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THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

THE FOURTEENTH ANNUAL MEETING OF THE PACIFIC DIVISION

By Dr. J. MURRAY LUCK, Secretary

THE fourteenth annual meeting of the Pacific Division of the American Association for the Advancement of Science and Associated Societies was held at the University of Oregon, Eugene, from June 18 to 21, 1930. The registration totaled 457, inclusive of 33 who attended the meeting of the Western Society of Soil Science held in Corvallis on the Monday and Tuesday preceding the Eugene meeting. Excellent hospitality was provided by the hotels of Eugene and the new dormitory of the University of Oregon. Over half of the members were thus cared for. Auto camps provided accommodation for 50. The remainder, many of whom were residents of Eugene and Corvallis, were guests in private residences.

The sessions commenced on the afternoon of June 18 with reviews of the scientific contributions of the past year. In accordance with the custom of recent years the speakers confined their attention to a few of the most significant papers contributed from the Pacific Coast and far western states. J. A. Anderson, of the Mount Wilson Observatory, and R. B. Brode, of the University of California, reviewed the physical sciences; Olaf Larsell, of the University of Oregon, and C. B. Lipman, of the University of California, surveyed the progress in the life sciences. This division of the field proved a happy one. Recognizing, as it did, the rapprochement that has been steadily growing among the sister sciences, it gave to the speakers in each group the wide domains of several interrelated sciences from which to sketch sweeping panoramic views of an entire field or details of a portion. At 4 P. M. two of the excellent sound films pre-

pared by the General Electric Company were presented. The four-reel film by Sir William Bragg on the "Arrangements of Atoms and Molecules in Crystals" and that of C. W. Hewlett on "Radioactive Rays" were the two selected by the committee in charge. About 250 attended these opening sessions.

From 5:00 to 6:30 P. M., Dr. Arnold Bennett Hall, president of the University of Oregon, and Mrs. Hall received the members and guests of the Pacific Division and Associated Societies. In the evening Dr. Hall formally welcomed the association to the university. In his address he stressed the value of the objective methods of science to the social disciplines and expressed a desire for closer relationships between the natural and social sciences. E. G. Martin, vice-president of the Pacific Division and chairman of the executive committee, responded to President Hall's message of welcome. Dr. Douglas H. Campbell, professor emeritus of botany in Stanford University and president of the Pacific Division, gave the address of the evening on "The Origin of Land Plants." It was published in full in the August 22 issue of this journal.

The morning of Thursday, June 19, was devoted to a symposium on "Forest Trees" in which most of the societies participating in the Eugene meeting joined. George W. Peavy, dean of the School of Forestry, Oregon State Agricultural College, presided. The introductory address on "Utilization Aspects" was given by Dr. Wilson Compton, of the National Lumber Manufacturers' Association, Washington, D. C. The speaker discussed the manifold uses of wood products, especially of the substances obtainable from cellulose. The potential value of lignin was also considered. Emphasis was given to the need of research on the properties of the important commercial woods and the means by which the desirable physical characteristics of wood could be modified or controlled and lumber thus made proof against decay, fire, insect attack, shrinkage and warping. T. T. Munger, of the Forest Experiment Station, Portland, Oregon, presented a paper on the "Ecological Aspects of the Transition from Old Forests to New." Reforestation in the Douglas fir region of Oregon and Washington was considered. The displacement of Douglas fir by hemlock and cedar, its reappearance in burned and logged land, and the rôle of drought, seed supply, temperature and animal enemies in this rebirth of the forest constituted the theme of the address. A paper by E. I. Kotok, of the California Forest Experiment Station, on "Fires, a Problem in American Forestry," was read by Dr. R. E. McArdle. The disastrous effects of forest fires in reducing the stands of economic worth and in affecting adversely the water supplies of dependent agricultural land areas were emphasized. Whole-hearted public support in the attempts of the forester to secure reasonable fire exclusion is needed. F. P. Keen, of the Forest Experiment Station, Portland, Oregon, spoke on "Forest Entomology" with particular reference to the dangers during the transition period from virgin to second-growth stands and the development of insect-resistant trees. A paper on "Forest Pathology" by E. E. Hubert, of the University of Idaho, was read in Professor Hubert's absence by Dr. Barss, of Oregon State Agricultural College. Control methods for the exclusion or eradication of the most important fungus diseases in the Pacific Northwest were considered. All speakers stressed the need of scientific study and control in the development, protection and utilization of the forests.

The evening of June 19 was devoted to an address by Professor A. E. Douglass, of the University of Arizona, on "Tales Told by Tree Rings." The speaker described the well-known studies conducted by himself and his collaborators in which an analysis of tree rings in the semiarid regions of the Southwest has given a complete chronological record extending back to A. D. 780. By the use of this scale it has proved possible to assign exact dates to the ancient pueblos and Indian ruins of Arizona and New Mexico. The subject was suitably illustrated with slides and motion pictures.

The concluding evening address was presented on Friday, June 20, by W. F. G. Swann, director of the Bartol Research Foundation of the Franklin Institute, Swarthmore, Pennsylvania, on "Philosophic Concepts in Modern Physics." Vivaciously and with much humor the speaker dwelt upon the nature and trend of several phases of theoretical physics—the relativity concept in particular.

In addition to the regular scientific sessions which extended over Thursday and Friday, a number of excursions to places of special interest were arranged. A paleo-botany expedition to rich fossil beds south of Eugene attracted a large party on Thursday afternoon. This was led by Dr. Ethel Sanborn. Trips to the Springfield Lumber Mill, the State Game Farm and the Power Plant and State Fish Hatchery at Leaburg proved to be of great interest. On Saturday a party of 50 motored to the lava beds in the region of the McKenzie Pass. This trip led along the beautiful McKenzie River into the foothills of the Upper Cascades. Through the courtesy of the Obsidian Club of Eugene guides were provided for those desirous of climbing one of the snow-capped peaks in the high Cascades. Eleven participated in this outing, which extended over Saturday and Sunday, June 21 and 22. On Friday afternoon approximately 200 availed them-

selves of an opportunity to visit the Oregon State Agricultural College at Corvallis.

Business sessions of the Pacific Division, the executive committee and the affiliation committee were held during the course of the meetings. At the general business session on June 19, successors were elected to the two retiring members of the executive committee. O. F. Stafford, of the University of Oregon, was elected to succeed himself, and J. H. C. Smith, of the Carnegie Laboratory of Plant Biology, Stanford University, was appointed to fill the vacancy created by the retirement of Professor J. O. Snyder. A resolution of gratitude for the gracious hospitality extended by the University of Oregon was unanimously adopted. Announcement was made that the meeting of 1931 would be held in the month of June in Pasadena, California. The affiliation committee, consisting of representatives of the Affiliated Societies, reported on the decisions of the various societies in the matter of participating in the special winter meeting of the Pacific Division. This is to be held at Stanford University, December 22 and 23, 1930. It is designed primarily for the benefit of societies unable to meet in the summer and for such other societies as regard the additional meeting advantageous. At the meeting of the executive committee, on June 20, T. Wayland Vaughan, director of the Scripps Institution of Oceanography of the University of California, was elected president of the Pacific Division for the year 1930–31. E. G. Martin was reelected vice-president and chairman of the executive committee, and J. Murray Luck, secretary-treasurer, for terms of three years.

O. F. Stafford, Paul Ager, E. M. Pallett and J. F. Bovard served as chairmen of the committees in charge of local arrangements.

The reports of the scientific sessions of participating societies follow.

American Association of Economic Entomologists, Pacific Slope Branch

(Report by J. C. Elmore, Acting Secretary)

Chairman Don C. Mote opened the sessions with a paper on the food of China pheasants, showing that while the major portion is weed and waste crop seed, the animal portion consists of arthropods, most of which are insects. H. E. Burke reported on the relative importance of insect pests of ornamental and shade trees of the Pacific states. J. C. Elmore's paper indicated a close relationship between winter temperatures and the development of host plants of the pepper weevil, which in turn influenced the degree of infestation on the following commercial crop. R. L. Webster showed that two species of Epitrix varied greatly in abundance in different parts of Washington. H. A. Scullen reported that bumblebees occurred from sea-level to the snow line in Oregon, and were common except in arid uncultivated areas. Leroy Childs gave an account of the successful introduction of the woolly aphis parasite, *Aphelinus mall,* into the Hood River Valley. L. P. Rockwood reported on the distribution and damage of a seed caterpillar on native clover. B. G. Thompson reported the discovery of the dusky veined walnut aphis in Oregon in 1928 and its subsequent spread. W. J. Chamberlain gave a synopsis of the insects which cause defects in wood or attack materials used by the engineering profession. R. E. Dimmick discussed laboratory methods of teaching entomology. J. R. Eyer's paper reported on cane or corn syrup baits for the codling moth in New Mexico, and that certain esters increased their attractiveness. E. J. Newcomer gave an account of the damage to pears and apples from codling moth eggs hatching after the fruit is picked and showed that this might be prevented by an oil emulsion treatment. Anthony Spuler reported on codling moth activity in the Wenatchee Valley as shown by trap records. Trevor Kincaid reported on the control of the earwig by the European ground beetle, and of the European brown scale by chalcid parasites. J. Wilcox reported on experiments with baits for strawberry root weevils in Oregon, and E. R. de Ong gave an account of the preparation and use of pine tar oils as insecticides and fungicides. Officers for the coming year are Roy E. Campbell, *chairman;* H. E. Burke, *vice-chairman;* H. A. Scullen, *secretary-treasurer.*

American Chemical Society—Pacific Intersectional Meeting

(Report by O. F. Stafford, Chairman of Program Committee)

The third Pacific Intersectional Meeting of the American Chemical Society was held in conjunction with the Pacific Division of the American Association for the Advancement of Science at its meeting at the University of Oregon, Eugene, Oregon, June 19 and 20, 1930. The participating sections were California, Northwest Utah, Oregon, Puget Sound, Sacramento, Southern California and Washington-Idaho Border.

The opening session was devoted to the presentation of three papers of a general nature. The first of these, "Isotopes and Band Spectra," was by R. P. Birge, of the University of California. The second, "The Application of X-Ray to Chemical Problems," was by Maurice L. Huggins, of Stanford University, while the third, "The Concepts of Physical Chemistry in Investigations of Vital Processes," was by L. B. Becking, of the Hopkins Marine Station, Pacific Grove, California.

Following the general session were meetings of the

two groups composed, respectively, of those interested in general and physical chemistry, upon the one hand, and organic and biochemistry upon the other. Twenty-four papers were read before the first of these groups and twenty-six before the second.

GROUP I

General and Inorganic Chemistry, Physical Chemistry, Analytical Chemistry, Industrial Chemistry

The measurement of the absolute amount of absorption at the air-water interface: J. W. McBAIN and C. W. HUMPHREYS, Stanford University.

Phase rule equilibria of horse serum globulin: ELOISE JAMESON, Stanford University.

A study of the emulsifying properties of gelatin: DONALD N. EVANS and LEO FRIEDMAN, University of Oregon.

A simplified glass electrode apparatus: G. ROSS ROBERTSON, University of California at Los Angeles.

The measurement of turbidity with a thermocouple: E. D. MCALISTER, University of Oregon.

Hydrazino-salts: R. E. KIRK and A. I. DE LEON, University of Montana.

The calcium-chlorinity and magnesium-chlorinity ratios of sea water: THOMAS G. THOMPSON and CALVERT C. WRIGHT, University of Washington.

The sulphate-chlorinity ratio of sea water: THOMAS G. THOMPSON and WILLIAM R. JOHNSTON, University of Washington.

Research for the undergraduate: R. E. KIRK, University of Montana.

Studies on the structure of cellulose fiber: FLOYD VAN ATTA and LEO FRIEDMAN, University of Oregon.

The production of wood pulp in the Pacific Northwest: H. K. BENSON, University of Washington.

An upper limit for the absolute potential of the normal calomel electrode: OTTO KOENIG, University of California.

Conductance and activity coefficients of aspartic and glutamic acids and their sodium salts at 0°: W. M. HOSKINS, MERLE RANDALL and CARL L. A. SCHMIDT, University of California.

The effect of iodine chloride on the photosynthesis of hydrochloric acid: G. K. ROLLEFSON and F. E. LINDQUIST, University of California.

The sensitized photosynthesis of carbon dioxide at low chlorine pressures: G. K. ROLLEFSON, University of California.

Cyclic chlorine in waters from certain sections of Western Oregon: LOUIS C. RAYMOND and ROBERT A. OSBORN, Oregon State College.

Some factors affecting the composition of dry lime-sulphur solutions: D. E. BULLIS, Oregon Agricultural Experiment Station.

Determination of strontium in sea water: THOMAS G. THOMPSON and BERTRAM D. THOMAS, University of Washington.

The acid requirement of sea water: THOMAS G. THOMPSON and ROBERT U. BONNAR, University of Washington.

Principles determining the arrangement of atoms and ions in crystals: MAURICE L. HUGGINS, Stanford University.

More efficient laboratory instruction in general chemistry: W. E. BRADT, Washington State College.

Cyanourea as a mixed aquo ammono carbonic acid: G. E. P. SMITH and J. S. BLAIR, Stanford University.

The transition between the glassy and liquid states: GEORGE S. PARKS, H. M. HUFFMAN and S. B. THOMAS, Stanford University.

A molten salt mixture process for the treatment and hardening of steel: T. L. MEADOR.

GROUP II

Organic Chemistry, Biochemistry, Agricultural Chemistry

The arrangement of atoms in organic molecules: MAURICE L. HUGGINS, Stanford University.

Observations on the chemical constitution of carotene and xanthophyll: JAMES H. C. SMITH and H. A. SPOEHR, Stanford University.

An apparatus for percolation at a uniform constant rate, and a device for automatically collecting the percolate in a series of receivers: P. L. HIBBARD, University of California.

Some reactions of the ketimines: G. E. P. SMITH, Stanford University.

The use of oxygen values in sea water pollution studies: H. K. BENSON, University of Washington.

Optically active pinenes from western woods: R. C. THIELKE and F. H. THURBER, Oregon State College.

Bound water in hydrophilic colloids: J. L. ST. JOHN and J. S. CARVER, Washington Agricultural Experiment Station.

Synthetic rations for chicks: J. S. CARVER and J. L. ST. JOHN, Washington Agricultural Experiment Station.

Arsenic and lead in apples and pears: J. S. JONES, Oregon Agricultural Experiment Station.

The biological value of leaf proteins: J. R. HAAG, Oregon Agricultural Experiment Station.

A study of the physical and chemical properties of commercial arsenates of lead as they may effect the control of codling moth: R. H. ROBINSON, Oregon Agricultural Experiment Station.

Structure symbols and their interpretation: INGO W. D. HACKH, College of Physicians and Surgeons, San Francisco, California.

Further study of the negative catalytic effect of alcohols in the reaction of Grignard reagents with carbonyl compounds: C. R. KINNEY, University of Utah.

The properties of some tri-aryl selenonium salts: H. M. LEICESTER and F. W. BERGSTROM, Stanford University.

Studies on the antimony trichloride colorimetric assay of vitamin A: 1. Effect of concentration of reagent upon color produced: EARL R. NORRIS and ANNA E. CHURCH, University of Washington.

Studies on the antimony trichloride colorimetric assay of vitamin A: 2. Effect of light and temperature upon the stability of the chromogen: EARL R. NORRIS and ANNA E. CHURCH, University of Washington.

The effect of the destruction of vitamin A by dilution oils upon the accuracy of the determination by biological and colorimetric methods: EARL R. NORRIS and ANNA E. CHURCH, University of Washington.

The composition of mesquite gum: LOUIS OTIS, University of Arizona.

A study of the chemical properties of quinoxaline: R. A. OGG and F. W. BERGSTROM, Stanford University.

The chemical properties of 2, 3 dimethyl and 2, 3 diphenyl quinoxaline: R. A. OGG and F. W. BERGSTROM, Stanford University.

The composition of flaxseed mucilage: J. A. CROWDER, University of Arizona.

The adsorption of organic nitrogenous compounds at different hydrogen ion concentrations: JOHN H. TRUESDAIL and ROGER J. WILLIAMS, University of Oregon.

The effect of Jansen and Donath's antineuritic vitamin on yeast growth: RICHARD R. ROEHM and ROGER J. WILLIAMS, University of Oregon.

Toxic effects of fish liver oils: EARL R. NORRIS and ANNA E. CHURCH, University of Washington.

Utilization of a sensitive thermocouple in the determination of the red cell content of blood: RICHARD R. ROEHM, EDWARD D. MCALISTER and ROGER J. WILLIAMS, University of Oregon.

Enolic modifications of pyridines and quinolines alkylated in 2 or 4 positions: F. W. BERGSTROM, Stanford University.

A feature of the meeting at Eugene was an intersectional contest between competing teams of high-school students representing the states of California and Oregon. These teams, each of which had been selected by preliminary elimination contests, were from the high schools at Roseville, California, and Hood River, Oregon, respectively. The contest was conducted by Dr. C. R. Kinney, of the University of Utah. The trophy was awarded to the Hood River team.

On Thursday evening a chemists dinner was held at which over a hundred were in attendance.

At the business session Dr. G. Ross Robertson, of the University of California at Los Angeles, was elected to the intersectional committee to succeed Professor J. H. Norton, of Sacramento Junior College, whose three-year term expires. The personnel of the intersectional committee for the coming year is therefore as follows: George S. Parks, Stanford University, *chairman;* O. F. Stafford, of the University of Oregon, and G. Ross Robertson, the newly elected member. Dr. Robertson is to be chairman of the program committee for the intersectional meeting to be held next year at Pasadena.

AMERICAN MATHEMATICAL SOCIETY

(Report by E. E. De Cou, Acting Secretary)

The session was held on Friday morning, June 20, in the Administration Building of the University of Oregon. The total attendance was about forty persons, of whom nineteen were members of the society. Twenty-five papers were presented. A revision of the by-laws of the society, proposed at the recent meeting of the society at Chicago, which had to lie over under the rules, was finally adopted at this meeting, which now ranks as a national meeting of the society. Those who presided were President E. R. Hedrick and Professors E. T. Bell, H. F. Blichfeldt and R. E. Moritz. A luncheon was served at noon in the dining-room of the university, and was followed in the afternoon by an automobile trip to the Oregon State College.

AMERICAN METEOROLOGICAL SOCIETY

(Report by Edward L. Wells, Secretary for Eugene Meeting)

On the afternoon of June 19 Major Edward H. Bowie discussed nocturnal radiation and stratus cloud formation on the Pacific Coast. Because of the fact that humid air radiates heat more rapidly than drier air instability is brought about in the humid stratum, the cooling being greatest in its upper portion. This results in convection, cloud and in many instances rain. Lieutenant V. O. Clapp described the apparatus used in obtaining upper air soundings and described the conditions attending the formation of ice on airplanes. A paper written by Thomas R. Reed, on "Aviation Weather Hazards," was read by Edwin H. Jones. The weather is the outstanding problem confronting flying operations; serious weather hazards are two—fog and sleet. This was followed by a general discussion of the relation of meteorology to aviation, led by Major Bowie and participated in by Messrs. Jones, Freeman, Wells, Dague, Douglass, Clapp and Breese. A. E. Douglass gave an address on recent weather cycles. He has worked over a long series of tree growth curves and finds that the only long cycles that exist in these are multiples of the sunspot cycle of eleven years. E. T. Allen, of the Western Forestry and Conservation Association, was introduced, and spoke of the fire weather forecasts of the Weather Bureau.

On Friday morning Edwin H. Jones outlined some of the climatic peculiarities of the Yakima Valley. It is rather a series of valleys. The most pronounced adiabatic and radiational effects in the behavior of temperatures must be expected. The most favorable formation for precipitation is just after the center of the storm has begun to pass eastward. A paper on "Experiments with an Automatic Psychrometer," by Eckley S. Ellison, was read by title. Edwin T. Hodge discussed Tertiary changes in the climate of Oregon, producing evidence of two periods of glaciation. An abstract of a paper by E. M. Keyser, on "An Inland Empire Long-period Precipitation Riddle," was given

by the acting secretary. Tree ring growths in Bonner County show alternate wet and dry periods of from 20 to 40 years, with the recent dry period, since 1885, as the driest of all, while the lakes in Spokane County, Washington, seem to indicate that the earlier years were drier than recent years. A paper on "Tulare Lake," by C. E. Grunsky, was read by the secretary. Facts cited were taken to indicate that the climate is not necessarily undergoing permanent changes, but there may yet be periods without excessive precipitation, followed by periods in which wet years will be frequent. J. M. Adams showed pictures representing early stages in the growth of snowflakes, explaining how the twinning of crystals in the formative process was responsible for keeping certain crystals upright, resulting in various types of optical phenomena.

A luncheon of meteorologists and their friends was given at The Anchorage. Following the luncheon there was an informal discussion, participated in by those who had done meteorological work in out-of-the-way places of the earth, or who had had experiences, related to meteorology, in those places.

In the afternoon a paper on "Forest Tree Diseases Caused by Meteorological Conditions," by E. C. Hubert, was read by title. A. G. Simson discussed relative humidity and short period variations in fuel moisture content. A knowledge of the degree and rapidity with which the various kinds of forest fuels respond to relative humidity is essential to good slash burning technique, and should aid in the proper disposition of fire suppression forces. R. E. McArdle said that the lag of fuel moisture content behind atmospheric humidity was less than formerly supposed. O. W. Freeman presented a new rainfall map of Washington. All the available records were used, supplemented by the results of personal observations of relief and vegetation. C. I. Dague gave an account of the disastrous fire weather of September, 1929. The worst drought in the history of Weather Bureau records prevailed from June 20 to December 7. More than 90 per cent. of the fire losses for the season occurred after September 6. For the first time in the history of organized protection it was necessary to maintain patrol forces until the first week of December. The closing paper was one by G. W. Alexander, distinguishing between fire weather and fire climate and giving suggestions for standardizing methods of making permanent record of weather in its relation to fire hazards.

Resolutions were adopted thanking various organizations for courtesies extended, suggesting that the *Bulletin* of the society give less attention to reports of airplane disasters and urging the foundation of an institute for meteorological research, international in character.

AMERICAN PHYSICAL SOCIETY

(Report by R. B. Brode, Acting Secretary)

The one hundred and sixty-fourth regular meeting of the American Physical Society was held in Eugene, Oregon, on Thursday and Friday, June 19 and 20, 1930. The Thursday afternoon program was held jointly with the Astronomical Society of the Pacific. The program of the joint session consisted of three papers, by invitation, on the general topic, "The Red Shift in the Spectra of Distant Light Sources and Its Physical Interpretation." M. L. Humason, of the Mount Wilson Observatory, spoke on "The Apparent Velocity Shifts in the Spectra of Faint Nebulae," and E. Hubble, of the Mount Wilson Observatory, spoke on "The Distance of Nebulae and Their Correlation with Apparent Velocities." R. C. Tolman, of the California Institute of Technology, discussed "The Significance of the Velocity Distance Relation from the Standpoint of General Relativity."

Twenty-five papers were presented in the Friday morning and afternoon sessions. Titles and abstracts of these papers are printed in the *Bulletin* of the American Physical Society.[1] A luncheon was held Friday noon at the Hotel Osborn.

The one hundred and sixty-seventh meeting of the American Physical Society will be held at the University of California at Los Angeles on December 12 and 13, 1930. The session on Friday afternoon, December 12, will be a joint meeting with the Acoustical Society of America.

AMERICAN PHYTOPATHOLOGICAL SOCIETY—PACIFIC DIVISION

(Report by B. A. Rudolph, Secretary)

Three half-day sessions were held. At a business meeting the following officers were elected to serve the society during the next two years: Eubanks Carsner, *president;* J. M. Raeder, *vice-president;* B. A. Rudolph, *secretary-treasurer;* C. E. Owens, *councilor.*

T. E. Rawlins and W. T. Horne showed that buckskin of sweet cherries may be transmitted by grafting diseased scions upon healthy root stocks. A. R. C. Haas described pathological changes induced in sand and water cultures of citrus species by a deficiency of boron, which apparently is essential to the translocation of carbohydrates. L. J. Klotz and E. C. Raby reported inoculation experiments with an apparently new fungus disease of date palm inflorescences. While greatly resembling "Khamedj" of African dates the California disease also displays distinct differences from the other. W. N. Takahashi and T. E. Rawlins have found the electrophoretic behavior of tobacco mosaic virus to be similar to that reported by other workers for bacteria. W. T. Horne

[1] Vol. 5, No. 3, issued June 6, 1930.

and E. R. Parker have succeeded in producing "sun blotch" in healthy avocado trees by grafting diseased scions upon them. The disease, apparently an infectious chlorosis, thus far has resisted transmission by any other method. J. S. Cooley found that pears and apples wrapped in papers treated with a 2½ per cent. solution of hydrated copper sulphate are protected from *Botrytis* rot which will readily penetrate fruit wrapped in untreated papers. J. H. Crenshaw has determined how long after application Bordeaux mixture may be expected to prevent germination of spores of the perennial canker fungus. J. Cooley and P. W. Miller have shown that, while perennial canker in apples may follow mechanical wounds and abrasions, entrance of the causal organism is greatly enhanced by the presence of winter injuries. C. O. Smith and J. T. Barrett reported their studies of the susceptibility of various species of black and English walnuts to *Phytophthora*-like fungi. *Juglans californica* was found to be the most susceptible of all. H. P. Barss described original formaldehyde treatments which prevent decay in fruits in transit. Various other materials used experimentally without success were enumerated. Barss also reported a serious outbreak of brown rot in cherries in the Willamette Valley, Oregon, in 1929 and 1930 due chiefly to *Sclerotinia cinerea* (Bon.) Schröt. forma *pruni* Wormald rather than to the American form, *Sclerotinia fruticola* (Wint.) Rehm. (= S. americana Nort. & Ezek.). L. K. Jones has found that spread of "streak" in tomatoes may be greatly reduced in greenhouses by disinfecting pruning shears and carefully washing the hands frequently with soap and water when working with the plants. G. Burnett and L. K. Jones have succeeded in producing "streak" easily in tomato plants by rubbing them with the juice of apparently healthy potato tubers mixed with juice from mosaic tobacco plants. But juice from potato seedlings mixed the same way did not produce the disease. F. D. Heald and K. Baker reported a serious rot of tulip bulbs, proved experimentally to be due to a *Penicillium* sp. which was able to rot apples but not gladiolus bulbs. S. M. Zeller discussed a recent paper of his[2] which establishes proof of the greater susceptibility of raspberry previously attacked by yellow rust (*Phragmidium imitans*) to cane blight (*Leptosphaeria coniothyrium*). Zeller also described a witches broom of ocean spray (*Holodiscus discolor* Max.) which is believed to be of virus origin. T. P. Dykstra succeeded in transmitting potato leaf rool to tomato, pepper, *Datura stramonium, D. tatula, Solanum nigrum* and *S. dulcamara.* By means of infected aphids (*Myzus persicae*) many successful cross-inoculations were made. L. N. Goodding has found a new species of *Didymosphaeria* parasitic on alder trees which he has named *D. oregonensis Goodding.* B. A. Rudolph has found that bacterial blight of walnuts can be controlled within practical limits with Bordeaux 8–4–50, the lime being reduced as per formula.

[2] *Jour. Agr. Res.*, 34: 857–863, illus., 1927.

AMERICAN SOCIETY OF ICHTHYOLOGISTS AND HERPETOLOGISTS—WESTERN DIVISION

(Report by G. S. Myers, Secretary)

At the Berkeley meeting of the association, 1929, a group of western members of the society formed a Western Division of the organization with the following officers: J. O. Snyder, Stanford University, *president;* R. L. Bolin, Hopkins Marine Station, *vice-president,* and G. S. Myers, Stanford University, *secretary-treasurer.* A winter meeting was held at the Hopkins Marine Station, Pacific Grove, December 20, 1929.

At the first annual meeting, at Eugene, June 19, 1930, 1:30 P. M., there was a short business session at which the officers for the ensuing year were elected, as follows: W. F. Thompson, International Fisheries Commission, *president;* P. H. Pope, Whitman College, *vice-president,* and G. S. Myers, Stanford University, *secretary-treasurer.*

Exhibits of living material were as follows: Amphibians, *Ascaphus truei, Ambystoma decorticatum,* adults and larvae, *A. paroticum,* adults and larvae, *A. macrodactylum* and *Ensatina eschscholtzii,* all by J. R. Slater, College of Puget Sound; Fishes, *Empetrichthys merriami,* by G. S. Myers, Stanford University.

PAPERS PRESENTED

Races of Halibut: W. F. THOMPSON, International Fisheries Commission. Marking experiments indicate that the halibut population of the Northeast Pacific is broken into small units of non-migratory immatures and larger composite units of migratory matures over eleven years old. Each unit of both types has distinctive physical characteristics of doubtful meaning to the systematist because of changed grouping with age and some interchange between units. These units are depleted independently and are thus important to regulatory laws.

Notes on the habits of a rare East Indian Eel: ALBERT W. HERRE, Stanford University. A vast colony of the rare eel, *Heteroconger polyzona,* has been discovered in the coral sands at Dumaguete, Oriental Negros, P. I. Each eel has its own burrow, the holes arranged in pairs. This is the first record of the species since its discovery at Amboina in 1868.

A study of certain measurable characters for comparisons of Salmonoid fishes in western Washington: LOYD ROYAL, University of Washington.

The fisheries of the East Indies: ALBERT W. HERRE, Stanford University. The commercially most important single species is *Chanos chanos,* raised in salt-water fish

ponds in the Philippines. The most important family is the Clupeidae. Attention is directed to the great opportunities awaiting development of the sardine, tuna, bonito and albacore fisheries.

A statistical study of the growth of the lamprey, Lampetra planeri, from Western Washington: LEONARD P. SCHULTZ, University of Washington.

Distribution of the true fresh-water fishes of the western United States: J. O. SNYDER, Stanford University. The fresh-water fishes of the Pacific Slope fall into six general faunal groups, as follows: the Columbia, Klamath, Sacramento-San Joaquin and Colorado river-systems, and the two interior basins of old Lakes Lahontan and Bonneville. Most of these each have a few peculiar genera and a series of allied species of certain genera, these showing definite relationships between the basins.

ASTRONOMICAL SOCIETY OF THE PACIFIC

(Report by W. E. Harper, Chairman of the Program Committee)

Two forenoon sessions were given over to the astronomical papers, of which there were 28 presented. Aitken's new general catalogue of double stars (A. D. S.), now in press, will contain 17,181 entries. Nicholson and (Miss) Sternberg reported that the solar activity is decreasing, being definitely less in 1929 than in 1928. Marked fluctuations were found having a period of about 15 months. Hill gave the orbital elements of the spectroscopic binary 103 Tauri, while Harper reported on four orbits of A-type spectroscopic binaries whose periods ranged from 1.5 to 4.2 days. Neubauer at Santiago has been taking spectra of stars fainter than magnitude 5.5 and radial velocity results for 354 are now available, 180 of which are of B-type. Pearce and Plaskett gave details of a catalogue of radial velocities of 0 to B5 stars numbering 996 in all which have been determined to date at all observatories. Using the velocities for 680 of these stars Pearce has made a new determination of the solar motion, galactic rotation and K term. Humason and Christie described the spectra of two F-type stars showing bright lines. One was constant in velocity; the other a spectroscopic binary. Considerable interest was centered around the new object found at the Lowell Observatory, and Slipher reported on its discovery and the early orbital computations. Whipple gave his own recent determinations of the orbit utilizing the new data accruing from the discovery, some ten days previous to the meeting, of the object on Mount Wilson plates of 1919. The results of Nicholson and Mayall from the same data were almost identical with Whipple's, and the eccentricity of 0.256 so determined, coupled with the fact that Mount Wilson has found for it a spectrum more or less of solar type, should lessen the opposition to its being considered a planet. From long exposure photographs with the 60-inch reflector on the planets Uranus and Saturn, Christie had concluded that no additional satellites of these planets existed which were brighter than 18.5 magnitude. Miss Hayford determined the orbit of comet 1930 d and found it to resemble that of Daniel's comet of 1909. Menzel has studied the spectra of the outer planets in which marked absorption bands occur and seems to feel that these are due to hydrogen, oxygen or water. Moore reported on the solar eclipse expedition to Camptonville on April 28. Photos of the flash spectrum were obtained as well as direct photos, the latter suggesting that the eclipse there was annular, not total. Efforts by Jeffers from an aeroplane to photograph the moon's shadow on the ground were unsuccessful. Similar work attempted by Brackett with observers in two army aeroplanes at altitudes approximately 19,000 feet showed that the method was hopeful.

In the second forenoon session Beals outlined a suggested classification of Wolf Rayet stars which will run approximately parallel to the corresponding subdivisions for absorption O's. Redman obtains evidence for a rotation of the line of apsides in the binary Y Cygni, in confirmation of earlier photometric work. Pictures were shown by Adams of the 50-foot interferometer recently completed at Mount Wilson, and tests made on Betelgeuse and Arcturus give results in agreement with those obtained with the 20-foot. Continuing the experiments on ether drift with instrumental equipment whose sensitivity is 100 times as great as that used by Miller, Pease and his associates show that the effect Miller found could be due to errors in the instrument. St. John reviewed the evidence for the Einsteinian displacement of spectral lines and concluded that the general theory of relativity must now be accepted. Joy finds that the period of the eclipsing variable U Sagittae is not constant. From a study of open star clusters Trumpler finds that, contrary to accepted opinion, absorption of light takes place in our stellar system. Intergalactic space is, however, highly transparent. By counting the number of lines of each intensity in the solar spectrum Babcock finds that the abundance increases smoothly as we proceed from high intensity to low. Wave-length determinations made in furnace and arc spectra for the stronger lines of the rare earths have furnished King at Mount Wilson with additional data as to the presence of these lines in the solar spectrum. By using high dispersion spectra of bright stars Sanford and Adams find a variation of radial velocity with excitation potential. Spectra of the interesting 27-year period eclipsing variable *epsilon* Aurigae were shown by Adams and Sanford.

These were made with very high dispersion and showed the lines double in November, 1929, and February, 1930.

While important researches are embodied in the papers so briefly referred to, the reading and discussion of which were of much value to those present, it might be considered by some that the joint meeting of mathematicians, physicists and astronomers on the Thursday afternoon was of even greater value. This was in the nature of a symposium on the subject "The Red Shift in the Spectra of Distant Light Sources and its Physical Interpretation." Humason, of the Mount Wilson Observatory, detailed the observational evidence obtained of these great line shifts; Hubble, of the same observatory, correlated such apparent velocity displacements with the distances of the objects, while Tolman, of the California Institute of Technology, gave a mathematical discussion showing how such line shifts need not be considered as velocity displacements in the ordinary sense but rather shifts explainable by the excessive radiations of these distant objects.

The Botanical Society of America—Pacific Division

(Report by E. T. Bartholomew, Secretary)

E. T. Bartholomew, of the University of California, Citrus Experiment Station, Riverside, was elected president, and LeRoy Abrams, of Stanford University, secretary for the coming year. Besides participating in the general sessions of the Pacific Division, the botanical section held an afternoon session which was devoted to the reading and discussion of papers. L. G. M. Baas-Becking presented data which showed that the walls of the geniculi of Amphiroa and Corallina are non-cellulosic, probably pectin or a derivative, while the articuli are calcified. A study of the geniculi showed the walls to be built of isotropic, concentric lamellae. The only mineral deposited by the young cells is calcite. In her paper on "The Eocene Trees of the Oregon Region," Ethel I. Sanborn reported that the records indicated a warm temperature for the Comstock beds and a subtropical temperature for the Goshen beds. G. R. Johnstone and T. S. Clare discussed the proper chilling periods and temperatures for the optimum germination of the seeds of various species of Pinus. G. R. Johnstone and F. W. Newton reported the finding of various amounts of carbon monoxide in the pneumatocysts of *Pelagophycus porra,* the maximum amount being 3.59 per cent. Ansel F. Hemenway's findings indicate that while root activity in deciduous trees may cease during the winter such is not the case for conifers. *Phragmites communis* has been found in a new locality in the State of Washington, according to B. G. Rigg. According to William E. Lawrence, the brown algae, although their habitat is confined to sea water, have attained many, if not most, of the developments found in the higher plants. That the organic materials in the higher plants may pass along the walls rather than from cell to cell was indicated by evidence presented by A. S. Crafts. A. S. Mulay presented further data on the seasonal variations in nitrogenous compounds in pear shoots. E. T. Bartholomew reported preliminary studies on Citrus leaf.

Ecological Society of America

(Report by W. E. Lawrence, Acting Secretary)

A single session was held on the afternoon of June 20. W. E. Lawrence, of Oregon State College, presented a paper on the criteria in the classification of growth-forms and the synonymy of the terms employed. L. F. Henderson, of the University of Oregon, reported on the distribution of the genus *Erythronium* in Oregon, and hybridization between *E. giganteum* and *E. Hendersoni.* The marked ability of the prothallia of many ferns to withstand severe and prolonged drought was described by F. L. Pickett, of Washington State College; W. C. Lowdermilk, of the California Forest Experiment Station, discussed some of the relationships of vegetation to soil development and erosion. A paper by Vera Smith Davidson, of Stanford University, on "Seasonal Relations of Animal Species and Total Populations in a Deciduous Forest Succession" was read by title.

Society of American Bacteriologists

(Report by H. J. Sears, President, Oregon Branch)

An informal meeting of the Society of American Bacteriologists was held on June 20, under the auspices of the Oregon Branch. Both a morning and an afternoon session were necessary to complete the program which consisted of sixteen papers. The average attendance for both sessions was approximately 25 persons. Four of the papers were read by title only. In a very interesting paper on "Bacterial Adaptations" Dr. Victor Burke showed that certain organisms could, by selection, acquire a heat resistance that was not easily lost. He was reluctant to call this mutation, however. Bacteria of the sea, according to Burke, are merely land or fresh-water forms that have adapted themselves to marine conditions. Dr. Weinzirl reported that, by a refined technique of measuring pH, evidence was obtained of the utilization of dextrose by many of the so-called nonfermenters. Professor Charlton, of Oregon State College, reported some interesting studies on chlorine resistant species of Pseudomonas isolated from swimming pools, and believed their origin to be the raw

water. Dr. Parker's paper describing the wide distribution of Rocky Mountain spotted fever in the western states was the center of much interest in this program, the Northwest being the most seriously affected area. Interesting facts relating to the tubercle bacillus were reported by Dr. Weinzirl. Desensitization of tuberculous guinea-pigs he believes to be an accomplished fact, and the existence of a waxy envelope as a protective covering for the organism is a myth that should be discarded from our writing and thinking. Undulant fever comes in for its share of consideration, a skin test with definite promise in diagnosis being reported by Dr. Levin, and a study of incidence in the Portland area being discussed by Dr. Sears and his pupils. An important contribution to our knowledge of the bacteria responsible for sinusitis in children was made by Mr. Frick, of the University of Oregon Medical School, and Miss Strube, of the same institution, reported the incidence of syphilis in this community to be in the neighborhood of 8 per cent. as deduced from the results of some 12,000 Wassermann tests.

SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE—PACIFIC BRANCH

(Report by E. G. Martin, Secretary pro tem)

A meeting of this society was held on Thursday afternoon, June 19, beginning at 1:30 P. M. About 40 persons were in attendance. Dr. G. E. Burget, professor of physiology of the Oregon Medical School, acted as presiding officer for the meeting. Twelve papers were presented, and five others read by title. Seven of the papers were from the University of Oregon Medical School. Dr. William F. Allen reported a method of obtaining experimental arhythmia (pulsus bigeminus) in rabbits. Doctors Harold B. Myers and Warren C. Hunter showed that renal capsulectomy had little, if any, demonstrable effect either on renal function or on the regeneration of tubular epithelium in acute mercuric chloride nephritis. G. E. Burget and Karl Martzloff reported that survival of many months could be obtained in animals in which closed loops of the small intestine had been set off and the continuity of the main intestine restored. In order to secure survival it was necessary to drain the closed loops at intervals. E. G. Martin, Eola Woolley and Miriam Miller reported that in the gracilis muscle of the dog about twice as many capillaries can be injected with India ink when the muscle is exercised as when it is at rest. Edwin Osgood described an improved technique for the detection of Bence-Jones' proteinuria. I. A. Manville showed that under certain conditions a greater yield of vitamin D was obtained when the intensity of radiation was reduced than when radiation of maximum intensity was employed. Frank R. Menne described histologic changes in the thyroid glands of rabbits following the introduction of various substances into the circulation. M. R. Amsden, A. C. Daniels and J. M. Luck found that when insulin was administered subcutaneously to normal fasting male adults the amino acid nitrogen of the blood was reduced by 20 per cent. Olaf Larsell found that when one eye was extirpated in larvae of the tree frog the cells of the opticus layer failed to attain the same size as corresponding cells of the opposite side. The effect was attributed to absence of nerve stimuli as a consequence of removing the eye. Dr. C. P. Stone reported from studies of rats subjected to cortical lesions that native responses (copulatory and maternal behavior) appear to be mediated primarily by subcortical brain centers in contrast with learned responses which are very dependent on cerebral cortex for their performance. Mary L. Smull, F. M. Baldwin and associates subjected individuals to prolonged mental effort over a series of days. A significant rise in the metabolic level was observed on the third and succeeding days. Dr. F. M. Baldwin described a method of obtaining aliquot samples of the expired air permitting determinations of respiratory volumes with the use of 1000 cc glass cylinders.

WESTERN SOCIETY OF NATURALISTS

(Report by C. V. Taylor, Secretary)

Two half days were devoted to the presentation of papers. J. R. Slonaker reported further investigations on protein requirements in the albino rat, indicating an optimum of 14 per cent. protein diet for young weaned animals but a higher optimum for the nursing young. R. R. Huestis' studies on more than 500 Peromyscus showed that pelage coloration varied directly with the arid habitat. The cerebellum in amphibians, studied by O. Larsell, has reached maximum development in land-living Anura, remaining poorly developed in more primitive urodeles. J. E. Guberlet, V. J. Samson and W. H. Brown showed that yolk-sac dropsy in fish is due to the bacterium *Diplobacillus liquefacius piscium,* being experimentally induced in 75 per cent. of fish exposed. Rosalind Wulzen found that the harmful effects of egg white and liver pulp in planarian nutrition varies with the ratio of these foods. Alice M. Bahrs reported that growth-promoting power of rabbit digestive mucosa for Planaria diminishes when mucosa of fasted or of old rabbits is provided. H. S. Warren announced the discovery of a new cestode parasite in *Artemia salinas,* in the cysticercoid stage. Papers by invitation were presented Friday forenoon. E. Gellhorn showed that in sea urchin eggs, at a constant pH, the permeability of dyestuffs is decreased by Ca and

increased by Mg and Na. The increase due to Na and Mg may be suppressed by Ca. These changes do not inhibit fertilization and cleavage. J. Murray Luck, Grace Sheets and J. O. Thomas reported the successful culture of the ciliate Euplotes on two strains of bacteria in a basal medium of artificial sea water and glucose. An inoculum of about 20 individuals flourished while that of one or two individuals died off. They described a method of rendering Euplotes free of bacteria, but this ciliate could not be reared under aseptic conditions on dead bacteria, bacterial autolysates, blood sera or simple organic nutrients. E. Victor Smith showed that the age and growth-rate of the starry flounder, *Platichthus stellatus,* can be accurately determined by the number of annular rings on the otoliths. The method was successfully checked by size frequency groupings. Quinn McNamar and Calvin P. Stone found that memory in the white rat varies greatly with individuals and that the rate of forgetting may not be a linear function of time, as determined by maze experiments. Correlation coefficients between learning and relearning scores range from minus 0.06 to plus 0.89 with a weighted average of plus 0.66. Officers elected for the ensuing year are: *president,* D. R. Hoagland; *vice-president,* J. P. Baumberger; *secretary-treasurer,* E. G. Moberg.

WESTERN SOCIETY OF SOIL SCIENCE

(Report by J. C. Martin, Secretary)

Four half-day sessions of the society were held at Oregon State Agricultural College with an average attendance of thirty members. A. S. King reported on studies of the percolation of water through typical water-bearing materials in a tank as affected by different types of well casing perforations. M. R. Lewis discussed the development of ground water, pointing out the distinct advantage of deep wells due to the storage capacity of the underground strata. H. P. Magnuson and J. C. Marr reported the results of infiltration measurements on very impervious alkali soils in cylinders in the field as affected by H_2SO_4, gypsum, $CaCl_2$ and $FeSO_4$. W. L. Powers reported good progress in replacing exchange Na with Ca and in restoring permeability and productiveness by use of sulfur and manure in reclaiming black alkali land at Vale Experiment Field. Three papers of the afternoon session of June 16 dealt with the nitrogen and organic matter phases of soil investigations; H. F. Holtz, working with Palouse soil, reported that when plant residues are below 2 per cent. there is insufficient N for active decomposition and other sources of N must be depended upon for accumulation of NO_3-N in the soil; W. L. Powers and R. D. Lewis reported an increased NO_3 supplying power accompanying increases in total N and organic C during five three-year rotations, resulting in marked increases in yield of crops; M. M. Oveson showed changes in N and organic matter content of two soil types by the growth of Austrian winter peas, changes in the organic matter content correlate with those of N content where the peas were either harvested or returned to the soil. The first three papers of the morning session of June 17 pertained to studies of soil phosphate; P. L. Hibbard pointed out the desirability, in making equilibrium extracts, of having the pH the same for all soils and of using a highly buffered acid, as acetic, for the extraction; C. V. Ruzek reported that the "blue colorimetric" method for phosphate, as modified by Truog, offers possibilities for field recommendations based on laboratory investigations; R. E. Stevenson and H. D. Chapman reported on a study of eleven soil series receiving from one to twenty-two annual applications of phosphate fertilizer showing that in light to medium textured soils appreciable penetration into the root zone of plants occurred while in very heavy soils there was little or no penetration. E. L. Proebsting found that in a series of field plots of fine sand, growing Tuscan peaches, applications of KCl since 1926 which have trebled the replaceable K in the top foot have not affected the K content in the lower depths; the ash of the twigs shows increased K. J. S. Jones pointed out certain possible relations between the physical and chemical characteristics of some orchard soils with the quality of the Bosc pears produced. S. C. Vandecaveye reported that the addition of medium decomposed manure to virgin peat, of low available P and Ca and of reaction pH 4.3, stimulated microbiological activities as measured by CO_2 evolution and caused an appreciable increase in numbers of fungi, whereas the addition of superphosphate (600 lbs. per acre) was without effect. R. E. Bell found from studies of fertilizer applications to six soils in pot experiments that various types of plants give different responses. L. Doneen reported investigations of the NO_3-N absorption by eleven varieties of winter wheat on different soil treatments; some varieties show quite marked differences in rates of absorption as compared to others. The abstract of a paper by G. B. Bodman and E. P. Perry was read in which was discussed the significance of various single value expressions as indicators of physical characteristics of soils. W. Macfarland presented a paper dealing with the relation of the fertilizer industry to the scientific associations, and J. F. Breazeale read a very interesting paper on the development and maintenance of a high standard in agricultural research.