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THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

THE PASADENA MEETING OF THE PACIFIC DIVISION

Edited by Professor J. MURRAY LUCK

SECRETARY

DURING the week of June 16, 1941, the twenty-fifth annual meeting of the Pacific Division, American Association for the Advancement of Science, and of eighteen associated societies was held at Pasadena, California. The meetings extended over six days.

In two respects at least they are to be regarded as the most eventful in the history of the division. The attendance far exceeded that of any previous meeting, the total number of members and guests who registered being 1,314. There is good reason for believing that many were in attendance at the meetings who failed to register. At the previous meeting in Pasadena (1931) which was national in character, the total registration for the week was 1,193. It is a matter of interest and at the same time a matter of regret to scientists on the Pacific Coast that these meetings failed to enjoy the attendance and participation of any appreciable number from the East. For example, 1,142 of those who attended the present meeting were from California, and only 82 were from outside the territory of the Pacific Division proper. The meeting was also eventful in that it represents a turning point in the history of the division—the completion of the first quarter-century of organized activity on the part of scientific societies in the Pacific states.

It was inevitable that the complexion of the meetings should be colored somewhat by the troubled con-

ditions existing abroad and the grave emergency that confronts the nation. That the conditions of the day are such as to throw upon organized science an added burden of responsibility is reflected in various contributions to the meetings proper. Most noteworthy in this respect was the divisional symposium on "Science and National Defense," in which papers were contributed by Professor M. P. O'Brien, of the University of California, Dr. Karl F. Meyer, of the Hooper Foundation for Medical Research, and Dr. Arthur G. Coons, of Claremont Colleges. The topics were "The Relation of the Engineering Colleges to the National Defense Program," "Medical and Public Health Problems in Relation to National Defense" and "The Economics of National Defense," respectively.

The afternoon of the same day was devoted to surveys of current research, a program which has been repeated annually by the Pacific Division for many years. Dr. W. S. Adams, Mount Wilson Observatory, reviewed some of the "New Results in Stellar Spectroscopy"; Professor E. W. Schultz, of Stanford University, discussed some of the outstanding "Recent Advances in the Study of Poliomyelitis"; Julian Hinds, of the Metropolitan Water District of Southern California, gave an interesting survey of some of the engineering problems encountered in the construction of the Metropolitan Aqueduct; and Dr. Myron Prinzmetal, of the University of Southern California, presented a résumé of "Recent Studies on High Blood Pressure."

The evenings of Tuesday, Wednesday and Thursday were devoted to addresses of general interest to visiting members, as well as to the lay public. That of Tuesday evening was delivered by Professor H. U. Sverdrup, president of the Pacific Division, who spoke on "The Pacific Ocean." On Wednesday evening Professor Max Mason, of the California Institute of Technology, discussed the progress of work on the 200-inch telescope, an instrument which is an increasing source of interest to visitors at the institute. The concluding address was given by Dr. John H. Lawrence, of the University of California, on "Biological Studies with Radioactive Elements."

Several events of a social character, arranged for the entertainment of visiting members and guests, completed the general sessions of the division. Deserving of special mention was the reception tendered by the Huntington Library and Art Gallery on the afternoon of June 16. A special exhibit of Aeronautica, historical in character, and arranged by the staff of the Huntington Library, proved to be of outstanding interest. In addition to more than 1,500 printed items, the library's Aeronautica collection is rich in engravings, drawings, cartoons and other pictorial items.

On Wednesday afternoon tea was served in the patio of the Athenaeum to approximately 300 of the members in attendance, while on Thursday afternoon many took advantage of an opportunity to visit some of the beautiful private gardens in Pasadena.

Meetings of the executive committee of the council were held in the course of the week. Professor D. R. Hoagland, of the Division of Plant Nutrition, University of California, was elected to the presidency of the division for the ensuing year, and A. R. Moore, of Oregon State College, Corvallis, was elected a member of the executive committee in succession to Paul W. Merrill, who retires on completion of his term of office. T. I. Storer and Linus Pauling were elected to the council as members-at-large, for four-year terms.

Announcement was made that the meetings of 1942 and 1943 will be held in Salt Lake City, Utah, and Corvallis, Oregon, respectively.

Local arrangements for the meeting were in the care of a committee consisting of Paul W. Merrill, *chairman;* William R. Smythe, *vice-chairman;* Alice Beach, *secretary;* Ian Campbell; Philip S. Fogg; William V. Houston; F. W. Maxstadt; William W. Michael; Robert A. Millikan; Robert O. Schad; Franklin Thomas; J. Paul Youtz.

Publicity and press relations were under the immediate supervision of Professor William Huse, of the California Institute of Technology.

Three institutions, assisted by the Pasadena Chamber of Commerce, served jointly as hosts for the meeting: The California Institute of Technology, the Henry E. Huntington Library and Art Gallery and the Mount Wilson Observatory.

Perhaps there is no satisfactory way of measuring the "success" of scientific meetings, but it is perhaps fair to say that, in the judgment of many, the meetings were outstanding. Quite apart from the unusually heavy registration, the sessions of individual societies were exceptionally well attended and many papers of outstanding merit were presented. Some of the symposia organized by individual societies were of singular merit and evoked wide-spread interest and participation on the part of the members.

All the meetings were held on the campus of the California Institute of Technology, which provided excellent facilities for the participating societies. Numerous exhibits arranged by departments of the institute proved to be of great interest to visiting members and guests.

It is hardly possible within the limits of available space to describe adequately excursions to points of interest in the immediate vicinity, but mention should be made of the Hale Solar Laboratory of the Mount Wilson Observatory, which was open daily, and of the special trip to Mount Wilson arranged for visitors on Friday afternoon.

SESSIONS OF AFFILIATED SOCIETIES

Eighteen of the affiliated and associated societies participated in the meetings and over five hundred papers were presented. The reports of the various sessions follow:

AMERICAN ASSOCIATION OF ECONOMIC ENTOMOLOGISTS PACIFIC SLOPE BRANCH

(Report by Roy E. Campbell)

The 26th annual meeting of the Pacific Slope Branch was highly successful. Of the total of 57 papers listed on the program, only 3 authors were absent. The total attendance was 335. Each session was started with an invitational paper of special interest, among which were: "Commodity Treatment for the Alleviation of Plant Quarantine," by D. B. Mackie; "Some Problems of Western Forest Entomology," by K. A. Salman; and "Radioactive Elements in Entomological Research," by R. Craig.

Wednesday sessions were devoted to reports of experimental work on vegetable, sugar-beet and garden insects, parasites and fumigation. There was a session on Wednesday night on "Systematic Entomology" arranged by E. O. Essig, in which this subject was thoroughly discussed by Professor Essig, H. H. Keifer, E. G. Linsley, M. T. James, G. F. Ferris and R. L. Usinger. The interest in this subject was shown by the fact that there were 145 in attendance.

The outstanding session was on Thursday, devoted to a symposium on "Petroleum Oil Sprays on Deciduous and Citrus Fruit Trees." All papers and discussions were by invitation. W. M. Hoskins discussed "Some Recent Advances in the Chemistry and Physics of Spray Oils and Emulsions," and A. W. Cressman presented "Methods of Determining Oil Deposit." E. L. Overholser discussed "Physiological and Physical Effects of Spray Oil on Deciduous Trees." "Effects of Petroleum Oil Sprays on Citrus Trees" was given by P. W. Rohrbaugh, and "Effects on Quality of Citrus Fruits" by W. B. Sinclair. The use of toxicants in oils was discussed by several speakers.

On Thursday night a very successful dinner was given at the Altadena Country Club, with an attendance of 278.

The Friday morning program, devoted to "Problems in Western Forest Entomology," was ably arranged by K. A. Salman, and several interesting papers were given by members of the staff of the Forest Insect Laboratory at Berkeley on various western forest insects. On Friday afternoon the sessions were concluded with miscellaneous papers, including some on the honeybee, thrips, properties of insecticidal dust and a colored motion picture called "Louse Control."

The officers elected for the ensuing year were: *Chairman,* George F. Knowlton, Logan, Utah; *Vice-Chairman,* Jas. C. Evenden, Coeur d'Alene, Idaho; *Secretary-Treasurer,* Roy E. Campbell, Alhambra, California.

AMERICAN ASSOCIATION OF PHYSICS TEACHERS

(Report by E. C. Watson)

The program of the American Association of Physics Teachers consisted of a session devoted to contributed papers and a session devoted to invited papers. Speakers ranged from Tucson, Arizona, to Seattle, Washington, but were mostly from Southern California. The attendance totaled more than 80 and fell at no time below 50. Twelve states in all were represented.

Twelve papers only were presented and so ample time was available both for adequate presentation and for discussion. Three of the papers dealt specifically with problems in the teaching of physics, three with the history and philosophy of physics, and two were accompanied by experiments or demonstrations. Discussion centered principally around Professor V. F. Lenzen's paper on "The Meaning of Dimensions" and Professor R. W. Kenworthy's paper on "Concepts of Potential Difference and Electromotive Force as Presented in College Physics Texts." Unfortunately, Professor T. von Karman was called to Washington on national defense work and so was unable to present his paper on "Aerodynamics in College Physics."

AMERICAN CHEMICAL SOCIETY, PACIFIC INTERSECTIONAL DIVISION

(Report by Carl Niemann)

The meetings of the Pacific Intersectional Division of the American Chemical Society were well attended and sixty-two papers were presented during six half-day sessions. One session was devoted to papers in the field of synthetic organic chemistry and among the subjects considered were: the structure of naphthenic acids, the reaction of the Grignard reagent with lactones, syntheses in the cyclobutane series, the synthesis of alkoxyacetylenes, the synthesis of "ortho" thyroxine and the constitution of arabogalactan. The mechanism of some organic reactions provided papers for a second session and the titles presented dealt principally with the hydration of ethylenic double bonds, cis-trans isomerization of ethylenic double bonds and cyanohydrin formation. In the third session allotted to organic chemistry, papers which considered some of the reactions of hemoglobin, myosin, pituitary lactogenic hormone, glutathione and chlorophyll were read. In addition to the above there were interesting accounts of researches on the provitamin-A content of American whole-wheat flour, the non-enzymatic darkening of fruits and the digestibility of proteins.

The remaining three sessions were allotted to papers in the field of physical and inorganic chemistry. In the first session of this group a number of papers on the molecular structure of some organic and inorganic compounds were given and in addition one paper described the use of punched cards in calculations of molecular structure. A second session was devoted to the presentation of papers dealing with radioactivity and thermochemistry and among the topics considered were: fission products from uranium 238, chemistry of radio hydrogen (tritium), the heat capacity of gaseous paraffin hydrocarbons, the entropy of methyl mercaptan and the thermal decomposition of dimethyl acetal. The final session was devoted to the consideration of such papers as the quantitative stability relationship between the various forms of silica, the mercurous bromide electrode, the dissociation of salts in solvents of low dielectric constant and the use of phase diagrams in the classification of liquid crystalline phases.

In addition to the above a number of laboratory demonstrations were arranged in both physical and organic chemistry and the meeting was concluded with a joint dinner with the Southern California section of the American Chemical Society.

American Meteorological Society

(Report by G. M. Sheldon, Jr.)

The Pasadena meeting of the American Meteorological Society, held in conjunction with the meeting of the Pacific Division of the A.A.A.S., was well attended and all the seventeen papers presented, during the four half-day sessions, were of exceptional interest. The meeting was closed with a luncheon Friday noon, after which was shown a motion picture in color on "Cold Front Phenomena."

The largest group at any one session was the approximately two hundred who attended the symposium on long-range forecasts on Thursday afternoon. The papers covering the theory and research and the preparation of the forecasts, given by Dr. Krick, and the verification and results, given by Mr. Elliott, brought forth considerable comment and discussion.

The papers presented covered four general fields of research, namely, radiation and fogs, illumination climate, long-range forecasts and convective showers and thunderstorms.

The officers of the Los Angeles Seminar for the coming year were introduced: *Chairman,* Dr. J. Bjerknes, University of California at Los Angeles; *Vice-Chairman,* Kenneth Fink, of the U. S. Weather Bureau at Los Angeles; *Secretary-Treasurer,* D. C. Tandy, of the American Airlines, Inc., at Burbank.

American Physical Society

(Report by Paul Kirkpatrick)

Sessions for the presentation of brief contributed research reports were held on Wednesday, Thursday and Friday forenoons. These reports, thirty-five in number, touched upon theoretical and experimental investigations in varied fields, with purely theoretical papers concentrated in the Wednesday morning program. Diverse topics were grouped in the Thursday program, while Friday's session consisted of x-ray and spectroscopic contributions.

Two symposia concerned with applications of physics in adjacent fields were presented at the Wednesday and Thursday afternoon sessions. On Wednesday the society met in joint symposium with the Astronomical Society of the Pacific to consider dynamical phenomena of atmospheres in general and specifically that of the sun, earth and other planets. Papers by J. Holmboe, J. Strong, E. C. Slipher and S. B. Nicholson were heard. The symposium of Thursday afternoon upon electron microscopes was addressed by Otto Beeck, Alfred Marshak and William V. Houston. Many industrial, biological and chemical applications, projected and accomplished, were presented. A motion picture of the RCA electron microscope was shown. Following the symposium the audience was invited to witness Professor Houston's two-stage electron microscope in operation.

On Wednesday evening a joint dinner was held with the Astronomical Society of the Pacific; and at a physics luncheon on Thursday the group was addressed by President George B. Pegram, of the American Physical Society.

American Phytopathological Society, Pacific Division

(Report by C. E. Yarwood)

The society held four half-day sessions for submitted papers; a symposium, with certain other societies, on "Micronutrient Deficiency Diseases of Crops," under the chairmanship of D. R. Hoagland; an evening dinner meeting with entertainment provided by the membership; and a field trip under the direction of K. F. Baker. Of the twenty-nine volunteered papers, twelve were on virus diseases, nine on fungous diseases, five on plant disease control, two on diseases caused by nematodes and one on non-parasitic diseases. Among the more outstanding papers were one by M. B. Linford on the mechanism of feeding of nematodes, one by D. E. Bliss on artificial inoculation of plants with *Armillaria mellea,* one by L. C. Cochran and L. M. Hutchins on a wide-spread ring spot virosis on various species of *Prunus* and one by W.

N. Takahashi on a virus inactivator obtained from yeast. Fifty-one members and several non-members registered at the sessions.

Officers of the society for the ensuing year are as follows: *President,* R. B. Streets, University of Arizona, Tucson; *Vice-President,* L. D. Leach, University of California, Davis; *Secretary-Treasurer,* C. E. Yarwood, University of California, Berkeley; *Councilor,* N. J. Giddings, U. S. Department of Agriculture, Riverside.

AMERICAN SOCIETY FOR HORTICULTURAL SCIENCE, WESTERN SECTION

(Report by W. W. Aldrich)

This was the third annual meeting of the Western Section. The program included a joint symposium, five half-day sessions for the forty-one submitted papers, including one joint session with the Western Section of American Society of Plant Physiologists, the annual dinner and a tour of the U. S. Regional Salinity Laboratory and the Citrus Experiment Station, at Riverside.

The program was started with the joint symposium with the Western Society of Soil Science, American Society of Plant Physiologists and the American Phytopathological Society upon "Micronutrient Deficiency Diseases of Crops." Dr. W. H. Chandler discussed recent developments in the study of zinc deficiency. Reviews of boron deficiency conditions in the Northwest and boron and copper deficiency conditions in vegetables in the East, were given by Dr. E. L. Overholser and Dr. J. E. Knott, respectively. Dr. J. P. Bennett reported his results on iron deficiency in relation to manganese. Professor W. T. McGeorge discussed the soil chemistry phases.

The eight submitted papers on "Fruit Physiology," presented on Wednesday afternoon, covered climacteric respiration curves for the avocado, effects of methyl bromide upon deciduous fruits, relation of date fruit thinning to fruit quality, reduced date fruit cracking with reduced water supply to fruit, pecan nut filling in relation to tree vegetativeness and pear fruit growth in relation to water supply.

The Thursday morning session, with submitted papers on mineral nutrition, was outstanding. Symptoms of manganese deficiency in walnut and citrus were well illustrated. The growth of deciduous fruit trees and of field crops in the now famous Aiken loam at Paradise, California, was reviewed. The effects of inorganic and organic nitrogen fertilizers upon lettuce, the effects of high salt concentrations in solution culture upon tomato, and the high boron requirement with low calcium for table beets in sand culture, were covered by three very interesting papers.

Of the seven papers on Thursday afternoon and the ten papers on Friday morning, one showed the effect of organic matter in increasing water penetration, two reported methods of studying soil moisture depletion by citrus, four were upon delayed foliation and one upon relative resistance to powdery mildew by delphinium species. These sessions had an average attendance of fifty-three.

At the Friday afternoon session a paper reporting reduced growth of tomato, lettuce and Bermuda grass at pH 3, 4 and 9, as compared to good growth at pH 5 to 8, was particularly interesting. A preliminary report upon severe citrus pruning stimulated considerable favorable discussion.

Officers for the coming year, elected at the dinner on Friday evening, are: *Chairman,* A. C. Hildreth; *Vice-Chairman,* F. M. Coe, and *Secretary-Treasurer,* J. H. MacGillivray.

AMERICAN SOCIETY OF ICHTHYOLOGISTS AND HERPETOLOGISTS, WESTERN DIVISION

(Report by Richard S. Croker)

The meetings of the Western Division, American Society of Ichthyologists and Herpetologists, were featured by three symposia and a half-day session of general papers. The first symposium was on introduced fishes in the waters of the Pacific Coast. Papers were presented by Brian Curtis, W. A. Dill, W. M. Chapman, G. H. Clark, and P. R. Needham and Osgood Smith. The consensus of opinion expressed was that the introduction of exotic fishes had been a worthwhile success. The symposium on rattlesnakes and other pit vipers featured papers by R. Maslin, A. W. Herre, H. S. Fitch, L. M. Klauber and C. B. Perkins. Fitch's field study provoked a great deal of discussion. The final symposium was a joint session with the Western Society of Naturalists, and was entitled "Africa, Zoologically Speaking." The high light was a paper by Bailey Willis on geology and evolution in the Dark Continent. Other papers on evolution were by C. Stock concerning mammals and G. S. Myers on fishes. R. B. Cowles, Sarah Atsatt and A. Van der Horst presented papers on modern Africa.

At the general session, seven papers were read. Of great interest were the remarkable photographs of breeding trout presented by Osgood Smith. An extensive exhibit of California fossil fishes was presented by Lore R. David. About 130 persons attended the symposium on Africa and about 60 were attracted to each of the other sessions.

Officers of the Western Division of the society for the ensuing year are: *President,* Margaret H. Storey, Stanford University; *Vice-President,* A. M. Woodbury, University of Utah; *Secretary,* Richard S. Croker, California Division of Fish and Game, Terminal Island, California.

Salt Lake City, Utah, will be the scene of the 1942 meetings.

AMERICAN SOCIETY OF PLANT PHYSIOLOGISTS, WESTERN SECTION

(Report by J. van Overbeek)

The attendance ranged from 60 to 200. Three joint symposia were held and twenty-eight miscellaneous submitted papers were presented. D. R. Hoagland presided at a symposium on micronutrient deficiency diseases of crops. The characteristics of zinc deficiency, which causes more trouble in good than in poor soils and to which woody plants are more susceptible than herbaceous plants, were discussed by W. H. Chandler. E. L. Overholser reviewed boron deficiency in the Northwest, while J. E. Knott discussed copper, manganese and iron deficiency in the East. J. P. Bennett stressed the importance of colloidal iron, which is available from pH 3 to 9. W. T. McGeorge discussed soil chemistry. F. W. Went presided at a plant hormone symposium. He discussed chemical specificity of auxins. J. P. Bennett showed evidence of a substance which breaks the dormancy of trees. James Bonner refuted the popular notion that vitamin B_1 promotes the growth of horticultural plants. J. van Overbeek discussed dwarfism in corn due to excessive auxin destruction. He also showed that injection of naphthalene-acetic acid into *Datura* ovaries produces "seeds" containing non-viable pseudoembryos. A symposium on protoplasm was headed by O. L. Sponsler, who discussed relative size of protoplasmic constituents. A. R. Moore discussed essential factors in protoplasmic movement and A. L. Cohen the causes of form determination.

Air-conditioned greenhouses and fruiting of tomatoes under controlled conditions were discussed by F. W. Went. F. T. Addicott reported reduced meristematic activity in isolated roots lacking vitamin B_6. H. E. Hayward discussed suberized layers in the root cap due to high chloride concentrations. M. A. Joslyn discussed succinic acid formation in yeast. P. W. Rohrbaugh measured biologically ethylene in motor gases. G. H. Harris found sulfur important for raspberries. A highly instructive demonstration was given by W. Z. Hassid showing that glucose phosphate is immediately converted into synthetic starch when phosphorylase is added.

A. Goetz found yeast extremely susceptible to silver ions. D. R. Hoagland and T. C. Broyer presented experiments on the importance of respiration for accumulation of solutes and permeability to bromide in roots. J. van Overbeek showed evidence for water uptake by forces other than osmosis. R. Emerson showed that phycocyanin is effective in photosynthesis. P. J. Allen found a 700 per cent. increase in respiration of wheat leaves after infection with mildew. D. M. Bonner discussed four groups of chemicals promoting growth of isolated leaf tissue. J. Bonner showed that translocation of B_1 is similar to that of other plastic materials. D. I. Arnon found that no nutrients are absorbed at pH 3, while at pH 9 only no phosphorus is absorbed. F. G. Leibig showed that small amounts of aluminum increase copper tolerance. W. W. Aldrich reported 55 per cent. starch in date trees. Soil moistures can not be controlled below field capacity, according to A. H. Hendrickson. The effect of pruning on regeneration of top growth was discussed by A. H. Cameron. O. F. Curtis found that carotenes decrease in mineral-deficient plants, while A. L. LeRosen stressed the necessity of a gene R for carotenes in tomatoes. A. S. Crafts discussed a paper by R. N. Raynor on selective weed-killing ability of phenol compounds. W. O. Williams showed improved techniques for potassium titration.

Excursions were held to Riverside and Santa Ana.

Officers for the coming year: *Chairman,* J. van Overbeek; *Vice-Chairman,* E. T. Bartholomew; *Secretary,* D. I. Arnon.

ASSOCIATION OF PACIFIC COAST GEOGRAPHERS

(Report by J. E. Williams)

The seventh annual meeting of the Association of Pacific Coast Geographers was held at the California Institute of Technology at Pasadena, California, on June 18–20, 1941, where eighteen papers and a symposium on the Pacific Basin were presented.

The first paper on "Conservation and Chorology," by Dr. Kuchler, emphasized the importance of knowing the symbiotic balance in the landscape before attempting conservation. Dr. Bissell brought out the relation of climate to the prehistoric settlement of Chaco Canyon, New Mexico. Dr. Hoover described the natural beauty of the Havasu Canyon of Arizona. Next, Dr. Martin gave an excellently illustrated paper on the Zuyder Zee Reclamation Project. The morning session was closed by a discussion of the glacial retreat in the Lake Chelan region of Washington by Dr. Freeman.

The group gathered for luncheon and were able to see Dr. Hoover's film on Havasu Canyon.

In the afternoon, Mr. Gerlach presented "The Climates of California" from the standpoint of variation between desert, steppe and Mediterranean types. The determining factors in location of early Los Angeles were outlined by Dr. Baugh. The land-forms of the San Gabriel Mountains were next analyzed from a study of their Quaternary history by Dr. Williams. A paper on the black sands and terraces of Monterey by Dr. Beard analyzed the commercial use of various minerals found there.

A preliminary report on the status of geography in the junior colleges of the Pacific Coast was given by Mr. Buoncristiani. The shearing of trees by a steady directional wind was proved to be a mechanical process, by the facts of Dr. Richardson's paper. Dr. Zierer discussed the relationship of the urban forms of Melbourne to its significance as a functional center. Dr. Spencer analyzed the effect of the present migrations in China on the Chinese culture and the absorption of the non-Chinese. The ambitious program of mapping the State of California was described by Dr. Miller, of the California State Planning Board.

The afternoon session was a symposium on the Pacific Basin, with Dr. Spencer as chairman. Contrasts of the occidental and oriental rural landscapes turned out to be more like similarities.

The president's address, given by Dr. Earle at the dinner, was an interesting study of house types, both oriental and occidental. She emphasized the function of the various house units in many localities.

The officers for the coming year are: *President,* Dr. Forrest Shreve, Desert Laboratories, Tucson, Arizona; *Vice-President,* Dr. Eliot G. Mears, Stanford University; *Secretary-Treasurer,* Dr. Willis H. Miller, California State Planning Board, Sacramento, California.

THE ASTRONOMICAL SOCIETY OF THE PACIFIC

(*Report by R. E. Wilson*)

A joint session with the American Physical Society was held on Wednesday afternoon, June 19, to hear a symposium on "The Dynamics of Atmospheres." Dean George B. Pegram, of Columbia University, president of the Physical Society, presided. The attendance was about 150. The theory of the hydrodynamics of rotating atmospheres was presented by J. Holmboe, of the University of California at Los Angeles, and John Strong, of the California Institute of Technology, discussed the emission and absorption of infra-red radiation in the earth's atmosphere. E. C. Slipher, of the Lowell Observatory, summarized the work of many years at that institution on the atmospheres of the planets, his many excellent photographs revealing marked changes from day to day, notably in the polar caps of Mars. The remarkable changes continually taking place on the surface of the sun were illustrated by photographs and discussed by S. B. Nicholson, of the Mount Wilson Observatory.

Three sessions for papers were held under the chairmanship of A. S. King, R. J. Trumpler and W. S. Adams. The average attendance was about 55. The twenty papers presented covered a rather unusual variety of subjects from instrumentation to theory and from terrestrial phenomena to the extragalactic nebulae. Edison Pettit described a new polarizing monochromator for viewing solar prominences. This instrument was in operation on Mount Wilson on Thursday and aroused considerable interest. F. Zwicky described a mosaic grating for use with the Schmidt telescope. Among the papers of special interest relating to the sun were descriptions by Mary F. Coffeen of a new table of solar wave-lengths in the infra-red, a cooperative work of the Mount Wilson and Princeton Observatories, and by H. D. Babcock of a new method of measuring the sun's general magnetic field. D. R. Barber reported a significant correlation between the luminosity of the night sky and the activity of the earth's magnetic field during the preceding twenty-four hours. Andrew McKellar discussed in one paper the structure of one of the cyanogen bands in the spectrum of Comet Cunningham and in another the problem of the possible molecular identification for certain interstellar lines. Three papers dealt with eclipsing binary systems: R. M. Petrie presented evidence of apsidal motion in the orbit of AR Cassiopeiae; A. H. Joy discussed the absolute dimension of WW Draconis; and O. C. Wilson showed from observations of ζ Aurigae at the 1939–40 eclipse that both the turbulence in the atmosphere of the larger star and its excitation temperature increase with height. A. van Maanen announced the discovery of more than two dozen new faint members of the Pleiades cluster, extending knowledge of the content of that interesting assembly to stars of photographic magnitude 17.5. Two papers on the motions of the long-period variable stars by P. W. Merrill and R. E. Wilson pointed out a marked dependence of the dispersion in the radial velocities on the period of light variation, an asymmetry in motion apparently associated with galactic rotation, and a definite correlation between their mean luminosities and periods. R. Minkowski presented evidence that there are two and possibly three kinds of supernovae. Carl K. Seyfert suggested that broad emission lines found in the spectra of the nuclei of three extragalactic nebulae, lines commonly found narrow in galactic planetary nebulae, may be broadened as the result of the motions of the stars or gases in the nuclei.

An informal dinner with the American Physical Society was held at the Athenaeum on Wednesday evening. The last session for papers was held in the auditorium on Mount Wilson, after which the various telescopes and pieces of equipment were on display. The observatory was host to the members of the society for a supper at the monastery, after which the 100- and 60-inch telescopes were opened for observations. On Friday about 35 of the members took a trip to Mount Palomar, where the 200-inch and the Schmidt telescopes were exhibited by members of the staff.

BOTANICAL SOCIETY OF AMERICA, PACIFIC SECTION

(Report by Ira L. Wiggins)

The program of the Pacific Section consisted of two symposia, three half-day sessions for the presentation of submitted papers, a luncheon attended by members of the American Society of Plant Taxonomists and other botanists and a field trip to the Rancho Santa Ana Botanic Garden.

The Wednesday morning program of submitted papers dealt with genetic and cytological problems and that of Thursday morning contained papers on morphology and anatomy of flowering plants, the effect of ethylene chlorhydrin on potato tubers and algological investigation on the Pacific Coast of North America. No program was scheduled on Wednesday afternoon in order that members of the Botanical Society might visit the U. S. Regional Salinity Laboratory at Riverside, California.

A joint symposium with the Western Section of the American Society of Plant Physiologists on Thursday afternoon, June 19, considered plant hormones, with F. W. Went, J. P. Bennett, James Bonner and J. van Overbeek presenting stimulating papers.

The symposium on protoplasm held jointly with the American Society of Plant Physiologists on Friday morning included four interesting papers by O. L. Sponsler, A. R. Moore, S. C. Brooks and A. L. Cohen. The molecular, colloidal and physical properties of protoplasm, the role of protoplasm in regulating cellular permeability and the organization of protoplasm as revealed by studies on slime molds were discussed.

The final session for presentation of submitted papers was held on Friday afternoon, June 20. A paper dealing with the ecological relationships among certain desert plants presented by F. W. Went excited considerable discussion as did one reporting results of experiments on the germination of seeds of native California plants. Other papers dealt with the taxonomy and geographical distribution of the *Saprolegniaceae* and of several groups of flowering plants.

At the annual business meeting held on Thursday morning, the following officers were elected: *President,* C. E. Owens; *Secretary-Treasurer,* Basset Maguire; *Council Member,* P. A. Munz.

Through the generosity of Mrs. Susanna Bixby Bryant, director, an extremely interesting visit and a delightful luncheon at the Rancho Santa Ana Botanic Garden were enjoyed by about twenty-five members of the Botanical Society and of the American Society of Plant Physiologists on Saturday.

CALIFORNIA ACADEMY OF SCIENCES

(Report by Joseph Goodman)

The California Academy of Sciences sponsored a symposium on "Natural Illumination" on Wednesday morning, June 19. About 75 persons were in attendance. A. Breese explained the concept of illumination climate. R. C. Miller reported on the behavior of birds, insects and other organisms with reference to morning and evening twilight. H. F. Blum discussed the possible role of the shorter wave-lengths of sunlight in causing cancer of the skin.

The symposium concluded with a round table discussion by biologists, physicists and meteorologists of the need for a coordinated program for the measurement of solar radiation as received at the earth's surface. A resolution was introduced and unanimously passed requesting Dr. R. C. Miller as director of the California Academy of Sciences to form a committee under the auspices of the academy to work out such a program on the widest practicable basis.

ECOLOGICAL SOCIETY OF AMERICA, WESTERN SECTION

(Report by H. de Forest)

Twelve papers reporting research were presented in two half-day sessions, with the fields of animal and plant ecology represented about equally. Interesting brief discussions followed most of these papers.

In addition seven papers were given in two symposia. One of these, on "Ecological Aspects of Evolution," attracted a particularly large attendance. This symposium comprised papers by W. M. Hiesey on the relations between climate and intraspecific variation in plants, by G. L. Stebbins on polyploid complexes in relation to ecology and the history of floras, by A. H. Miller on habitat selection among the higher vertebrates and its relation to intraspecific variation, and by J. van Overbeek on physiological aspects of the problem of ecology and evolution. The second symposium, on "The Development of Quantitative and Experimental Work in Ecology," consisted of papers by W. D. Billings on quantitative correlations between vegetational change and soil development, J. S. Horton on quantitative analysis of chaparral by quadrats, and L. R. Penner on effects of temperature and moisture on the distribution and incidence of parasites.

A pleasant ecologists' luncheon was held on one of the meeting days.

THE OCEANOGRAPHIC SOCIETY OF THE PACIFIC

(Report by C. L. Utterback)

The program of the sixth annual meeting of the Oceanographic Society consisted of a symposium on "Coastal Currents of North America," a half-day session of contributed papers, and the annual luncheon and business meeting.

The symposium papers were prepared by Dr. R. H. Fleming, of the Scripps Institution of Oceanography, O. E. Sette, of the United States Fish and Wild

Life Service, and Dr. Richard Van Cleve, of the California State Fish and Game Commission. Due to the absence of Dr. Fleming, his paper was presented by H. U. Sverdrup. The speakers described the distribution of the halibut eggs and larvae in relation to the ocean currents in the region of Cape St. James on the southern end of Queen Charlotte Island and the distribution of the pilchard eggs and larvae in relation to the ocean currents off the coast of Southern California. The papers were followed by a discussion of various parts of the researches.

The Thursday afternoon program of contributed papers concerned different phases of oceanography. Dr. B. Gutenberg presented some of the results of his researches on earthquakes and submarine topography. An interesting account of ten years with the *Valero III* was given by Dr. C. M. Fraser. Other papers were concerned with certain aspects of the chemistry of the ocean. Two other papers presented results of studies of current configuration in selected areas.

At the annual business meeting on Wednesday noon the following officers were elected: *President,* Dr. R. C. Miller, director of the California Academy of Science; *Vice-President,* Professor A. H. Hutchinson, of the University of British Columbia; *Member of the Executive Committee* (two-year term), Dr. Richard Van Cleve; *Secretary-Treasurer* (three-year term), Professor C. L. Utterback, of the University of Washington.

SOCIETY OF AMERICAN BACTERIOLOGISTS, NORTHERN CALIFORNIA-HAWAIIAN BRANCH, SOUTHERN CALIFORNIA BRANCH

(Report by Ruth L. Conrad)

The two western branches this year combined to present a program of wide interest range at their half-day session.

Dr. M. Ball pointed out that an unknown growth factor exists in serum, probably non-protein in nature. It has a greater growth-stimulating effect than nicotinic acid.

A new mold in the field of allergy, *Epicoccum,* was reported by Dr. O. A. Plunkett to have air-borne spores prevalent in May rather than in October, the peak for most mold spores in the Los Angeles area.

The sensitivity of pneumococci to sulfapyridine was of general interest. Dr. F. J. Moore described a rapid qualitative test for resistance based upon the inoculation of sputum into treated and untreated mice. It was found that patients fall into four groups in respect to their response to chemotherapy.

The isolation of phages from normal strains of *Staph. aureus* and the failure to detect them on strains of *Staph. albus* was reported by Dr. Roy T. Fiske.

The report of Dr. W. W. Smith that hydrogen zeolites are more superior to sodium zeolites in lowering the bacterial count of water was of particular significance because of the arrival that day of the Colorado River water.

Dr. G. A. Matson came from Salt Lake City to tell us of his work on determining the racial purity or crossing among some of the Indians by means of the blood groups.

Tissue selectivity of strains of *Torula histolytica,* incidence and control of avian Salmonella infections, the marked reduction of bacterial flora of mackerel due to fast-freezing, studies on hydrogen sulfide production, the use of marked antigens and the oligodynamic action of silver were also reported.

Following the meeting, members of the group enjoyed a luncheon at the Athenaeum.

SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE

(Report by D. M. Greenberg)

The Pacific Coast and Southern California branches of the Society for Experimental Biology and Medicine held a joint meeting on Friday afternoon, June 20. The officers of the Southern California Branch, Dr. Emil Bogen, *Chairman,* and Dr. Max S. Dunn, *Secretary,* conducted the program.

About one hundred were in attendance and interest was maintained throughout the whole of the program. Thirteen scheduled papers on subjects ranging from parasitology to biochemistry and biophysics were presented.

The variety is shown by the following topics covered: "Does *Trypanosoma cruzi* Chagas exist in man in the United States?" by S. F. Wood; "A comparison of the chemical and biological changes in beans produced by fertilization with the excreta of cats fed on adequate and deficient diets," by F. M. Pottenger, Jr., and D. G. Simonson; "Hemorrhage control in *Eimeria tenella* infected chicks when protected by the antihemorrhagic factor, Vitamin K," by F. M. Baldwin, O. B. Wiswell and H. A. Jankiewicz; "A study of carbohydrate metabolism in subacute thiamin deficiency," by H. A. Harper; "The comparative glycogenic and ketolytic activity of the hexitols," by C. Johnson and H. J. Deuel, Jr.; "The strength-duration curve of nerve excitation by means of electrical fields," by J. A. Gengerelli; "The effect of Higueronia on the nemathelmintic gastric ulcers of California sea lions," by C. M. Herman; "The effect of decomposition on brain tissue," by W. A. Hilton; "Tracer studies with induced radioactive isotopes of the permeability of the blood-cerebrospinal fluid barrier to ions," by D. M. Greenberg, R. B. Aird, M. D. D. Boelter, W. W. Campbell, W. E. Cohn and M. M. Murayama; "Effects of x-rays and neutrons on chromosomes and on phos-

phorus metabolism of nuclei," by A. Marshak; "Protein and energy utilization in riboflavin-deficient chicks," by M. Kleiber and T. H. Jukes; "Some analyses of purified poliomyelitis virus," by Hubert S. Loring and C. E. Schwerdt; "The effect of a water-soluble lemon peel extract on the circulatory system," by A. J. Leser, C. F. Lombard, C. H. Thienes, C. Wawra and J. L. Webb.

At the end of the afternoon session, a dinner was held for the group.

WESTERN SOCIETY OF SOIL SCIENCE

(Report by W. P. Martin)

The meetings of the Western Society of Soil Science were featured by a larger attendance, a more diverse program and greater discussions than heretofore. Approximately eighty soil scientists listened to and discussed thirty-one papers on current research during four half-day sessions. In addition to the above, six papers were presented during a symposium on deficiency diseases of plants under the chairmanship of D. R. Hoagland in which the soil scientists collaborated with the plant pathologists, the plant physiologists and the horticulturists.

Papers ranged from a description of the physical and chemical characteristics of mature soil profiles by J. Thorne to studies on the effect of root-nodule bacteria on seed pea production by S. C. Vandecaveye. Early sessions were devoted principally to the physical properties of soils, with papers being presented by J. E. Fletcher, L. H. Smith and P. I. Vlasoff, of the Soil Conservation Service, and O. W. Israelsen, G. B. Bodman, L. T. Kardos and J. P. Martin, of the State Agricultural Experiment Stations. Numerous papers presented various aspects of the moisture problem in Western soils; R. E. Moore, P. R. Day, J. R. Furr, L. A. Richards, R. F. Reitemeier, M. R. Huberty, T. F. Buehrer and I. S. Vanoni were active in this respect.

Papers on the significance of Donnan equilibria in soils and errors inherent in the interpretation of pH measurements were given by L. E. Davis and P. R. Stout. J. P. Conrad, A. B. Caster, W. P. Martin, J. S. Jones, D. W. Thorne and L. T. Kardos presented papers on the retention by soils of the nitrogen of amino acids, nitrite build-up in the oxidation of ammonia and a threshold pH for same, organic matter changes in dry farm soils, and both zinc deficiency and arsenic toxicity in soils, respectively. Two related papers on plant tissue analyses as an aid to diagnosing nutrient deficiencies of crops and the potash content of citrus trees in relation to the supply in the soil were presented by A. Ulrich, S. M. Brown and H. D. Chapman.

At the banquet on Tuesday evening, Dr. L. D. Batchelor, director of the Citrus Experiment Station at Riverside, discussed the work of the station relative to the fertilization of citrus trees, and M. E. McCollam showed a colored motion picture entitled: "Fertilizer experiments with Ludina clover pastures." Seventy persons were in attendance.

An interesting field trip to visit the laboratories of the United States Regional Salinity Laboratory and the Citrus Experiment Station at Riverside was made on Wednesday afternoon.

Officers of the society for the coming year are as follows: *President,* L. C. Wheeting, Washington State College, Pullman; *Vice-President,* T. L. Martin, Brigham Young University, Provo, Utah; *Secretary-Treasurer,* W. P. Martin, University of Arizona, Tucson.

OBITUARY

ERHARD FERNHOLZ

THE death of Dr. Erhard Fernholz occurred as the result of accidental drowning at Princeton, New Jersey, on December 14, 1940. Dr. Fernholz was born at Hiddenhausen, Westphalia, Germany, on June 9, 1909, and graduated from the Realgymnasium of Bünde in 1928. He received the degree of doctor of philosophy from Göttingen with highest honors in the Faculty of Mathematics and Natural Science in November, 1932, and during the following year worked on a stipend with Professor Windaus. From October 1, 1933, until March, 1935, he was university assistant in the Chemistry Faculty of Göttingen, in charge of the Biochemical Department of the Organic Chemistry Laboratory. In the spring of 1935 he received a fellowship from Princeton University on funds given the university by Merck and Company and came to this country to work in the Chemistry Department, where he was associated with Professor E. S. Wallis.

In the course of eight years, Dr. Fernholz contributed more than forty papers to the chemical literature. At an early date he established himself as an uncommonly original and able investigator. Most of his earlier work was concerned with the sterols and bile acids, and he was soon recognized as a leader in this field. His work on the constitution of stigmasterol led directly to the first successful partial synthesis of progesterone, accomplished independently by Fernholz and by Butenandt. This work established the structure of progesterone proposed by Slotta.

After coming to the United States, Dr. Fernholz continued to contribute papers on the steroids and maintained an active interest in the field. It was his desire to determine the structure of the more impor-