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THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

THE LOS ANGELES MEETING OF THE PACIFIC DIVISION

By Dr. J. MURRAY LUCK
SECRETARY

THE nineteenth annual meeting of the Pacific Division and its affiliated societies, held under the auspices of the University of California at Los Angeles, may properly be regarded as one of the most successful in the history of the division.

Few would be disposed to regard attendance alone as an adequate criterion of a successful meeting, but it is worthy of note that the Los Angeles meeting was the largest in the history of the division. The attendance of members and guests exceeded all expectations. The actual registrations reached a total of 779, to which might be reasonably added an additional 200, which represents a conservative estimate of the number that failed to register. Approximately 75 of those in attendance came from beyond the territory of the Pacific Division.

Much of the success of the meeting was unquestionably due to the generous and unstinted cooperation of the University of California at Los Angeles. All the sessions were centralized in the excellent lecture theaters of buildings within close reach of registration headquarters in Kerckhoff Hall. The arrangements for meals, special luncheons and banquets were well organized, despite difficulties of no small magnitude arising from the unexpectedly large attendance. Dormitory accommodations upon the campus are as yet inadequate for the entertainment of large conventions, but many private homes in Westwood Village provided hospitality for visitors, and rapid transportation between the university and the hotels of Santa Monica, Hollywood and Los Angeles was available. A general reception to members and guests was

graciously tendered by the university, officially represented by Provost E. C. Moore. Alexander Schreiner, university organist, kindly gave a special organ concert on Wednesday, June 26. In addition to excursions of special scientific interest, numerous trips of more general appeal were arranged—to the beautiful gardens and galleries of the Huntingdon Library and Art Museum at San Marino, to the Santa Monica and San Gabriel Mountains, Mt. Lowe, Santa Catalina Island, the Rancho Santa Ana Botanical Garden and other places of unusual interest.

A number of special luncheons and banquets, arranged by the various societies, were held during the week. Among them might be mentioned the Biologists' Dinner, sponsored by the Western Society of Naturalists and attended by about 150 members and guests. The banquets of the Astronomers, Entomologists and Psychologists and the special luncheons of the Physicists, Soil Scientists and Oceanographers were also highly successful.

Viewing the sessions in retrospect one can not fail to be struck by the number of symposia, 11 in all, including several of outstanding interest. There is no doubt that this is indicative of a growing tendency on the part of science to seek correlation among related fields of research, integration of the miscellany of fact contributed by numerous investigators, and more frequent definition of the state of knowledge.

GENERAL SESSIONS

The meetings opened officially on Tuesday, June 25, after an advance registration by the Western Society of Soil Science, in session on Monday, June 24.

In accordance with the policy developed in recent meetings of the division the introductory session was given over to a symposium designed to be broad in scope and of special regional interest.

The subject of earthquakes was selected. As a general introduction Professor Owen C. Coy, of the University of Southern California, described the Californian earthquakes of the past 150 years, commencing with the graphic records of Portolas, relative to the quake of 1769, and concluding with the temblor of 1933. Professor Perry Byerly reviewed the work of the seismological laboratories and stations of the University of California, and Professor Beno Gutenberg, of the California Institute of Technology, discussed the geographical distribution of the regions of earthquake activity throughout the world. A full account of the extensive seismologic work of the U. S. Coast and Geodetic Survey was given by Dr. T. J. Maher. The problems attendant upon the construction of earthquake-resistant buildings and the results of experimental studies bearing upon this subject were presented by Professor Lydik Jacobsen, of Stanford University. Dr. George B. MacDougall, of the Department of Public Works at Sacramento, outlined the questions involved in the drafting and enactment of legislation adequate to ensure the construction of buildings of maximum safety. Several of the speakers emphasized the important fact that the hazards of earthquakes can be virtually completely overcome by the construction of properly designed buildings.

The second general session, held on Tuesday afternoon, consisted of reports on the progress of research in three selected fields. Professor V. O. Knudsen reviewed recent developments in acoustics, Professor Th. Dobzhansky discussed recent work in genetics in relation to the mechanism of heredity and Professor B. M. Allen outlined a number of the problems of commanding interest in present-day research in endocrinology.

It is the policy of the executive committee, in organizing, year by year, the meetings of the division to provide for similar surveys of current research in selected subjects of outstanding significance.

On the morning of Wednesday, June 26, a joint symposium was held on the virus diseases of plants and animals, in which four of the affiliated societies collaborated: the American Phytopathological Society, Pacific Division; the Botanical Society of America, Pacific Section; the Society for Experimental Biology and Medicine and the Western Society of Naturalists. Dr. John F. Kessel, of the University of Southern California, was in direct charge of the general arrangements.

Four major topics were discussed:

The nature and properties of viruses: E. W. SCHULTZ, Stanford University.

The relation of viruses to plant tissues: C. W. BENNETT, U. S. Department of Agriculture, Riverside.

Virus diseases of animals in California: C. M. HARING, University of California, Berkeley.

Immunity in virus diseases of man: ANSON HOYT, University of Southern California.

A novel and interesting feature of the symposium consisted in several demonstrations of virus techniques, presented as follows:

Filtration technique: T. D. BECKWITH and H. H THORNBERG, University of California at Los Angeles.

Technique of handling insect vectors: EUBANKS CARSNER, U. S. Department of Agriculture, Riverside.

The use of stream double refractions in the study of viruses: T. E. RAWLINS and WM. N. TAKAHASHI, University of California, Berkeley.

Electrokinetic phenomena of viruses: C. E. CLIFTON Stanford University, and ROY T. FISK, University of Southern California.

Among other symposia which aroused great interest was one on the geologic and the cosmic age scale organized by the American Physical Society and the

Astronomical Society of the Pacific. Abstracts of the six papers presented in the symposium have been published in this journal.[1]

Addresses of general interest were delivered in Royce Hall on the evenings of June 25, 26 and 27 by Dr. Bailey Willis, of Stanford University; Dr. Fred Wright, of the Carnegie Institution of Washington, and Dr. Karl F. Meyer, of the University of California, respectively. Dr. Willis, the retiring president of the Pacific Division, spoke on "The Living Globe." After discussing the usual theory that the earth is slowly becoming cooler and cooler, he developed an alternative view that the fluid mass of the central core may be becoming hotter and hotter and, extending towards the crust, may eventually cause the earth to become a small but shining star. Dr. Wright, speaking on "The Surface of the Moon," reviewed the influences which the moon, according to legend and ancient folk-lore, exercises upon man. The major portion of the address was devoted to a résumé of our present knowledge of lunar physiography and topography, including mention of current work on the nature of the materials constituting the lunar surface. Dr. K. F. Meyer presented an address of considerable interest on "Plague, Past and Present." The causes of several of the important plagues recorded in history were considered. Special attention was given to selvatic plague foci, endemic within recent years in South Africa and California.

Mention should be made of three motion pictures which were presented on Thursday afternoon: Encystment and Excystment in Ciliated Protozoa (courtesy of Professor C. V. Taylor); The Nature of Living Cells as Revealed by Micro-Operations; Various Aspects of Cells in Living Tissues (courtesy of Professor Robert Chambers and C. G. Grand).

Among the excursions, of which many were planned, it is possible to refer to only a few. Those of scenic interest and non-technical in character have already been mentioned. A trip to the Mt. Wilson Observatory, including an illustrated lecture on the work of the observatory and inspection of the larger telescopes, was greatly enjoyed. The Los Angeles Museum and Rancho La Brea, the San Dimas Watershed, the Citrus Experiment Station and School of Tropical Agriculture at Riverside and the California Institute of Technology at Pasadena were also visited.

SESSIONS OF THE AFFILIATED SOCIETIES

Fifteen of the affiliated and associated societies participated in the meetings, and 383 papers were presented. The reports of the various sessions follow.

[1] SCIENCE, 82: 51, 1935.

AMERICAN ASSOCIATION OF ECONOMIC ENTOMOLOGISTS PACIFIC SLOPE BRANCH

(Report by H. A. Scullen)

Without a doubt the outstanding paper presented at the Entomological meetings at Los Angeles was the invitation address by Professor Harry S. Smith on "The Rôle of Biotic Checks in the Determination of Population Densities." Some forty or more additional papers were presented, and the meetings were attended by about one hundred entomologists. An unusually large number of papers related to various types of chemical controls. Five papers dealt specifically with codling moth control and ten with citrus insects.

In addition to the above, Dr. W. B. Herms gave a report on the transmission of California relapsing fever by a tick; Stanley F. Bailey gave an extended review on thrips as vectors of plant diseases; G. H. Vansell presented a paper on the origin of color in western beeswax; H. H. Stage reported on mosquito-control work in the Northwest under work-relief projects; Stanley E. Flanders reported on "The Effect of Host Density on Parasitism"; R. L. Patton and G. Allen Mail reported on the losses caused by Say's plant bug in Montana; S. B. Freeborn reported on the color preferences of the housefly; Robert L. Kitchel presented the results of studies on respiration of the cockroach; L. S. Jones presented some notes on the life history and control of the peach-twig borer, *Anarsia lineatella* Zell.; and J. R. Eyer reported the California Prionus as a serious pest on fruit trees in New Mexico.

Officers elected for the ensuing year are: *President,* H. A. Scullen; *vice-president,* A. L. Strand; *secretary-treasurer,* John F. Lamiman.

AMERICAN METEOROLOGICAL SOCIETY

(Report by Burton M. Varney)

C. C. Conroy, in a paper on "Early Los Angeles Raingages," gave a historical and descriptive outline of the development of raingages and of precipitation records in Los Angeles from the earliest known (1855, with Tennent gage) to the general public acceptance of the Signal Service records in about 1890. A paper by H. P. Gillette, "Cycles Causing the Present Drought," discussed the pre-record methods of tracing precipitation changes, including the Sequoia tree-ring counts of Douglass, the varves in silt deposits of ancient glacial lakes and the recessional moraines deposited during the last Ice Age. These, he states, unite in disclosing twelve cycles, notably the largest of a 155-year period whose next minimum will be reached in 1939 and another of 69 and two thirds years whose last minimum occurred in 1934. Mr. Gillette believes

that the close confluence of these minima explains the wide-spread drought of 1935. The value of analyzing in detail the local characteristics of temperature, wind, precipitation and humidity on a given tract of land previous to utilization of it was clearly shown by F. A. Carpenter. Two large areas were subjected to climatic surveys which led to great financial saving through proper location of plantings. In one of these areas a change from unprofitable agricultural use to profitable summer resort use was based on the findings of a climatological survey. L. M. Daingerfield's paper on "Terminology Trends in Meteorology" showed the need of taking stock of our technical terms in a science evolving as rapidly as is meteorology, in the interest of clarity and avoidance of duplication. L. E. Blochman, discussing "Seasonal Long-Range Forecasting," stated his belief that a greater persistency of weather types on the Pacific Coast under oceanic domination gives this region some advantage over the Atlantic Coast. Winter storm tracks were discussed as well as the assistance afforded by the Daily North Pacific Chart issued by the San Francisco Weather Bureau Office. J. W. Smith presented a qualitative summary of the climatic characteristics of northern Nevada based on its outstanding features of aridity and strong daily and annual ranges of temperature in conjunction with the marked effects of contrasting mountain-and-plains topography in the region. The relation of meteorological phenomena in southern California to the local fruit industry was discussed by Woodbridge Metcalf, who showed the great importance of windbreaks in protecting orchards from the desiccating "Santa Ana" or foehn wind; by G. P. Weldon, who showed how delayed foliation in peach trees was associated with winters of plus departures from the normal temperature; and by S. H. Cameron and R. W. Hodgson, who presented a study of average early spring temperatures in their relation to the size of the avocado crop. L. G. Gray, dealing with "California Forest Fire Economics," showed that fire damage and suppression costs vary directly with trends of air temperature in the region and pointed out several useful applications of this fact to forest administrations and fire weather research. J. E. Jones reviewed the technique and some of the problems of "Snow Surveying for Short-Time Forecasting," discussing the types of snow courses, selection of standards of reference for determining "normal" water content, the factors that affect the accuracies of stream run-off estimates. He showed that the run-off forecasts were usually within 10 per cent. of observed run-off. J. G. Brown dealt with "The Relation of Atmospheric Electricity and Meteorology." He advanced the theory that, owing to greater ionization of the air at high levels, with the lower air as a dielectric, a condenser is formed with the earth as the negative plate and the upper air as the positive. The current across the dielectric is offset by a return flow in thunderstorms when the earth's charge beneath the storm is of opposite sign and the condenser thus is kept charged. Without thunderstorms, it might lose its charge in a few minutes. A large group of papers dealt with various aspects of air-mass analyses. A paper by H. C. Huang treated some of the air-mass types found in Northern China, notably the cool, dry type from Siberia, the warm, moist type from the Yellow Sea and the hot and very dry type from the interior of Asia to the southwest. Upper air soundings by means of kites were used to determine the properties of these different masses. I. P. Krick undertook to apply the wave motions of the tropopause resulting from the disturbance of two sloping discontinuity surfaces separating three dissimilar fluids, to the extension of weather prediction in certain localities from the usual 36 to 48 hours to as long as a week or ten days. He made specific application to the North Pacific-Great Basin region, discussing the relationship of intense lows over the ocean to the formation of plateau anti-cyclones, and the possibility of long-range prediction for the western United States if the formation and magnitude of the anti-cyclone can be predicted. W. M. Lockhart presented a study of the west coast inversion as applied to navy aviation forecasts for the San Diego area. He finds that when the inversion is low the ceiling is also low and the stratus breaks during the day, but that a higher inversion may cause fairly high cloudiness to persist throughout the day. He pointed out that a study of the upper-air winds with particular attention to the passage of fronts aloft seems to give the most reliable clue to the probable depth of the surface layer of maritime air. Further information on the behavior of two groups of tropical storms forming on the southwest coast of North America was contributed by Dean Blake. One group originates in summer and early fall in very low latitudes off the Mexican coast and moves northwestward under the influence of upper-air flows on the southwestern side of the high-level anti-cyclone that overlies the semi-permanent thermal low of our Southwest. It was suggested that the other group, off the Lower California coast, may originate in the known high-level movements of air from the south when a deep high overlies the western United States. Progress toward quantitative forecasting of precipitation was indicated by J. R. Fulks's paper on "Rates of Precipitation from Adiabatically Ascending Air," in which he gave an approximate and simple formula and a chart derived therefrom for estimating hourly precipitation rates according to any combination of temperature, pressure, vertical velocity and thickness

of the air layer involved. A. B. Carpenter described a noteworthy example of subsidence in a stagnated dome of air over the northwest United States. Air drainage from this region was slow, owing to the high mountain ranges. Fog and low cloudiness accompanying the stable conditions were related to the sloping subsidence layers, lasted about three weeks, and ended when a low area to the south set up a gradient, draining off the air in that direction. A paper by G. M. French on coastal cloud types of southern California described cumulus formation in unstable polar air near the southern California coast. These clouds form off-shore at night, when the interior is clear, and over the land in the daytime when the weather is clear over the ocean. The result is much the same whether the source region of the air is Canadian or North Pacific, provided the trajectories of the masses carry them over the ocean before reaching our coast. These clouds seem to form within cold sectors rather than on cold fronts. Introducing the two next-noted papers, F. H. Hay described the meteorological work of the Los Angeles County Flood Control District and showed some of the extraordinary difficulties involved in solving the local precipitation-and-run-off problem. W. J. Wood then discussed the precipitation records of the district in terms of their historical development and of the requirements for further perfecting the fundamental data. R. S. Goodridge, dealing with "Storm Patterns," related the development of curves of cumulative precipitation to types of storms over southern California: the occlusion type, in which precipitation slowly increases as mountain-dammed cool southwesterly air is overrun by Tropical-Pacific air and often reaches a damaging climax when the Tropical-Pacific air is occluded by incoming Polar-Pacific air; and the comparatively rare thunderstorm type in which precipitation initially is usually great and diminishes thereafter. A group of papers on the distribution and measurement of precipitation over the San Dimas experimental forest was introduced by E. I. Kotok with a general description of the project and statement of the precipitation problem. H. G. Wilm then explained the factors governing the choice of locations of the 175 raingages for obtaining the most nearly satisfactory picture of the distribution of precipitation. H. C. Storey compared the statistical and isohyetal methods for analyzing the resulting rainfall measurements.

AMERICAN PHYSICAL SOCIETY, 200TH MEETING

(Report by Leonard B. Loeb, local secretary for the Pacific Coast)

The two hundredth meeting of the American Physical Society was held in affiliation with the Pacific Division, American Association for the Advancement of Science, at the University of California at Los Angeles during the period from June 26 to June 29. The program consisted of the following items:

On Wednesday, June 26, a symposium on "The Geologic and Cosmic Age Scales," in cooperation with the Astronomical Society of the Pacific, with the following titles:[2]

The age of the earth from sedimentation: GEORGE D. LOUDERBACK, University of California, Berkeley.

The age of the earth from radioactive disintegration products: ROBLEY D. EVANS, Massachusetts Institute of Technology.

The age of the earth from the changes in its temperature and elastic properties: BENO GUTENBERG, California Institute of Technology.

The age of the galaxy from the disintegration of Galactic star clusters and binary star systems: G. P. KUIPER, Lick Observatory.

The age of the universe from the red shift in the spectra of extragalactic objects: RICHARD C. TOLMAN, California Institute of Technology.

On attempts to reconcile the long and the short-time scales in cosmogony: PAUL S. EPSTEIN, California Institute of Technology.

On Thursday, June 27, a symposium on "Nuclear Structure," with the following program:

A survey of present knowledge of the nucleus: CARL D. ANDERSON, California Institute of Technology.

Recent developments in artificial transmutation: ERNEST O. LAWRENCE, University of California.

Gamma rays from nuclear transmutations: H. RICHARD CRANE, California Institute of Technology.

A mathematical interpretation of nuclear phenomena: PAUL S. EPSTEIN, California Institute of Technology.

Absorption of high energy electrons: SETH H. NEDDERMEYER, California Institute of Technology.

Eccentricities of high explosives: ROBERT W. WOOD, Johns Hopkins University, president of the American Physical Society.

The last paper on this program did not fit into the subject-matter of the program. In view of the presence of President Robert W. Wood, of the American Physical Society, opportunity was taken of a vacancy at the end of the program to enable Professor Wood to speak on a topic of his own choosing.

On Friday and Saturday there was a program of thirty-nine contributed papers of ten minutes each by members of the society. In several cases it happened that a number of papers by different investigators dealt with the same subject, so that in place of the normal ten-minute program the papers were informally regrouped so as to make small symposia on these subjects. Particularly notable was the one on "Anomalous Diffraction Gratings," contributed to by Professors Wood, Strong and Langer.

[2] For abstracts of these communications see SCIENCE, 82: 51, 1935.

The meetings were highly successful and the exceptionally large attendance of over three hundred at the two symposia proved conclusively the value of symposia at the Pacific Division meetings alone. This was the first Pacific Division meeting in which the Physical Society attempted to hold symposia.

The attendance at the sessions where contributed papers were presented was in the neighborhood of a hundred.

AMERICAN PHYTOPATHOLOGICAL SOCIETY, PACIFIC DIVISION

(Report by B. A. Rudolph, secretary-treasurer)

At the nineteenth annual meeting of the society, C. E. Owens, of Oregon State College, was elected president to serve one year. Four half-day sessions were held, at which twenty-three papers were read. Preceding the regular sessions the Pathologists and several other societies participated in a joint symposium on "Virus Diseases of Plants and Animals." Dr. C. W. Bennett represented the Pathologists, and his paper, "The Relation of Viruses to Plant Tissues," made a very favorable impression. Dr. Carsner, Dr. Thornberry and Dr. Takahashi demonstrated various virus techniques following the symposium. Brief reports of the papers presented follow: W. W. Mackie reported the possibilities of successful control of stem rust of wheat by means of sulfur dusting from airplanes. H. S. Reed and H. H. Thornberry described a very new peach disease in Southern California, the cause of which is still not wholly clear. D. E. Bliss described experiments demonstrating the causal agent of rots of three species of palm trees to be *Penicillium roseum*. L. D. Leach and A. E. Davey showed that suitable and timely applications of cyanamid to the soil or the application of either anhydrous ammonia or ammonium sulfate in proper quantities in irrigation water would greatly curtail attacks of southern sclerotium rot of sugar beets. They also suggested that solutions of anhydrous ammonia or ammonium salts applied to the soil may, with a sufficiently high pH, be effective in reducing infection by inhibiting the growth of the fungus. J. R. Eyer described the pathological histology of potato-leaf tissue affected with psyllid yellows and certain aspects of the biochemistry involved. C. M. Tompkins, C. M. Tucker and A. E. Clarke described a new root and stem rot on China asters caused by *Phytophthora cryptogea*. B. F. Dana and F. P. McWhorter reported a severe outbreak of "curly top" on pansy in Oregon in 1934. The beet leafhopper *Eutettix tenellus* was present in large numbers on the plants and considered to be responsible for transmitting the disease to them. C. O. Smith submitted a list of conifers which he found to be susceptible to attacks of crown gall in inoculation experiments. C. M. Tompkins, C. M. Tucker and M. W. Gardner described a root rot of cauliflower produced by *Phytophthora megasperma* Drechsler. J. T. Barrett and H. Parker reported a disease of the roots of *Stellaria media* which they have attributed to attacks by *Ligniera junci*. W. W. Mackie, H. Johann and N. E. Stevens reported and described a fungus disease of maize which appeared at Berkeley, California, in 1933. The fungus has been identified as a species of Sphaeropsis and greatly resembles *S. ambigua*, already reported on corn. W. C. Snyder described a new disease of pea in California presumably due to a fungus which as yet has not been positively identified. J. L. Hewitt advanced a hypothesis concerned with the possible creation of living matter from non-living matter. F. P. McWhorter described the pathological histology of narcissus leaves affected with mosaic. F. P. McWhorter and J. A. Milbrath reported a tip blight of tomato in Oregon which is probably due to a virus, but which differs in certain definite points from several other diseases of similar origin. F. P. McWhorter reported experiments which substantiate the theory which he presented at the sixteenth annual meeting of the society to the effect that tulip breaking results from the interaction of two antithetic viruses, one of which tends to add flower color and one that removes it. Results obtained experimentally by E. T. Bartholomew tend to show that while high soil moisture is conducive to endoxerosis of lemon fruits, during protracted hot weather trees having access to the least amount of water will show the greatest yield of endoxerotic fruit. J. M. Fife and V. L. Frampton described the effect of carbon dioxide on the pH gradient of the sugar beet and on the feeding of the curly-top vector. H. P. Severin and J. H. Freitag described the distribution of celery mosaic diseases in California and their symptomology. J. H. Freitag and H. P. Severin described experiments designed to show the number of days infective leafhoppers may be capable of transmitting curly-top to beets. J. T. Barrett discussed the taxonomy of *Rhizomyxa hypogea* Borzi and *Ligniera junci* (Swartz) Cook.

AMERICAN SOCIETY OF ICHTHYOLOGISTS AND HERPETOLOGISTS, WESTERN DIVISION

(Report[3] by R. B. Cowles)

Six communications were presented as follows:

(1) "The Breeding Habits of the Chub, *Mylocheilus caurinus* (Richardson) (Cyprinidae)," Leonard P. Schultz. A description of the behavior of schools of chub during spawning activities in Lake Washington.

(2) "The Growth of the Rattlesnake," L. M. Klauber. Captive specimens, which fail to grow natu-

[3] Abbreviated. J. M. L.

rally, were not used. A growth curve was plotted from measurements made on 450 specimens of the Pacific rattlesnake captured in San Diego County. Observations on weight, length, number of rattles, age and mating were recorded.

(3) "Sand Dune Reptiles from Baja California and the Problem of Convergent Evolution," Walter Mosauer. A description of three sand reptiles from the dunes of the Vizcaino desert. A comparison is made of the dune biota in different deserts.

(4) "Intergradation in the Genus Salvadora and its Bearing on the Phylogeny of the Genus," C. M. Bogert. Intergradation between three species of *Salvadora grahamiae* are considered: *S. g. grahamiae,* the typical form of the Mexican plateau and south central United States; *S. g. hexalepis* of the southwestern deserts; and *S. g. virgultea* of the southwestern coastal area of California and northwestern Lower California.

(5) "Color Change and Color Mechanism in Reptiles," Sarah Atsatt. The relative significance of heat and light on the color change of iguanids and the *Xantusiidae.*

(6) "The Toleration of Solar Heat by Desert Reptiles," Walter Mosauer. Contrary to popular opinion, desert lizards have no greater toleration of high temperatures than nocturnal snakes.

A series of 130 Agfa Autochromes, illustrative of variations in pattern and color of reptiles and amphibians, was shown by Dr. Cowles, and an exhibit of living reptiles and amphibians, prepared by C. M. Bogert, L. M. Klauber and R. B. Cowles, was placed on view.

Officers for the coming year were elected as follows: *President,* Dr. Sarah Atsatt; *vice-president,* Dr. Rolf Bolin; *secretary,* Dr. Arthur Svihla.

ASTRONOMICAL SOCIETY OF THE PACIFIC

(Report by Frederick C. Leonard, chairman, Program Committee)

The sessions on June 26 were devoted to joint symposia with the American Physical Society. The forenoon symposium was on "The Geologic and the Cosmic Age Scales."[4]

The afternoon session opened with a discussion of these papers, followed by a symposium on "The Technique of Metallizing Mirrors and the Performance of Metallized Telescope Mirrors," at which the following two invited addresses were given: (1) "The Technique of Depositing Aluminum by Evaporation on Telescope Mirrors," John Strong, California Institute of Technology; (2) "The Reflectivity of the New Aluminum-Magnesium Alloy in the Near Ultra-Violet," Hiram W. Edwards, University of California at Los Angeles.

These papers were followed by "Reports on the Performance of Aluminized Telescope Mirrors in Use at the Lick and the Mt. Wilson Observatories, by Members of their Staffs," namely, G. P. Kuiper, of the Lick Observatory, and A. H. Joy and R. S. Richardson, of the Mt. Wilson Observatory. After further discussion of the subject-matter of this symposium, the following paper, whose title was received too late for inclusion in the printed program, was delivered: "The Transformation of a Spherical into a Parabolic Mirror by Controlled Deposition of Aluminum," by John Strong and E. Gaviola, California Institute of Technology.

At the morning sessions of the Astronomical Society, on June 27 and 28, the following nineteen miscellaneous papers were read, in most cases by their authors:

The photometry of electric furnace absorption multiplets: ROBERT B. KING and ARTHUR S. KING, Mt. Wilson Observatory.

Recent developments in meteoritics: FREDERICK C. LEONARD and ROBERT W. WEBB, University of California at Los Angeles.

Remarks on the establishment of a scale of wave lengths in the infra-red solar spectrum: HAROLD D. BABCOCK, CHARLOTTE E. MOORE and WENDELL P. HOGE, Mt. Wilson Observatory.

The photometry of the magnesium b group in the solar spectrum: ERNEST CHERRINGTON, JR., Lick Observatory.

Some exceptional features of hydrogen flocculi: R. S. RICHARDSON, Mt. Wilson Observatory.

A comparison between the radiation from the moon and from Mercury: EDISON PETTIT and SETH B. NICHOLSON, Mt. Wilson Observatory.

A program for general perturbations of the minor planets: A. O. LEUSCHNER and SOPHIA H. LEVY, University of California, Berkeley.

The origin of the light of the night sky: JOSEPH KAPLAN, University of California at Los Angeles.

Preliminary report on observations of Mars in 1935: E. C. SLIPHER, Lowell Observatory.

The constitution of the star cluster in Coma Berenices: R. J. TRUMPLER, Lick Observatory.

The mass of the Virgo Cluster: SINCLAIR SMITH, Mt. Wilson Observatory.

Reexamination of spectroscopic binary orbits: W. E. HARPER, Dominion Astrophysical Observatory.

Spectrographic elements of the eclipsing variables AN Cephei, GO Cygni, MR Cygni and TX Ursae Majoris: J. A. PEARCE, Dominion Astrophysical Observatory.

Provisional elements of the visual binary Beta 1026 (A. D.S. 148): JOHN A. RUSSELL, University of California at Los Angeles.

The behavior of carbon, nitrogen and silicon in the spectrum of P Cygni: C. S. BEALS, Dominion Astrophysical Observatory.

[4] *Cf.* American Physical Society, page 261 and SCIENCE, 82: 51, 1935.

The radial velocity of Alpha Lyrae: F. J. NEUBAUER, Lick Observatory.

New velocities of extragalactic objects: M. L. HUMASON, Mt. Wilson Observatory.

The variability of Epsilon Lyrae: E. A. FATH, Goodsell Observatory of Carleton College.

An investigation of selective absorption in the Aquila region of the Milky Way: CLIFFORD E. SMITH, Lick Observatory (the only paper on the program to be read merely by title).

The afternoon session on June 27 was given over to a symposium on "Nova Herculis," consisting of the following four invited papers:

Some unusual features of the spectrum of Nova Herculis: A. B. WYSE, Lick Observatory.

Radial velocities from absorption lines in the spectrum of Nova Herculis: W. S. ADAMS, W. H. CHRISTIE, A. H. JOY, R. F. SANFORD and O. C. WILSON, Mt. Wilson Observatory.

Displacements of the sodium lines in the spectrum of Nova Herculis: PAUL W. MERRILL, Mt. Wilson Observatory.

Cyanogen bands in the visual region of the spectrum of Nova Herculis: ROSCOE F. SANFORD, Mt. Wilson Observatory.

The program concluded with an excursion to the Griffith Observatory in the early afternoon of Friday, June 28, followed immediately by an excursion to the Mt. Wilson Observatory.

BOTANICAL SOCIETY OF AMERICA, PACIFIC DIVISION

(Report by F. Murray Scott, secretary)

Two symposia and three general sessions were held on June 26, 27 and 28, Dr. O. L. Sponsler, president, presiding at the latter. Papers on the following subjects were presented: Life history of *Pelagophycus porra;* the periodic fruiting of Halicystis; the carbohydrate in the plant *Irideae laminarioides* and the isolation of a new polysaccharide, sodium sulphuric acid ester of galactan; effects of sun blotch on the anatomy of the avocado, *Persea drimifolia;* poison oak, poison ivy, the plants and their poisons; the histogenesis of foliar transition forms in Carya; five thousand miles of exploration for Cupressus in California; the effect of hydrogen peroxide on hastening the germination of *Pinus coulteri;* a respiration study of detached roots; the recovery of HCN absorbed by citrus foliage; the growth and yield of lemon trees as affected by differential water treatments; the amylolytic activity in orange leaves; the physiological basis of genetic dwarfs in corn; the origin of growth hormone in avena coleoptile; some relations between electric polarity and growth in plants; on the effect of ethylene in root formation; root formation on stem cuttings induced by hormones.

A symposium on plant pigments was held on Thursday afternoon, Dr. A. R. Davis, University of California, Berkeley, presiding. The following topics were discussed: "The Plastid Pigments of the Dodder, *Cuscuta salina,*" Dr. G. Mackinney; "Chlorophyll Changes in Algae," Dr. M. C. Sargent; "Preliminary Studies on Chlorophyll Formation," Dr. D. Appleman; "Chlorosis," Dr. J. P. Bennett.

The society also participated in the joint symposium on the virus diseases of plants and animals.

Among the field trips scheduled was a visit to the rapidly growing Botanic Garden of California native plants, the Rancho Santa Ana property of Mrs. Ernest A. Bryant, where Dr. C. B. Wolf is the botanist in charge.

Officers for the coming year were elected as follows: *President,* Dr. T. C. Frye, University of Washington; *secretary,* Dr. G. B. Rigg, University of Washington.

ECOLOGICAL SOCIETY OF AMERICA

(Compiled from the Bulletin of the Ecological Society, June, 1935)

In addition to a symposium on "Chaparral in Relation to Erosion and Fire Control," presided over by Charles J. Kraebel, the following seven communications were presented:

Some Southern California hydrothermals: H. DE FOREST, University of Southern California.

The vegetation of Baja California: FORREST SHREVE, Desert Laboratory, Carnegie Institution, Tucson.

Moisture relations in the chaparral of the Santa Monica Mountains: HARRY L. BAUER, Santa Monica Junior College.

Soil moisture, soil temperature and growth in the chaparral: VIDA M. WATKINS, University of Southern California.

Biogeographical features of the North Coast Ranges of California: HAROLD W. CLARK, Pacific Union College.

The localization of Asilidae (robber-flies) in Colorado: MAURICE T. JONES, Colorado State College.

Growth in Convolvulus soldanella L.: EDITH A. PURER, Hoover High School, San Diego.

Abstracts of these papers have been published in the *Bulletin of the Ecological Society of America,* 16: 19–21 (June, 1935).

SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE, SOUTHERN CALIFORNIA BRANCH AND PACIFIC COAST BRANCH

(Report by T. D. Beckwith)

The Southern California Branch and the Pacific Coast Branch of the Society for Experimental Biology and Medicine met on Thursday and Friday mornings The aggregate attendance was between seventy-five and one hundred. Dr. J. F. Kessel, president of the

Southern California Branch, presided at one session. In the absence of Dr. W. H. Manwaring, president of the Pacific Coast Branch, Dr. T. D. Beckwith, incoming president of the Southern California Branch, presided at the second session.

Drs. H. Borsook and C. E. P. Jeffreys opened the session by showing that the mucosa of the intestine and the liver account for the greatest part of uric acid formation from purines. J. M. Luck presented an interesting discussion in which he demonstrated that the increase in the size of the liver attending the use of certain protein diets must be classed as true hypertrophy. Roderick Craig and J. S. Yuill presented the results of a study of the development of fat in the larvae of the flesh fly (*Lucilia sericata,* Meig). The results have shown that this form of animal life synthesizes fats in large amounts. D. M. Greenberg and E. V. Tufts gave a summary of work carried on by them dealing with changes of body magnesium of the rat with age. They have demonstrated the interesting point that bony tissues of the body deplete more easily. Soft tissues tend to retain their magnesium content. This is a safeguard against magnesium tetany. Dr. D. L. Fox, while discussing some animal carotinoids, gave proof that certain fish can convert some of these compounds to others. A valuable discussion was presented by Drs. Lewis Gunther and D. S. Mackinnon, in which they compared the occilographic electrocardiogram with the more usual string type of machine. Dr. Hazel E. Field outlined results of extensive research on the effect of tobacco smoke on the experimental animal. Among other interesting points, she showed that tobacco smoke changes the structure of adrenals. Thus it appears likely that tobacco smoke has a definite effect upon the endocrine balance of the body. B. L. Davis, while discussing certain constituents of the adrenal gland, presented information on the effects of acetylcholine on the blood sugar and amino-acid content of experimental animals. By C. C. Lindegren, a fascinating relationship was shown genetically between the G. type of an organism and its more usual form. This paper therefore dealt with certain nuclear structures among the bacteria. *B. acidophilus* in soybean milk was discussed by T. D. Beckwith and B. L. Golden. They indicated that this organism undergoes a peculiar fragmentation and that it forms units nearly sub-microscopic in size. R. V. Stone presented his discovery of a method whereby the food poisoning type of staphylococcus may be recognized through certain critical culture reactions. Dr. Anson Hoyt has shown that rabies anti-serum has definite protective value when used with the white mouse as an experimental animal. New and more adequate methods of isolating meningococcus were described by Dr. Roy T. Fisk. Dr. J. F. Kessel encountered a new virus while studying the 1934 poliomyelitis epidemic. His discussion was accompanied by an interesting series of moving pictures. A technique whereby, in a wet blood smear, recognition of cancer in the patient may be rendered more simple was explained by Lloyd Kennell and Dudley S. Cooper. Charles Weiss and Alfred Goldman described their experiments whereby, successfully, they have been able to study the formation of lung abscess in experimental animals. That excess blood may be absorbed from the circulatory system by some organ controlled by the oxygen tension of respired air was stated by David B. Tyler and Francis M. Baldwin. Drs. N. W. Shock and E. Ogden made the interesting statement that following severe exercise young girls of grade-school age recover more slowly than do boys of similar age. By M. T. Burrows, data were presented that definite relationships existed between the presence of dead or degenerate tissues of the body and the appearance of cancer.

WESTERN SOCIETY OF SOIL SCIENCE

(Report by H. D. Chapman, secretary)

Three half-day sessions were held with attendance ranging from 35 to 75. A number of interesting papers and much discussion centered around the influence of soil alkalinity on the absorption and utilization of iron and other minor constituents of plants. One paper dealing with the utilization of various iron compounds in alkaline media was of interest in showing great differences in the availability of various iron oxides; magnetite and iron pyrites proved more available than hematite or carbonate; preparations of iron humate proved less available to corn plants than ferrous sulfate. The possible importance of intimate root-soil particle contact was stressed as possibly being one means by which plants secure iron from alkaline media. Physiologically acid nitrogen fertilizers and sulfur were found to increase significantly phosphate availability in calcareous soils. A careful physico-chemical study of factors affecting the pH of alkaline-calcareous soils revealed that soil-water ratio, fineness of division of calicum carbonate, protective coatings and salt effects were of great importance in changing the pH.

Of considerable interest in throwing new light on the nature, crystalline structure and properties of clay minerals was a study of the water losses of pure minerals, Bentonite and soil colloids, under the influence of variable temperatures. Similarities and differences between various clay minerals, bentonites and soil colloids, as shown by previous work of a different nature, were again manifest in the water retentiveness of these materials.

Studies of boron toxicity, as related to weed control, indicated the usefulness of boron containing com-

pounds mixed with chlorates as a substitute where arsenicals are undesirable. The studies reported also bore on the fixation and movement of boron compounds when applied to different soils.

The importance of organic matter and cover crops in the prevention of soil-nutrient losses by leaching under conditions of pineapple culture in Hawaii was shown by data presented. Marked differences in the transformations of organic matter in different soil types were shown in connection with studies carried on in Washington State College.

A partial explanation of the decline of old alfalfa fields in the West is suggested by experiments showing a gradual accumulation in old alfalfa plants of a root-nodule-bacteria-destroying substance (bacteriophage).

Of importance in the irrigation of sugar beets was the presentation of data showing that so long as the moisture content is kept from falling below the permanent wilting percentage, no differences in yield or sugar content of beets resulted. Wide differences in the soil-water level were maintained by varying methods of irrigation.

The following officers were elected for the coming year: *President,* R. E. Stephenson, Oregon State College, Corvallis; *vice-president,* R. L. Hibbard, University of California, Berkeley; *secretary-treasurer,* S. C. Vandecaveye, State College, Pullman, Washington.

Western Psychological Association

(Report by Howard C. Gilhousen)

The program of the Western Psychological Association consisted of meetings on Friday and Saturday. On the mornings of both days there were parallel sessions, both containing general experimental papers. Friday afternoon was devoted to a symposium on the topic: "Is the Quantitative Scientific Method Adequate for the Analysis and Prediction of Mental States or Behavior?" Professor R. C. Tryon outlined the issue, and the following contributed under the title of "The Point of View of": Conditioned Response, Professor Edwin R. Guthrie; Experimental Psychology, Professor Warner Brown; Social Psychology, Professor Knight Dunlap; Mental Measurement, Professor H. E. Garrett; Educational Psychology, Professor A. S. Raubenheimer; Comparative Psychology, Professor Edward C. Tolman; Gestalt Psychology, Professor R. H. Wheeler; Clinical Psychology, Professor Jean Macfarlane.

On Saturday morning one session was devoted to child psychology. This session was held jointly with the Society for Research in Child Development. The parallel Saturday session was devoted to comparative and physiological psychology. The afternoon session contained a variety of papers on learning and other topics.

On Friday evening the annual banquet was held in Kerckhoff hall, with about 100 persons attending. Professor Harold E. Jones gave an address, entitled "The Growth Study as a Psychological Method."

The following officers were elected for the ensuing year: *President,* Professor Grace M. Fernald; *vice-president,* Dr. Ralph Gundlach; *secretary-treasurer,* Dr. Robert C. Tryon.

Western Society of Naturalists

Exclusive of the symposium on virus diseases in which the society participated, some 23 papers were presented. Eight of these were on genetics and were grouped together to constitute the second session:

A four gene system of color inheritance in Clarkia elegans: L. L. Burlingame, Stanford University.

Heredity of "white anther" in Clarkia elegans: L. L. Burlingame, Stanford University.

Matthiola hybrids which indicate reciprocal translocation involving the A-chromosome: Howard B. Frost, University of California, Riverside.

Chromosome studies of the Pacific Coast trilliums: Harry E. Warmke, Stanford University.

New mutations in Drosophila pseudoobscura: Catherine V. Beers, University of Southern California.

The action of genes studied through deficiencies: D. F. Poulson.

Chromosomal differences between races: C. C. Tan, California Institute of Technology.

Inheritance of certain teratological forms in Clarkia elegans Dougl.: L. A. Waitzinger.

The remaining 15 papers were miscellaneous in character:

Studies in the structure and growth of the lamellibranch shell: Robert C. Miller, Harold D. Mitchell and Howard A. Coombs.

Observations on the distribution of marine invertebrates along the North Pacific Coast: John E. Guberlet and Robert C. Miller.

Studies in the seasonal distribution of plankton in Puget Sound and adjacent waters: Robert C. Miller, Charles C. Davis, Harry A. Hansen and Robert P. Dempster.

A biological reconnaissance of Portland Canal, Southeastern Alaska: Robert C. Miller, John E. Guberlet and James E. Galbraith.

Two new ecto-parasitic trematodes: John E. Guberlet.

The mechanism and biological significance of color changes in fishes: F. B. Sumner, Scripps Institution of Oceanography, La Jolla.

The climatic and evolutionary status of animals in relation to chemical properties of their fats: James B. McNair, Los Angeles.

The assimilation of ammonium by Nitzschia closterium and other marine phytoplankton: Claude E. ZoBell, Scripps Institution of Oceanography, La Jolla.

Evidences of structure in the cytoplasm of Plasmodium, Physarum polycephalum: A. R. Moore, Hopkins Marine Station, Pacific Grove.

The teeth of small fish from natural waters containing fluorine: ANDREW NEFF, California Institute of Technology.

Experiments on the source and amount of nitrogen used by Zootermopsis: R. E. HUNGATE, Stanford University.

The cause of the death of hundreds of cedar waxwings: M. L. FOSSLER, University of Southern California.

The relation of bacteria to the nitrogen metabolism of termites: ROBERT A. GREENE and EDWARD L. BREAZEALE, College of Agriculture, University of Arizona, Tucson, Arizona.

Auxiliary host in the life cycle of a lung worm: M. HOBMAIER, Hooper Foundation.

ASSOCIATION OF PACIFIC COAST GEOGRAPHERS

(Report by O. W. Freeman)

On June 27, 1935, the Association of Pacific Coast Geographers completed an organization. The society has applied for affiliation with the Pacific Division of the American Association for the Advancement of Science and plans to meet annually where the association meetings are held. A two-day session was held, at which 20 papers were presented. An annual yearbook will be published to contain abstracts of all papers presented, together with a few of the leading papers in full.

Officers for 1935–36 were elected as follows: *President,* Otis W. Freeman, State Normal School, Cheney, Washington; *vice-president,* George C. Kimber, Junior College, Sacramento, California; *secretary-treasurer,* W. B. Merriam, Department of Geography, University of Washington, Seattle, Washington.

On the morning of June 26 the program began with some observations bearing on the development of meanders in intermittent streams in the Colorado Plateau region by John Leighly. A transplanted culture by Italian-Swiss dairymen in the Santa Lucia Mountains of San Luis Obispo County was described by H. F. Raup. J. W. Hoover pointed out a close connection between sources of water and Papago Indian village sites in Arizona and Sonora. O. W. Freeman described the hop industry of the Yakima Valley, Washington, and W. B. Merriam the historical, physical and economic geography of the Rogue River Valley, Oregon. The human geography of the Quirigua region of Guatemala was described by Glenn Cunningham. In the afternoon a tour around Los Angeles harbor and vicinity was conducted by H. F. Raup.

On June 27 there were two papers on Lower California; one by Peveril Meigs described the historical geography and the other by Forrest Shreve discussed the human ecology. Edward N. Torbert presented a land utilization map of the intensively cultivated northern part of the Santa Clara Valley, California. J. E. Williams correlated the geology, landscape and climate with land utilization in the island of Majorca. Dot maps of the coal resources and production of China were presented by Barbara Woodruff and of the iron ore resources and production of China by Wilma Belden.

The political geography and settlement of northern Nigeria were described by John B. Appleton. Three papers on climate and meteorology were presented by: Anna Marie Boschen, on a modification of the Koppen criteria for determining seasonal distribution of rainfall; by Malcolm H. Bissell, on variation in the warmest temperatures in the United States; and by R. W. Richardson, on winter air mass convergence in the north Pacific area. The program ended with three papers on geography teaching. H. W. Fairbanks urged the need for a harmonious and aggressive front on the part of school geographers; J. F. Chamberlain gave the results of a study on geography in the secondary schools of the Pacific Coast states, and Vinnie B. Clark described field work as carried on in the State Teachers College at San Diego with freshman geography classes.

OCEANOGRAPHIC SOCIETY OF THE PACIFIC

On Friday, June 28, a luncheon was held, Dr. T. Wayland Vaughan presiding, under the joint auspices of the Committees on the Oceanography of the Pacific for the United States and for Canada. About sixty persons were present. The organization of the Oceanographic Society of the Pacific was completed at that time and the following officers were elected: *President,* T. Wayland Vaughan, Scripps Institution of Oceanography, University of California; *vice-president,* C. McLean Fraser, University of British Columbia; *secretary-treasurer,* C. L. Utterback, Oceanographic Laboratories, University of Washington; *members at large,* Beno Gutenberg, Seismological Laboratory, Carnegie Institution of Washington and California Institute of Technology, and W. L. Scofield, California Fisheries Laboratory, Terminal Island.

After the business had been disposed of, a program of communications on oceanographic subjects was presented as follows:

Oceanographic activities on the Pacific Coast of Canada: A. H. HUTCHINSON, University of British Columbia.

Oceanographic work of the U. S. Navy in the Pacific: LT. COMMDR. A. W. BROWN, U. S. Hydrographic Office, San Pedro.

Work of the U. S. Coast and Geodetic Survey in the Pacific: COMMDR. O. W. SWAINSON, U. S. Coast and Geodetic Survey.

Ocean waves: BENO GUTENBERG, California Institute of Technology.

California shoreline phenomena: J. P. BUWALDA, California Institute of Technology.

Studies of old hydrographic charts of California har-

bors with reference to shoreline changes: U. S. GRANT, University of California at Los Angeles.

Marine terraces of the California coast: WM. C. PUTNAM, Los Angeles Junior College.

Research in biology at the Oceanographic Laboratories of the University of Washington: R. C. MILLER.

Research in physical oceanography at the Oceanographic Laboratories, University of Washington: C. L. UTTERBACK.

Marine research, California Fish and Game Commission: W. L. SCOFIELD, Director, State Fisheries Laboratory, Terminal Island.

Research at the Marine Laboratory, California Institute of Technology, at Corona del Mar: G. E. MACGINITIE.

General oceanographic announcements and work of the Scripps Institution: T. W. VAUGHAN.

BUSINESS SESSIONS

Sessions of the executive committee were held on Tuesday, Wednesday and Thursday. In addition to routine matters immediately relevant to the arrangements and progress of the meetings, several items of more general interest were transacted.

Richard Chase Tolman, professor of physical chemistry and mathematical physics at the California Institute of Technology, was elected president of the division for the year 1935–36.

The requisite subcommittees for organizing the program of the 1936 meeting were established. This meeting will be held at the University of Washington, Seattle, in June, 1936. Dr. A. F. Carpenter will serve as chairman of the general committee in charge of the local arrangements.

A complete revision of the constitution under which the Pacific Division functions was ordered. The present constitution was adopted in 1916 and with numerous amendments has served effectively to the present time. The growth of the association on the Pacific Coast and in the western states, substantial increases in the number of affiliated societies and the inevitable expansion in the programs of our annual meetings have combined to render necessary a thorough inquiry into the machinery of organization to permit the division to serve most effectively in coordinating the activities of its associated societies.

At the general business session of the division held on June 26, the following were elected to the executive committee in succession to the retiring members, A. O. Leuschner, J. H. C. Smith and O. F. Stafford: Bennett M. Allen, professor of biology at the University of California at Los Angeles; Calvin P. Stone, professor of psychology, Stanford University; Thomas G. Thompson, director of the Oceanographic Laboratories, University of Washington.

The following schedule of future meetings was announced:

1936, Seattle.
1937, Denver (national meeting).
1938, Bay Region (tentative).
1939, Southern California (tentative).

This report of the Los Angeles meeting would be quite incomplete without recording the appreciation of members for the hospitality which was enjoyed. To the formal resolution of gratitude transmitted to the administrative authorities of the university, to the Los Angeles Chamber of Commerce and to the local committees in charge of arrangements it would be fitting to add an informal word of appreciation for the many unofficial courtesies which were extended and for the friendly environment of the meetings.

The General Committee in charge of local arrangements consisted of S. J. Barnett, *chairman,* B. M. Allen, L. E. Dodd, F. C. Leonard, *secretary,* D. G. Maclise, W. J. Miller, E. C. Moore, W. C. Morgan, Paul Perigord, H. M. Showman, E. K. Soper and O. L. Sponsler.

OBITUARY

CURTIS FLETCHER MARBUT

THE foremost authority on the soils of the world died of pneumonia while virtually alone in Harbin, Manchukuo, on August 25. No single individual has contributed more to soil science or been more important to American agriculture than Dr. C. F. Marbut. His untimely death overtook him en route to China, where he was to complete his examination of the soils of Asia at the request of the Chinese Government. He had planned to make a trip into India and then return to Rome, there to compile a soil map of the world for the International Institute of Agriculture.

Dr. Marbut was born on a farm in Lawrence County of the Missouri Ozarks on July 19, 1863. Short-term rural schools and intimate contact with an intensely rural community gave sufficient opportunity for his insatiable mind to develop early those habits of steady, honest inquiry which characterized all his scientific work and his way of life. Never, for any reason, could he be persuaded to deviate one iota from the path of scientific truth, regardless of where it led. After a brief period of teaching in the local rural schools and preparing himself for college he entered the University of Missouri, from which he graduated in 1889. A year later he was made a member of the State Geological Survey, and in 1893 went to Harvard University, receiving the master's degree in 1894. From 1895 to 1910 he taught geology in the Univer-