methods. For such a view-point ethics is not a field that can be sharply demarcated from other disciplines and made the province of priestly authority. As John Dewey remarks, "ethics is ineradicably empirical, not theological, nor metaphysical, nor mathematical. Since it directly concerns human nature everything that can be known of the human mind and body in physiology, medicine, anthropology, and psychology is pertinent to moral inquiry."

A scientific ethics would insist, as the Greeks did, upon the moral obligation of wisdom. One unfortunate influence of Christian ethics has been its tendency to divorce wisdom from morality. The good will alone is a very inadequate guide to good conduct. It is impossible to be really effectively good without being wise. There are circumstances under which practically all rules must be broken in order to lead the good life. Where different codes are followed in a community there is bound to be more or less conflict of moral aims. The people of Christian nations profess allegiance to a code which the exigencies of their life compel them to continually violate. The result is confusion and conflict and a constant incentive to hypocrisy.

In many ways the attempt to follow authoritarian ethics leads to conduct at variance with that which is dictated by considerations of human welfare. One of the most serious obstacles to several moral reforms is the blind adherence to moral codes that command unquestioning obedience. Were all questions of morality frankly recognized as scientific problems, much of the conflict I have mentioned would disappear. Many unsettled problems would of course remain, but by the applications of scientific methods they might finally be settled. It is only through becoming a true science that ethics can perform its greatest service. In this respect ethics is on precisely the same footing as medicine and other fields of applied science. Darwin, the great naturalist, in approaching ethics purely from the standpoint of natural history in the two famous chapters in his "Descent of Man," has contributed greatly toward making ethics scientific, and hence of greater value to mankind.

THE STANFORD UNIVERSITY MEETING OF THE PACIFIC DIVISION

Edited by Professor J. MURRAY LUCK
SECRETARY

THE twenty-third annual meeting of the Pacific Division, American Association for the Advancement of Science, and of seventeen associated societies was held at Stanford University, California, during the week of June 26, 1939.

The meetings may be considered noteworthy in several respects. They were characterized by a number of symposia of outstanding quality and were followed by a five-day symposium of fascinating interest on "The Cell and Protoplasm." Following upon this, in turn, was the sixteenth National Colloid Symposium, which brought to the university a third contingent of distinguished visitors. The results of such meetings can never be properly evaluated. The stimulus to scientific research is admittedly great, and the interest awakened within the layman in the contributions of science to the social order is, we suspect, more than transitory. The only index available for measuring the "success" of the meeting is to be found in the registration figures—a total of 882 for the divisional meetings alone. This is much greater than that of any previous meeting and may be compared with the registration total of 377 at the last Stanford University meeting (1924).

All the general sessions were held in the Memorial Theater and in Cubberley Hall—two new buildings provided with excellent auditoria and other facilities necessary for large meetings of this character. Guests were housed in Lagunita Court—a splendidly equipped dormitory which was placed in commission by the university only a few years ago. In every respect the material facilities were all that could be desired.

Local arrangements for the meeting were in the care of a committee consisting of S. B. Morris (*chairman*), Ernest R. Hilgard (*secretary*), Norris E. Bradbury, Eliot Blackwelder, Paul H. Kirkpatrick, Eliot Mears, George S. Parks, Templeton Peck, Gilbert M. Smith, Victor C. Twitty.

The first general session, which was held on the morning of June 27th, took the form of a symposium on "Radiation and Life." Four invited speakers participated. Since it is manifestly impossible to describe in detail the papers presented, it may be sufficient to list the titles and speakers: "Radiation," W. V. Houston, California Institute of Technology; "Radioactive Elements as Tracers in Metabolic Studies," John H. Lawrence, University of California; "Radiation and the Hereditary Mechanism," M. Delbruck, California Institute of Technology; "Medical Applications," Robert R. Newell, Stanford University Hospitals.

The afternoon of the same day was devoted to surveys of current research—a program which has been repeated annually by the division for many years. J. W. McBain, of Stanford University, reviewed a

number of the recent advances in colloid chemistry. A. R. Davis, of the University of California, dealt with mineral metabolism in plants, and H. Borsook, of the California Institute of Technology, surveyed some of the recent contributions to knowledge in that lively field of research, biological oxidations and reductions. A paper in the field of psychology was contributed by J. W. Macfarlane, of the University of California, who discussed research on personality development.

The evenings of Tuesday, Wednesday and Thursday were given over to addresses of general interest to the visiting members as well as to the lay public. That of Tuesday evening by Professor S. J. Holmes, president of the Pacific Division, on "Darwinian Ethics and its Practical Applications" evoked a great deal of interest and much comment in the press because of its challenge to authoritarian concepts of right and wrong. On Wednesday evening Professor V. Gordon Childe, of the University of Edinburgh, presented an address on the neolithic economy in northwestern Europe—a subject in which he is a recognized authority. The concluding address of the series, delivered by Professor J. D. Bernal, of the University of London, consisted of a graphic description of the structure of protein molecules.

Several events of a social character were arranged for the entertainment of visiting members and guests. Mention should be made of the reception tendered by the university on Tuesday afternoon, a visit to several private gardens in the Palo Alto—Atherton region and a special concert by the Roth Quartette on Friday afternoon.

In addition to organized visits to the Ryan High-Voltage Laboratory and the Laboratory of Plant Biology, Carnegie Institution of Washington, attractive excursions were made to Lick Observatory on Mount Hamilton, the Radiation Laboratory of the University of California and the Hopkins Marine Station at Pacific Grove.

Meetings of the executive committee and of the council were held in the course of the week. Dr. Lewis M. Terman, professor of psychology at Stanford University, was elected to the presidency of the division for the ensuing year, and R. E. Clausen and J. Murray Luck were reelected vice-president and secretary-treasurer, respectively. Ian Campbell, of the California Institute of Technology, was elected to the executive committee in succession to W. V. Houston, who retires on completion of his term of office. E. O. Essig, of the University of California, and C. V. Taylor, of Stanford University, were elected to the council as members-at-large for the customary four-year term.

Announcement was made that the next meeting, national in character, will be at the University of Washington, Seattle, during the week of June 17, 1940.

SESSIONS OF AFFILIATED SOCIETIES

Seventeen of the affiliated and associated societies participated in the meeting, and over 440 papers were presented. The reports of the various sessions follow.

AMERICAN PHYSICAL SOCIETY

(Report by Paul Kirkpatrick)

Sessions for the presentation of brief contributed research reports were held on Thursday, Friday and Saturday forenoons. These reports, fifty-seven in number, touched upon theoretical and experimental investigations in varied fields, with nuclear researches in the place of prominence.

Three symposia, concerned with applications of physics in the adjacent fields of astronomy, electrical engineering and biology, were presented at the afternoon sessions. On Wednesday afternoon the society met in joint symposium with the Astronomical Society of the Pacific to consider the phenomenon of limb darkening. Papers by C. D. Shane, Edison Pettit and A. B. Wyse on aspects of this problem were followed by a paper on the design and construction of the 60-inch cyclotron by E. M. McMillan. The symposium of Thursday afternoon presented aspects of the ultra-high frequency radio investigations in progress in the Stanford Physics Department. Papers by W. W. Hansen, D. L. Webster and S. F. Varian were accompanied by demonstrations of new devices (Rhumbatrons, Klystrons) applicable to communication. A symposium on methods and results of x-ray structure determination, held on Friday afternoon, was addressed by M. L. Huggins, J. D. Bernal and O. L. Sponsler, the first speaker defending the hypothesis of the existence of hydrogen bridges in crystals, and the succeeding ones discussing respectively the structures of plant virus particles and of the super-molecules of protein and cellulose existing in living organisms.

A dinner on Thursday evening, organized jointly by the American Physical Society and the Astronomical Society of the Pacific, was addressed by J. D. Bernal, who spoke of the social and human responsibilities of science.

AMERICAN METEOROLOGICAL SOCIETY

(Report by John A. Riley)

The American Meteorological Society held five sessions, with twenty-eight papers on the program. About one hundred persons were present.

The first session on Wednesday morning was concerned primarily with the meteorological problems of the Pacific Ocean as related to the weather in the western United States and Alaska and to transpacific aviation. In the absence of Dr. Reichelderfer, chief of the Weather Bureau, Major E. H. Bowie gave a

brief report on pending developments in meteorology, stressing the need for expansion and improvement of the vessel weather reporting service in the Pacific, with four complete reports daily. W. H. Clover spoke on the relation of meteorology to the operation of Pan American clippers across the Pacific; T. R. Reed discussed the relations between the general pressure field and the weather in California. "Occlusions on the Alaska Coast'" was the subject of A. B. Carpenter's paper.

The afternoon session was devoted to upper-air investigations and their application to forecasting and to aviation. A new field of observation and research has been opened by the use of the radiosonde, which now penetrates the stratosphere daily and transmits by radio data on the atmospheric conditions aloft for current use. A résumé of the first year of these observations at Oakland was presented by J. W. Smith and C. R. Elford. E. M. Vernon discussed a constant level synoptic chart based on free air data. John A. Day spoke on aviation wind forecasts for long hops over the Pacific, and C. L. Smalley demonstrated an instrument for rapid calculation of winds at flying levels from pressure and temperature fields and adaptable for use on charts of various size. Results of an investigation of cloud heights over the Plateau Region, referred to sea level, were reported by H. Dean Parry, of Salt Lake City.

A symposium on atmospheric radiation on Thursday morning consisted in the demonstration of instrumental equipment, theoretical studies and practical applications. L. W. K. Boelter, of the University of California, discussed the construction and operation of a sensitive yet inexpensive radiometer for use in measuring nocturnal and terrestrial radiation. C. Lorenzen, Jr., gave a report on some results obtained with the instrument in citrus orchards during the frost season. Walter M. Elsasser, of the California Institute of Technology, reviewed the theoretical considerations leading to a graphical method for the determination of radiative transfer. Edward M. Ashburn discussed the application of these results in computing the transfer of heat in the lower layers of the atmosphere in connection with summer stratus clouds on the California coast.

In the afternoon, N. E. Bradbury, of Stanford University, described the theory and practice of a continuously recording apparatus for the measurement of the density of atmospheric condensation nuclei; a report on the diurnal variation and vertical distribution of these nuclei was given by E. A. Yunker. The results of measurements of atmospheric charges with electric field recorders were presented by R. E. Holser, of the University of New Mexico. "Statistical Relationships of Seasonal Rainfall Records," by Charles P. Conroy, was followed by a report on varves and rock strata as recorders of cycles by Halpert P. Gillette.

During the last session, in "Melting Snow as a Flood Factor in the Sierra Nevada," E. H. Fletcher pointed out that, contrary to popular belief, the melting of snow by rain alone is a slow process and the presence of considerable snow on the ground acts as a damper in retarding a rapid run-off. C. P. Smith pointed out the need of accurate temperature forecasts for natural gas dispatching in California. Dean Blake spoke on the origin of tropical Pacific air in the Southwest, R. C. Counts on storm effects on tides in the Golden Gate and A. Breese on meteorological aspects of a historic disaster in Moscow. E. E. Eklund explained administration of the San Francisco Weather Bureau. The sessions closed with an illustrated talk on Alaskan and western mountains as climatic factors by L. H. Daingerfield.

ASTRONOMICAL SOCIETY OF THE PACIFIC

(Report by Gerard F. W. Mulders)

A joint session was held with the American Physical Society on Wednesday afternoon, June 28, with an attendance of about eighty. C. D. Shane, University of California, gave an outline of the theory of limb-darkening for a star and discussed the importance of limb-darkening measurements as a means of determining the wave-length dependence of the continuous absorption coefficient. Edison Pettit, of the Mount Wilson Observatory, described measurements of the limb-darkening in the sun and in the stars, respectively.

E. M. McMillan, of the University of California, described the design and construction of the recently completed 60-inch cyclotron at Berkeley. This instrument, the largest of its kind in the world, is capable of producing deuterons with an energy of 16.5 million volts.

Sessions for papers were held on Thursday, June 29, with an attendance of about forty-five. Twenty papers from five different institutions were presented and several points of special interest were noted. J. H. Moore reported on a spectroscopic determination of the rotation period of Saturn, showing that this planet rotates more slowly at higher latitudes than it does near the equator, which is similar to the rotation of the sun. R. M. Petrie described three spectroscopic investigations at the Dominion Astrophysical Observatory, Victoria, B. C., by W. E. Harper, C. S. Beals and himself. A. H. Joy gave a summary of the behavior of variable stars of intermediate periods, which he divided into two distinct groups with periods of 88 and 111 days. The members of the first group usually have a G-type spectrum which changes considerably between minimum and maximum brightness, while the second group has a spectrum of class M which shows little change.

The absorption lines of neon, usually rather faint in stellar spectra, are very strong in Upsilon Sagitarii, as Paul W. Merrill showed, which must be due to a high neon content of this star. N. U. Mayall described the occurrence of emission lines of ionized oxygen in the spectra of a great number of extragalactic nebulae. Roscoe F. Sanford reported on observation of interstellar lines of sodium and calcium in the spectra of various stars. G. E. Kron reported on an extremely accurate photoelectric determination of the color of an eclipsing variable star.

Modifications of the Schmidt camera were discussed by W. H. Christie and Franklin B. Wright, an amateur astronomer. Sophia H. Levy described a determination of mean elements and perturbations by the Berkeley Tables for four minor planets, while Damon M. Beard gave a new orbit method, which he had applied to the recently discovered eleventh satellite of Jupiter.

W. F. Meyer, A. H. Joy and Gerard F. W. Mulders presided at the various sessions. Astronomers and physicists met informally at a joint dinner on Thursday evening, June 29, while an excursion to the Lick Observatory took place on Friday, June 30.

Association of Pacific Coast Geographers

(Report by H. F. Raup)

The fifth annual meeting of the Association of Pacific Coast Geographers was held on Thursday and Friday, June 29 and 30. The first speaker to be introduced was John E. Kesseli, with a paper entitled, "The Origin of the Valley of June and Silver Lakes, Mono County, California." In his paper, Mr. Kesseli evaluated the several factors which have been responsible for the formation of the valley and the lakes. The second speaker, Walter A. Hackler, also dealt with physical aspects of the landscape. He showed many views of the widely publicized landslip near Sargent, California, and discussed the conditions under which the landslide occurred. J. O. M. Broek then gave a presentation of the demography of the California counties, with special emphasis placed upon the reasons for the decline of population and changes in economy of residents of the northern Coast Range counties. The present and past use of the North Branch of the Susquehanna River as a trans-Appalachian route of travel was discussed by H. F. Raup.

The afternoon session of June 28 began with an historical study of eighteenth and nineteenth century American geographers and their publications, by James F. Chamberlain. This was followed by a paper by Eliot G. Mears, "Some Locational Problems in British Industry," in which he treated of recent changes responsible for the location of British industry, in comparison with the traditional location factors such as fuel supply, markets, etc. Helen M. Strong, speaking as a guest of the association, gave an informal talk on the relationship between land use and geographical conditions in widely separated parts of the United States. She was followed by Willis H. Miller, who spoke on "Geography and State Planning," with special emphasis on California planning. The final paper of the session was presented by George C. Kimber, in which he advocated a wider use of geography in determining the political wishes and views of the people under a democratic form of government.

The annual dinner was held on June 29 with members present from many parts of the Pacific Coast, and one introduced guest, Dr. Pakstas, from Lithuania. The 1939–1940 officers, recently elected, were announced: *President,* Peveril Meigs, 3rd, of Chico State College; *Vice-President,* Forrest Shreve, of the Carnegie Institution Desert Laboratory, Tucson; *Secretary-Treasurer,* Frances M. Earle, University of Washington; *Editor,* Otis Freeman, Eastern Washington School of Education, Cheney. The address of the evening was given by the retiring president, John B. Leighly, of the University of California. His topic, "The Historical Background of Carl Ritter's Geographic Theory," was in part concerned with the relationship between the ideas of Ritter and Pestalozzi.

The concluding meeting on Friday, June 30, was addressed by J. W. Hoover, who showed many views of the terraced hills of southern Arizona, the "Trincheras de Cerros." Howard H. Martin followed with an illustrated talk on the Kabyles of Algeria, a people living under conditions of isolation in a mountain environment. Frances M. Earle described conditions of health among the white residents of tropical Queensland, where she found disease no longer a deterrent to occupation of this tropical region by white men. Margaret Carstairs gave the concluding paper, "The Intensification of Agriculture in Subtropical Japan," in which she described the unusually intensive cropping of fields on the southern islands of the archipelago. The meetings concluded with the annual business session of the association.

American Society of Ichthyologists and Herpetologists, Western Division

(Report by Margaret Storey)

Two regular sessions were held on Wednesday, June 28, at which twelve papers were presented: "Problems in the Classification of Some California Fresh-Water Fishes," Leo Shapovalov; "Preliminary Studies of the Denning of the Desert Tortoise, *Gopherus agassizii,*" A. M. Woodbury and Ross Hardy; "Darwinism in Contemporary Social Evolution," Paul D. R. Rüthling; "Specimen Species and Real Species," G. F. Ferris; "The Species of *Triturus* in British Columbia," Gertrude Smith Watney; "Observations on the Philippine Sea Snakes," A. W. Herre; "Notes on Metabolic

Levels of *Dipsosaurus dorsalis* (Crested Lizard) and *Sceloporus occidentalis* (Western Blue-Bellied Lizard) over a Period of Five Months under Temperature Control," F. M. Baldwin and P. W. Eberle; "Some Notes on the Physiology of Warm-Spring Fishes," F. B. Sumner; "Reproductive Cycles in the Sagebrush Lizard, *Sceloporus g. graciosus*," A. M. Woodbury and Marian Woodbury; "Observations on the Rate of Development of the Pacific Dogfish, *Squalus suckleyi*," L. E. Griffin; "Remarks on the Systematics of California Skinks," T. L. Rodgers and H. S. Fitch; and "The Herpetological Collections of the Stanford Natural History Museum," G. S. Myers. A collection of live herpetological specimens was on display at the Natural History Museum on Thursday afternoon. At the business meeting on Wednesday the following were elected to office for the coming year: *President,* Wilbert McLeod Chapman, Seattle, Washington; *Vice-President,* Tracy I. Storer, Davis, California; *Secretary-Treasurer,* Margaret Storey, Stanford University. Attendance at the various sessions ranged from 45 to 150.

The symposium "Dams and the Problem of Migratory Fishes" was presented on Thursday morning jointly with the Western Society of Naturalists. For this first authoritative summary of a timely and important problem in conservation the invited speakers included the men directly responsible for the fish-ways and fish-conservation measures at the great new dams on the West Coast. Dr. F. B. Sumner, president, introduced the following speakers: Willis H. Rich, of Stanford University and director of research, Fish Commission of Oregon, Portland, "Fishery Problems Raised by the Development of Water Resources"; Harlan B. Holmes, U. S. Engineers Corps, Portland, "The Passage of Fish at Bonneville Dam"; Wilbert M. Chapman, of the Washington State Department of Fisheries, Seattle, "Fish Problems Connected with the Grand Coulee Dam"; Harry A. Hanson, U. S. Bureau of Reclamation, Stanford University, "The Sacramento River Salmon-Salvage Problem"; and Alan C. Taft, chief of the Bureau of Fish Conservation, California State Division of Fish and Game, "Summary of the Present Status of Dams versus Migratory Fishes on the Pacific Coast, with Especial Reference to Problems in California." An interesting discussion followed, which was recorded, and a resolution was unanimously passed that before starting construction, surveys of the fisheries resources be made by qualified experts, to parallel engineering surveys, over a minimum period of five years, or sufficient to cover the life cycles of all economically important fishes concerned. Publication is planned for the entire symposium, including the discussion and resolution. Those desiring further information may write to Professor George S. Myers, Natural History Museum, Stanford University, California.

American Association of Economic Entomologists, Pacific Slope Branch

(Report by Roy E. Campbell)

The twenty-fourth annual meeting of the Pacific Slope Branch was undoubtedly the best one held so far, not only in attendance, which exceeded 200, but in the program. Almost every phase of entomology was covered, including experimental, taxonomy, teaching and demonstration. Tuesday morning included papers on new fumigants, hop insects, tomato worms, the pea aphid and the honey bee. Tuesday afternoon topics were fumigation and citrus scales, the addition of toxicants to oil sprays and recent progress in the control of other citrus pests. A motion picture was shown depicting the development and progress in fog spraying.

What was probably the outstanding feature of the meeting was the demonstration of spraying and dusting equipment Wednesday morning. At least a dozen commercial companies exhibited equipment, from small hand dusters and sprayers for backyard use to large high-powered machines mounted on trucks capable of reaching the tops of trees 150 feet high and covering orchards at the rate of 10 acres per hour. Fog and dust sprayers were also demonstrated as well as fumigating apparatus. The demonstration was attended by members of several other societies as well as the entomologists. The demonstration was followed by several technical papers on spraying, taxonomy and thrips.

On Wednesday afternoon papers on attrahents and repellents were given, together with several on forest insect problems. A sound picture on the production and use of sulfur was followed by one on the control of live-stock parasites. Thursday morning's session was devoted to papers on a variety of topics, including filbert and walnut insects, design of field plots, dried fruit insects, grasshoppers, insects for classroom use and a new alfalfa weevil. The final session was held in Golden Gate Park, San Francisco, jointly with the Pacific Coast Entomological Society.

Another notable feature of the meeting was the extensive exhibits of chemicals used as insecticides, mounts of injurious insects; insects, manuals and apparatus for classroom use; models of cages, dusters and field and laboratory apparatus used in insect studies. Officers elected were: *Chairman,* B. G. Thompson, Oregon State College; *Secretary-Treasurer,* Roy E. Campbell, Alhambra, California.

Botanical Society of America, Pacific Section

(Report by Ira L. Wiggins)

The Botanical Society of America, Pacific Section, held three general sessions, with an average attendance of fifty-five, at which thirty papers were presented. The standard of the papers was high, with particu-

larly good ones on anatomy and morphology, cytogenetics, marine algology, mycology and experimental taxonomy. D. M. Crooks described a "Translongitome" with which it is possible to cut transections and longisections, alternately, from the same block of material, both types of sections appearing in the same ribbon. G. L. Stebbins, Jr., and Lotti Steinitz reported that mitosis in *Hordeum* seedlings is inhibited under anaerobic conditions; H. S. Reed described the cytological effects of the little leaf disease; Eubanks Carsner reported that flowering of sugar beets is increased by shading of the soil or by early planting; and J. V. Harvey reported the discovery of several new watermolds.

Three symposia were held. One, a joint session with the Ecological Society of America, Western Section, dealt with "Recent Contributions of Botany and Ecology to Society" and was ably presented by E. B. Babcock, Tracy I. Storer, E. P. Meinecke and H. L. Shantz. At a joint symposium with the Western Section of the American Society of Plant Physiologists the views of two schools of thought on "Translocation of Solutes in Plants" were presented and excited brisk discussion. The third symposium centered about the opportunities for botanical research in western North America. Papers by five speakers indicated that many such opportunities still exist.

On Friday, June 30, a luncheon of the American Society of Plant Taxonomists was followed by the final session, during which ten taxonomic papers were read. D. D. Keck and J. Clausen described recent results obtained in experimental taxonomy. H. F. Copeland discussed some communications opposing and others supporting his recent proposal to make four distinct kingdoms of the old animal and plant kingdoms. Opinion was about equally divided between support and opposition.

A joint field trip to Año Nuevo Point was made by twenty-four ecologists and botanists on Saturday, July 1. Much interest was shown in the partially consolidated, unpetrified plant material exposed along the beach and in the vegetation occurring on and among the dunes.

At a brief business meeting George B. Rigg and C. Leo Hitchcock, of the University of Washington, Seattle, were elected to serve as president and councilor, respectively, during the ensuing year.

American Chemical Society, Pacific Intersectional Division

(Report by F. O. Koenig)

The session on Wednesday morning, June 28, opened with a series of four papers, chiefly by collaborators of Dr. Pauling, on molecular structure as determined by the diffraction of x-rays and of electrons. Of particular interest because of its bearing on the exact theory of protein structure at present being striven for on many fronts, was the conclusion of Dr. R. B. Corey regarding interatomic distances in proteins: from the complete crystal structure analysis of glycine and of diketo-piperazine it is probable that these distances are: C–C, 154° A; αC–N, 1.40° A; keto C–N, 1.33° A; C–O, 1.25° A. The four further papers of Wednesday morning dealt respectively with complex formation by hemoglobin derivatives (2 papers), the reduction of nitrobenzene by metals and the valence states of osmium.

The Wednesday afternoon session was devoted to two photochemical papers by Dr. Leighton and collaborators, four thermochemical papers by Dr. Parks and collaborators, a paper on liver proteins and a paper on the theory of diffusion.

On Thursday morning there were read first six papers by collaborators of Dr. McBain, dealing with the adsorption, the phase rule diagrams and the hydrolysis of various soaps. These were followed by a paper on the theory of strong electrolytes and one on the theory of cells with liquid-liquid junctions.

The session of Thursday afternoon began with a historical paper on Alexander Butlerov. This was followed by seven papers dealing respectively with the introduction of substituted amino groups into the aromatic nucleus, the quantitative determination of bismuth in certain antisyphilitic agents, the flotation of galena in the presence of xanthates, the oxidation of pigments in freshly killed leaves, the rate of salt infiltration into chilled fish, allylic rearrangements and the bioassay of riboflavin.

American Society of Plant Physiologists, Western Section

(Report by A. S. Crafts)

The program of the Western Section this year consisted of three symposia, three half-day sessions for submitted papers and the annual dinner.

A joint symposium with the Western Society of Soil Science on Wednesday morning, June 28, considered problems of nutrient availability in soils. Professor Burd's discussion of the mechanics of phosphate retention by soils and the description of the process of contact exchange between plant roots and soil colloids by Hans Jenny were outstanding contributions.

While the symposium with the Botanical Society on "Translocation of Solutes in Plants" was marred by the absence of T. G. Mason and O. F. Curtis, an interesting presentation of the anatomy of vascular tissues by Dr. Esau and descriptions of virus, auxin and radioactive isotope movement in plants provided an interesting program. A discussion of the mechanics of organic solute movement concluded the session.

The symposium on "Growth," which started with a description of growth in meristems by Dr. A. S. Foster

and considered the nutritional factors involved and the role of vitamin B and auxin, was of broad interest and attracted a good audience.

The Wednesday afternoon program of submitted papers concerned soil-plant relations as affected by water and nutrients. The physiology of yeasts, problems of plant biochemistry and the response of plants to x-rays and radioactive elements were topics considered on Thursday morning. Studies on phloem exudate from grape were also described. The Friday afternoon session presented some papers of outstanding interest on mineral nutrition, salt flux and accumulation and growth factor requirements of roots.

Officers for the coming year, as announced at the dinner on Friday evening, are: *Chairman,* W. M. Atwood; *Vice-Chairman,* A. S. Crafts; and *Secretary,* J. van Overbeek.

An extremely interesting trip through the greenhouses and laboratories of the Division of Plant Nutrition at Berkeley, personally conducted by Professor D. R. Hoagland and members of his staff, was enjoyed by a number of visiting plant physiologists on Saturday morning.

AMERICAN PHYTOPATHOLOGICAL SOCIETY, PACIFIC DIVISION

(Report by L. D. Leach)

The meetings of the Pacific Division of the American Phytopathological Society were featured by a larger attendance and greater diversity of program than for several years. Thirty-two papers reporting research projects were presented during four half-day sessions. Of the eight papers on virus diseases, the presentation of evidence of the production of curly-top virus antibodies or antibody-like substances in Turkish tobacco by J. M. Wallace created the most discussion. Other papers of general interest were those of C. E. Yarwood on attempts at the *in vitro* culture of certain powdery and downy mildews and of J. T. Barrett on the occurrence of overwintering mycelium of downy mildew in the California wild grape. A group of papers on control of *Armillaria* by soil fumigants was presented by H. E. Thomas, L. O. Lawyer and P. D. Caldis. Prevention of apothecial formation of *Sclerotinia fructicola* by soil treatments was reported by G. A. Huber.

Thursday morning was devoted to a symposium on teaching of plant pathology. Certain phases of the problem were discussed by W. W. Robbins, J. T. Barrett, W. B. Hewitt, H. R. Stanford and T. E. Rawlins.

A field trip of unusual interest, consisting of visits to several greenhouses and commercial plantings of ornamentals between Palo Alto and San Francisco and a tour through one of the large estates occupied all of Friday.

Officers of the society for the ensuing year are as follows: *President,* B. F. Dana, U. S. Department of Agriculture, Corvallis, Oregon; *Vice-President,* T. E. Rawlins, University of California; *Secretary-Treasurer,* L. D. Leach, University of California, Davis; *Councilor,* E. Carsner, U. S. Department of Agriculture, Riverside.

WESTERN SOCIETY OF NATURALISTS

No Report Received

ECOLOGICAL SOCIETY OF AMERICA, WESTERN SECTION

(Report by H. de Forest)

The society cooperated with the Botanical Society of America in organizing a symposium on "Recent Contributions of Botany and Ecology to Society," held on Wednesday, June 28. T. I. Storer and H. L. Shantz spoke for the Ecological Society on animal and plant ecology, respectively.

On Thursday, June 29, a session for the presentation of papers occurred. Eight papers were given, two of these being invitational, by R. W. Chaney on Tertiary forests and by A. H. Hutchinson on a method of polygonal graphing of ecological data containing several variables. H. P. Hansen read a paper on ring-growth and dominance in a spruce-fir forest, and G. A. Pearson one on growth in southwestern pine forests. E. Fritz gave an interesting account of anomalous growth rings in redwood. L. C. Cole described an electrical apparatus for measuring several environmental factors. The Hutchinson and Cole work held as much of interest for zoologists as for botanists. The more distinctively zoological papers, which were placed in the latter half of the program because of an unexpected A. A. A. S. botanical excursion to the Carnegie Institution Laboratory of Plant Biology in the later afternoon, were by W. H. Rich on the influence of environment on salmon migration and by C. T. Vorhies on the habitat and shelter preferences of *Neotoma albigula.* Both of these called forth interesting discussion.

The society participated in the Biologists' Dinner of Wednesday evening, June 28. On Saturday, July 1, an enjoyable joint field excursion took place with the Botanical Society of America. During the day redwood forests, streamsides, chaparral and other scrubs and the coastal sand dunes of Año Nuevo Point were visited. The plant life was commented on by L. R. Abrams and I. L. Wiggins, of Stanford University.

SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE

(Report by Charles Weiss)

The Pacific Coast and the Southern California branches of the Society for Experimental Biology and Medicine met jointly on June 30, 1939. A total of 19 papers was presented and also an invited address on

vitamin K by H. J. Almquist, of the University of California, Berkeley.

P. J. Hanzlik, W. C. Cutting and G. B. Robson reported on the gastro-intestinal absorption of insulin in animals. Astringents, simple alcohols, poly-alcohols, detergents, antiseptic dyes, local anesthetics and agents which increase permeability favor absorption in animals. Results in man are unsatisfactory.

James B. McNaught, R. R. Beard and F. DeEds reported on the efficacy of phenothiazine in experimental trichinosis. R. H. Wilson and F. DeEds concluded that the continued feeding of cadmium-containing diets produces cardiac hypertrophy traceable to the anemia produced.

E. F. Cannon, S. P. Lucia and E. H. Benson, of the University of California Medical School, conclude that the difference induced in the circulation time after exercise is not significant as a test for cardiac efficiency.

N. S. West and R. H. Vaughn, of the University of California, reported that coliform organisms of the genus *Citrobacter* might be responsible for gassy deterioration of olives.

Ira A. Manville, of the University of Oregon, Portland, reported that sorbitol is well tolerated by diabetic patients and provides a good source of energy; it also favors the deposition of glycogen in the liver. F. J. Reithel, of the University of Oregon, Portland, reported that the presence of food in the stomach decreases the concentrtaion of alcohol after the ingestion of intoxicating liquors. Effective foods are sugar, apple juice, milk, bread, egg albumen, butter, cream and amino acids.

H. S. Reed, Department of Botany, University of California, read a report sent by Dr. J. Dufrenoy, of Bordeaux, France. Certain springs which had been used since Roman times to cure sick people were found to favor the proliferation of willow cuttings. These are the springs of St. Roche and Tambour in the Pyrenees Mountains.

WESTERN SOCIETY OF SOIL SCIENCE

(Report by L. T. Kardos)

The Western Society of Soil Science held five half-day sessions at which were submitted 33 papers. The attendance ranged from fifty to seventy persons.

The papers on Monday and Tuesday were devoted largely to problems of land classification, land utilization, evaluation of soils, soil conservation, drainage, erosion, soil permeability, soil moisture, bound water in soils, flocculation of soil, fixation of arsenic by soils, organic matter in soils, base exchange capacity and bacterial activity in soils.

On Wednesday morning a session was held jointly with the American Society of Plant Physiologists in which four papers were presented in a symposium on the "Availability of Nutrients in Soils to Plants." The speakers were W. T. McGeorge, of the University of Arizona; John S. Burd, of the University of California in Berkeley; H. D. Chapman, of the Citrus Experiment Station in Riverside, and Hans Jenny, of the University of California in Berkeley.

The following officers were elected for the ensuing year: *President,* W. T. McGeorge, University of Arizona, Tucson; *Vice-president,* G. B. Bodman, University of California, Berkeley; *Secretary-Treasurer,* L. T. Kardos, State College of Washington, Pullman; *Council Representative,* O. C. Magistad, Regional Salinity Laboratory, Riverside.

CONCURRENT MEETINGS OF OTHER ORGANIZATIONS

AMERICAN ASSOCIATION OF PHYSICS TEACHERS

(Report by Paul Kirkpatrick)

The Wednesday morning session was devoted to the presentation of brief contributed reports, relative chiefly to apparatus useful in the teaching of physics but containing also reports of historical and theoretical interest. At the luncheon which followed, Vice-President A. A. Knowlton spoke briefly of the general affairs of the association. During Wednesday afternoon apparatus used in elementary and upper-division physics courses in Stanford was on display in the laboratories. This equipment is mainly of local design and construction.

The evening meeting of the same day consisted of three invited papers. V. F. Lenzen discussed "The Operational Theory in Elementary Physics," criticizing constructively a number of the concepts and definitions regularly presented in the teaching of general physics. "Historical View-Point and Allusion in Physics Teaching" was the subject of a paper by E. C. Watson, which the author illustrated by slides made from materials in his private collection of historical matter related to physics and technology. R. D. Richtmyer showed a series of related absolute experiments for the electrical-measurements laboratory, performing the manipulations and carrying out numerical results in the course of his presentation.

AMERICAN SOCIETY FOR HORTICULTURAL SCIENCE, WESTERN SECTION

(Report by W. W. Aldrich)

In the case of previously nitrogen-deficient grapefruit trees near Yuma, Arizona, the maintenance of a high nitrogen level (as indicated by nitrogen content of leaves) during the spring and summer resulted in fruit of a coarser texture and greener color that fall.—W. E. Martin, University of Arizona.

The sugar prune, which normally sets a heavy crop one year and then fails to blossom the next year,

blossomed heavily the following year when entire trees or limbs two inches or more in diameter were completely deflorated or defruited within 14 to 30 days after full bloom. Strangely, either the upper or lower half, if completely deflorated, would differentiate with large numbers of blossom buds, while the undeflorated half was apparently not affected.—L. D. Davis, University of California.

As a means of covering emasculated blossoms, to keep out insects and windblown pollen, a web of rubber cement can be spun by a small electric fan, with attachment for feeding cement at constant pressure. Web has thus far shown no deleterious effects to pollen or to pistil.—J. R. King, University of California.

In a ten-year study of rootstocks for the Satsuma orange, the Morton citrange showed promise of permitting as good tree growth and yield as the sweet orange. Trifoliate stock was definitely inferior.—H. J. Webber and L. D. Batchelor, University of California.

SCIENTIFIC EVENTS

EXHIBITS AT THE BRITISH NATURAL HISTORY MUSEUM

RECENT additions to the Natural History Museum, South Kensington, include a number of mounted heads and skulls of hoofed mammals from Northern Rhodesia, an area from which the museum has hitherto not possessed much material of this kind. They were collected, chiefly at Mpika, by the late F. H. Medland, and have been given by Mrs. Medland. Among them are some very fine sable and roan antelope heads which are of special interest as representing transition stages from the types found in South Africa to the more northerly forms of Tanganyika Territory and Kenya Colony.

Two large collections of South American mammals, one from Dutch Guiana and the other from Ecuador, have been purchased. The latter contains a series of specimens representing a remarkable genus of Diprotodont marsupials (*i.e.,* marsupials having the kangaroo type of dentition), *Caenolestes,* one of the genera of opossum mice.

A series of specimens of "Darwin Glass" from Mount Darwin, Tasmania, collected by the late Hartwell Conder, has been given by his widow. This is a silica glass of a pale olive color, thousands of tons of which are found, in the form of small rounded or rod-like pieces, over an area of 60 square miles. It is thought to have been formed by the heat caused by the impact of a large meteorite.

A British mineral of which good crystals are very rare is withamite, a pink variety of epidote, an iron aluminium silicate which is usually green. The type-locality is Glencoe, and some excellent specimens from there have now been presented to the museum by Mr. W. G. Myers, a local A.A. scout, who found them when the new road was cut through the lava in which they occur. The Mineral Department has also acquired a large rough crystal of microcline feldspar from Norway, measuring 14 inches by 12 inches by 10 inches and weighing about 100 pounds.

Two new exhibits have been put on view in the central hall. One is devoted to the Coelacanth fish, lately discovered off the South African coast, and belonging to a type which was supposed to have been extinct for 50,000,000 years. The fish has been named *Latimeria Chalumnæ* by Dr. J. L. B. Smith, of Grahamstown, who first recognized its nature and importance. A life-size photograph is shown, together with models illustrating the close similarity of *Latimeria* to its fossil relatives.

The second exhibit illustrates the method used by the museum to reconstruct extinct animals (the particular beast chosen is the large amphibian *Cyclotosaurus* from the Triassic ironstone of New South Wales) from the impressions of their skeletons in rock.

THE BYRD ANTARCTIC EXPEDITION

A CONFERENCE was held in Washington on July 24 under the auspices of the National Academy of Sciences and the National Research Council concerning scientific arrangements for the coming Antarctic Expedition.

According to press reports, thirty-two scientific men from twenty government agencies and representatives of institutions of learning and research discussed the scientific program of the expedition with Rear Admiral Byrd, commander. Dr. Isaiah Bowman, president of the Johns Hopkins University, presided. He was assisted by Dr. Henry B. Bigelow, director of the Oceanographic Institution at Woods Hole, Mass.

Plans for meteorological observations and for the mapping of a region some 5,000,000 miles in extent, 3,000,000 miles of which is still to be explored, were discussed at length. The desirability of making arrangements to insure the continuation of these observations over a series of years was also taken up.

It is planned to establish for the expedition three bases, one at Little America, another about 1,400 miles to the eastward, and a third between the two, with twenty-two men at each base, though not continuously. They will come and go as specialists replacing each other to engage in their respective activities.

Members of the expedition, which it is expected will start in October, will include: Dr. F. Alton Wade,