continued by a fleshy prolongation one to two-fifths of an inch in extent; thus making the height of this portion [P. 4] of the fin about an inch and one-fourth. The membranous portion is two inches

Plate III.



1. *CLAM TOMA* (San Pedroana) TRASK
 2. " " *annulata* " "
 3. " " *variegata* " "

2



1



1.A



3.

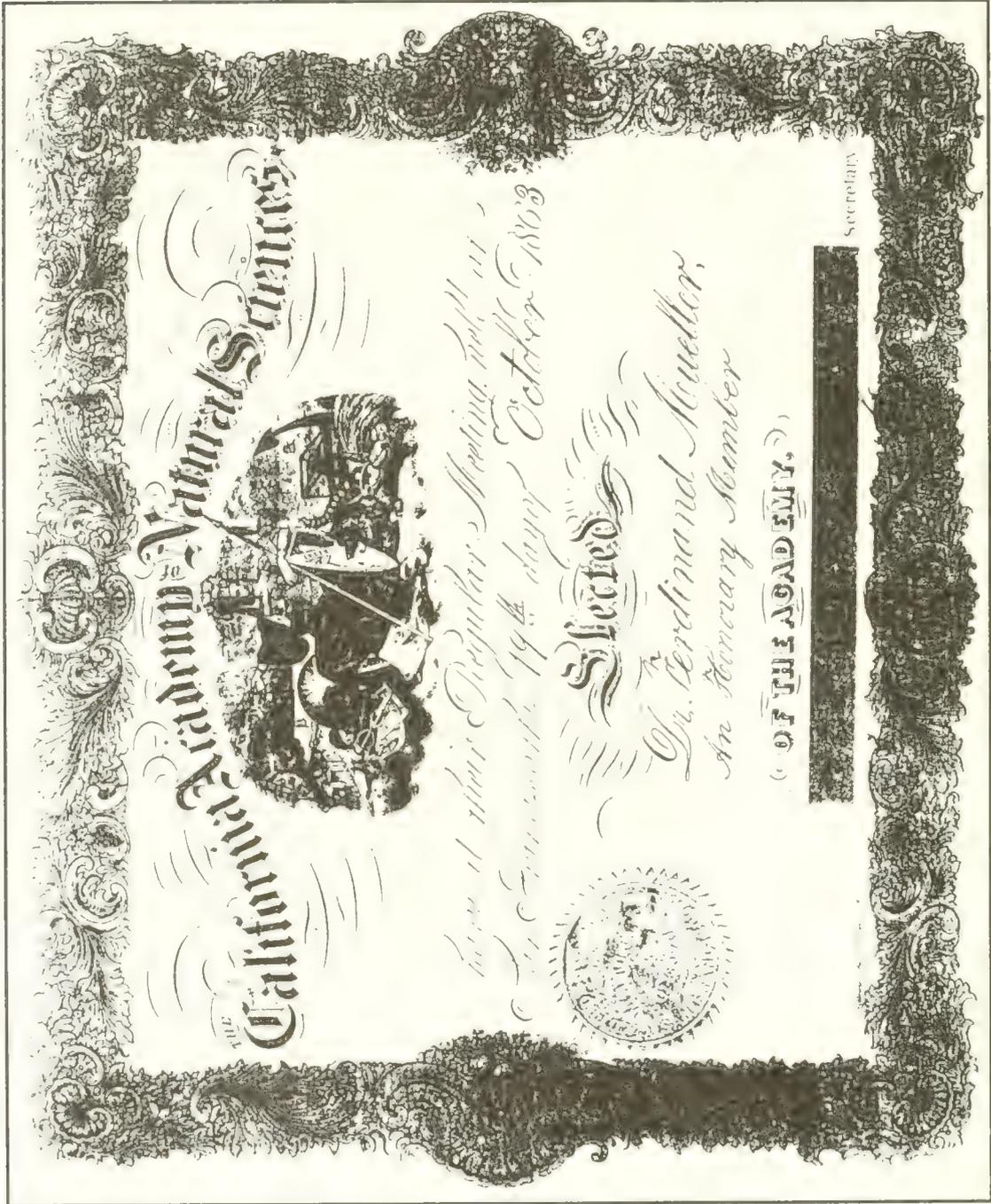


Britton & Reynolds.

- 1. PLAGIOSTOMA (Sow.) Pedroana TRASK.
- 2. " " annulatus "
- 3. " " truncata "

APPENDIX L

SAMPLE MEMBER CERTIFICATES ISSUED BY
THE ACADEMY DURING ITS EARLY YEARS



Certificate sent to the botanist Ferdinand Mueller, Melbourne Australia, announcing his election as an Honorary Member of the California Academy of Natural Sciences. The certificate was signed by William Orville Ayres, Corresponding Secretary. (Courtesy, Ms Sara Maroske, National Herbarium of Victoria, University of Melbourne.)

California Academy of Natural Sciences

San Francisco Cal. U.S.A.
Sept 4 1857

Sir

At the meeting of the California Academy
of Natural Sciences, held Aug 31/57
you was elected an Honorary Member of the Academy.
Should this be agreeable to you, a notice of your ac-
ceptance of the appointment is requested.

I send you a suite of the Proceedings
of the Academy.

I have the honor to be
Sir
Your obedient servant

W. O. Ayres Secretary

to Prof. J. Hall



Certificate sent to James Hall of Albany, New York, announcing his election as an
Honorary Member of the California Academy of Natural Sciences. The certificate
was signed by William Orville Ayres, Corresponding Secretary.
(Courtesy, New York State Archives, James Hall Papers, PG 16478, Box 10, Folder 412)

28
 To Prof. J. Henry
 Wash. D. C.

The "California Academy of Natural Sciences"
 begs leave to inform you, that it has, from this time forward, assumed
 the name of the

"California Academy of Sciences."

A copy of each of the two Memoirs, published by this Academy
 Parts 1 and 2 of Vol. 1, has been forwarded to you
 as
 Honorary Member —
 By mail —

Please acknowledge the receipt of the same, and address corres-
 pondence and exchanges to the "Corresponding Secretary of the Cal-
 ifornia Academy of Sciences, San Francisco."

I have the honor to be

Henry N. Bolander

San Francisco,

Cor. Sec'y

Jan. 13, 1868.

Certificate sent to Joseph Henry of the Smithsonian Institution Washington, DC informing him of the dis-
 tribution of two parts of *Memoir* volume 1 published by the Academy and sent to him as an Honorary
 Member. The certificate was signed by Henry N. Bolander, Corresponding Secretary.

(Courtesy Smithsonian Institution Archives)

APPENDIX M

DONORS TO THE ACADEMY LIBRARY FOLLOWING THE EARTHQUAKE AND FIRE

Following the disastrous earthquake and fire of April 18, 1906, institutions and many individuals, worldwide, responded by donating publications to the Academy's library, thus allowing the Academy to set about rebuilding itself as the premier natural history museum in Western North America. Donations ranged from one to many hundreds of volumes. The following list of donors was culled from the *Minute Books* for the years 1906 and 1907 (Stated Meetings, Dec. 1904-Nov. 1914, pp. 75 [Sept. 3], 80 [Oct. 1], 101-102 [May 20, 1907], 105-106 [July 1, 1907], 107 [July 15], 108 [Aug. 5], 109 [Aug. 19], and 112 [Oct. 7]). It speaks not only of the way a scientific community responds to natural disasters that afflict one of its members but of the esteem in which the Academy was held by that community. The names of organizations are given as recorded in the *Minute Books*; they have not been edited, but they have been rearranged and grouped by broad region and thus are not in the order in which they were recorded in the minutes.

Individuals

Frank M. Anderson
 Vernon Bailey
 Arthur L. Bolton
 Herbert Brown
 E. C. Burr
 Fred L. Button
 J. C. Cebrian
 I. N. Chapman
 Prof. F. W. Clarke
 W. Engelmann
 Dr. A. Fritsch
 G. K. Gilbert
 Horace L. Hill
 S. W. Holladay
 Dr. Hurst
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 Dr. David Starr Jordan
 A. Koebele
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 Duc de Loubat
 Rev. C. M. Marrack
 Levi W. Mengel
 E. J. Molera
 Mrs. Robert Orton Moody
 J. P. Moore
 F. K. Neixer
 Prof. Dr. O. Nordstedt
 Sen. George C. Perkins
 Ransom Pratt
 Miss Mary J. Rathbun
 Wm. J. Rhees
 C. C. Riedy
 John Rowley
 P. L. Sclater
 R. E. C. Stearns

Dr. John Van Denburgh
 Geheimrath Waldyer
 Dr. L. M. F. Wanzer
 Emile de Wildeman
 Eli Wright
 William Greenwood Wright
 P. Wytsman

Institutions: United States

American Academy of Arts & Sciences
 American Anthropologist
 American Museum of Natural History
 Archaeological Institute of America
 Biological Bulletin
 Biological Society of Washington
 Buffalo Society of Natural History
 Bureau of American Ethnology
 Bureau of Biological Survey, U.S. Department of
 Agriculture
 State Horticulture Commission of California
 California State Mining Bureau
 Carnegie Museum of Pittsburgh
 Colorado Scientific Society
 University of Colorado
 Connecticut Geological Survey
 Cooper Ornithological Club
 Davenport Academy of Sciences
 Delaware Valley Ornithological Club
 Elisha Mitchell Scientific Society
 Entomological Society of Washington
 Essex Institute
 Johns Hopkins University
 Illinois State Laboratory of Natural History
 Indian Department of Geology and Natural Re-
 sources
 Geological Survey of Kansas

Library of Congress
 Michigan Academy of Sciences
 Library, University of Michigan
 Botanical Laboratories, University of Minnesota
 Missouri Botanical Garden
 National Academy of Sciences
 Geological Survey of New Jersey
 New York Academy of Sciences
 New York Botanical Garden
 State Museum, New York
 Oberlin College
 Palaeontological Society
 Peabody Academy of Sciences
 University of Pennsylvania
 Philosophical Society of Washington
 Portland (Maine) Society of Natural History
 Academy of Sciences of St. Louis
 Smithsonian Institution
 Staten Island Association of Arts and Sciences
 United States Geological Survey
 University of California
 Wilson Ornithological Club
 Wisconsin Academy of Sciences
 Wisconsin Geological and Natural History Survey
 Wisconsin Natural History Society

Institutions: Canada

Geological Survey of Canada
 Nova Scotian Institute of Science

Institutions: Africa

South African Association for the Advancement of Science

Institutions: Asia, Australia, New Zealand

Asiatic Society of Bengal
 Australian Museum
 Australasian Ornithologists' Union
 Australasian Association for the Advancement of Science
 Bataviaasch Genootschap van Kunsten en Wetenschappen
 Dep't. Mines & Agriculture, New South Wales
 German Natural History & Ethnological Society of East Asia, Tokyo
 Geological Society of South Africa
 Geological Survey of New Zealand
 Geological Survey of Western Australia
 Indian Museum
 New Zealand Institute
 Public Library, Museums, & National Gallery of Victoria
 Royal Society of New South Wales
 Royal Society of Victoria

Stavanger Museum
 Sydney Observatory

Institutions: Europe

Academie du Dijon
 Academia Româna, Bukharest
 Belfast Natural History & Philosophical Society
 Bergens Museum
 Birmingham Philosophical Society
 Botanical Society of Copenhagen
 Botanical Society of Edinburgh
 Bristol Naturalists' Society
 British Museum (Natural History)
 British Association for the Advancement of Science
 Cambridge Philosophical Society
 Det Kongelige Danske Videnskabernes Selskab, Kjobenhaven
 Deutsche Entomologische Gesellschaft
 Deutscher Seefischerei Verein
 Dutch Society of Science
 Fondation Teyler
 Geologiska Föreningens i Stockholm
 Hungarian Geographical Society
 Imperial Academy of Sciences of Vienna
 Imperial Mineralogical Society, St. Petersburg
 Institut National Génevois
 Jardin Impérial de Botanique à St. Petersburg
 Kaiserl. Leop.-Carol. Deutscher Akademie der Naturforscher.
 Königlich Sächsischen Gesellschaft der Wissenschaften zu Leipzig
 Kgl. Danske Videnskabernes Selskab
 Kgl. Ungarischen Geologischen Anstalt
 K. K. Zoologisch-Botanische Gesellschaft, Wien
 Král. České Spolecnosti Náuk
 Linnean Society, London
 Liverpool Biological Society
 Magyar Nemzeti Muzeum
 Magyar Ornithologiai Központ
 Manchester Literary & Philosophical Society
 Ministère de l'Instruction Publique, France
 Musée Royale d'Histoire Naturelle de Belgique
 Musei di Zoologia ed Anatomia comparata, Torino
 Museo Civico di Storia Naturale di Genova
 Muséum d'Histoire Naturelle de Lyon
 Natural History Society of Glasgow
 Naturforschende Gesellschaft in Basel
 Naturforscher Gesellschaft bei der Universität Jurjew (Dorpat)
 Naturforschender Gesellschaft zu Freiburg i. Br.
 Naturhistorischen Hofmuseum, Vienna
 Naturhistorischen Verein Preussischen Rheinland
 Naturwissenschaftliche Gesellschaft "Isis"

Naturwissenschaftlichen Vereine zu Bremen
 Observatoire Royale de Belgique
 Ornithologische Gesellschaft in Bayern
 Provinciaal Utrechtsch Genootschap van Kunsten
 en Wetenschappen
 R. Accademia di Scienze, Lettere ed Arti, Modena
 R. Instituto Lombardo di Scienze e Lettere
 R. Corpo Delli Miniere Ufficio Geologico
 Real Academia de Ciencias y Artes de Barcelona
 Royal Academy of Sciences of Amsterdam
 Royal Academy of Sciences of Munich
 Royal Belgian Academy
 Royal Geographical Society
 Royal Hungarian Society of Natural Sciences
 Royal Irish Academy
 Royal Philosophical Society of Glasgow
 Royal Prussian Academy of Sciences
 Royal Society of Edinburgh
 Royal Society of London
 Royal Swedish Academy of Sciences
 Senckenbergische Naturforschende Gesellschaft
 Società Italiana di Scienze Naturali, Milano
 Società Reale di Napoli
 Societas Scientiarum Fennica
 Societe "Antonia Alzate"
 Société Géologique du Nord
 Société de Physique et d'Histoire Naturelle de
 Genève
 Société Entomologique de Belgique
 Société Fribourgeoise des Sciences Naturelles
 Société Royale de Géographie d'Anvers
 Société des Sciences Naturelles et Mathématiques
 de Cherbourg

Verein für Erdkunde zu Leipzig
 Verein für Vaterländische Naturkunde in Würt-
 temberg
 Verein zur Verbreitung Naturwissenschaftlicher
 Kenntnisse
 Videnskabs Selskab, Christiania
 University of Lund
 Wagner Free Institute of Science
 Zoological Museum of Berlin
 Zoological Museum, Tring
 Zoological Society of London

Institutions: Latin America

Academia de Ciencias Médicas, Físicas y Natu-
 rales de la Habana
 Comissão Geographica e Geologico do Estado de
 São Paulo
 Instituto Geográfico Argentino
 Instituto Geologico de Mexico
 Museo de La Plata
 Museo Nacional de Buenos Aires
 Museo Nacional, México
 Museu Paulista
 Sociedad Mexicana de Geografía y Estadística
 Sociedade Scientifica de São Paulo

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