doubted the possibility of any fungus traversing the dry stem of an apple. It is well proven that stem end rots occur in other fruits, for example, the stem-end rot of citrus caused by *Phomopsis* sp. and the stem-end rot of both citrus and watermelon caused by two species of *Diplodia*.

In the fall of 1921, large, mature Yellow Bellefleur apples were secured from trees in a Berkeley garden. These apples were picked with the fruit spurs attached, carefully washed in wood alcohol, mercuric chloride solution 1-1000 and distilled water consecutively. The leaves were clipped from the spurs to facilitate the work but the spurs were not removed. Moist chambers were sterilized, lined with filter paper, washed out with mercuric chloride solution, rinsed with distilled water, glass covers were prepared in the same manner. The spurs were then removed from each apple in turn and spores of *P. expansum* from sub-cultures made from the original isolation were planted on the freshly exposed surface at the ends of the apple stems, and the apples placed in the moist chambers. Control apples similarly treated but not inoculated were placed in jars prepared in the same manner and all were kept under the same conditions in the laboratory. Of the six apples treated in this manner, four developed the characteristic stem end rot and were soon completely decayed. The check apples kept in good condition for three months.

Yellow Newtown apples were picked in the same manner at Watsonville, California, and brought to Berkeley. On October 17, 1921, three of the ripest of these apples were treated and inoculated in the same manner as the Bellefleurs. On November 18 the decay of all three apples was identical with the decay observed on the fruits naturally infected. Six Yellow Newtown apples were treated in the same manner and inoculated with the same organism several days later than the previous group and they all developed the typical decay. In all cases the checks remained in good condition. At the end of six weeks, all the apples so inoculated were entirely decayed and covered with green spores.

Cultures of the spores appearing on the surface of the inoculated apples were made and appeared identical in every way with the original culture. Stab inoculations were made with these re-isolated cultures on apples also carefully sterilized. At the same time other apples were inoculated with the original culture. The results were identical, the typical Penicillium decay of apples resulting at every puncture. A penicillium isolated during the fall of 1921 from decaying prunes was found to cause typical decay of apples when inoculated into the flesh. This prune penicillium was planted on three Yellow Newtown apple stems and within three weeks it caused typical stem end decay of all three apples. This organism was later found to be identical in all of its reactions with the original penicillium isolated from apples.

Washings made from the attached leaves on some of the apples used in the experiments were plated and typical colonies of *P. expansum* appeared on all the plates so made. About 15 per cent. of the colonies which grew were identified as some species of Penicillium, a considerable number of which caused typical *P. expansum* decay when inoculated into mature apples. This would indicate the prevalence of the organism in the trees at the time of harvest.

These results prove that stem end infection of apples is a possibility. Observations by the writer indicate that this mode of infection is quite common among the apples of this state, especially in Yellow Newtowns. Though retarded in cold storage, the rot makes some progress at a temperature of 45° Fahr. and at room temperature the decay is rapid.

CLYDE C. BARNUM
UNIVERSITY OF CALIFORNIA,

AMERICAN PHYSIOLOGICAL SOCIETY

THIRTY-FOURTH ANNUAL MEETING

THE thirty-fourth annual meeting of the American Physiological Society was held during the Christmas holidays under the patronage of Yale University, New Haven, Connecticut. Two scientific sessions daily were held December 28, 29 and 30. The meetings opened at 9:30, December 28, with a joint session of the societies of the Federation of American Societies for

Experimental Biology, under the chairmanship of J. J. R. Macleod of the physiologists. A vigorous program of reports on the scientific subjects announced below was carried out in the six half-day sessions.

The afternoon of December 29 a joint demonstration was held in the halls of the Osborne Zoological Laboratory. The demonstrations of the American Association of Anatomists occurred at the same time. This brought the two great groups of scientists of the pre-medical sciences together in what proved to be a very pleasing and outstanding demonstration of scientific progress for the year.

Three business sessions were carried forward at which the more important steps and decisions made were as follows:

1. The report of the treasurer, Dr. Joseph Erlanger, of Washington University School of Medicine, showed a net balance of $467.07.

2. The annual assessment was placed at one dollar per member.

3. An appropriation of $125 was made in aid of the English journal, *Physiological Abstracts.*

4. The council announced the appointment of J. Hepburn of the University of Toronto to the fellowship established at the last annual meeting under the grant of Dr. W. T. Porter. Dr. Hepburn is pursuing his research in the subject of 'The Reactions of the Respiration Center to Lack of Oxygen." This investigation is being carried out in the Laboratory of Physiology, University of Toronto, under the direction of Professor J. J. R. Macleod.

5. The society voted approval of the principles stated in the Cannon-Henderson resolution, instructing its officers of the executive committee of the federaiton to support the same.

6. The council announced the appointment of Donald R. Hooker of Baltimore as managing editor of the *American Journal of Physiology* for the year 1922.

7. The council recommended and the society voted the following changes in the rules governing the publication of *Physiological Reviews.* These changes affect the general management of the journal by reserving to the council the appointment of the chairman of the editorial board, and by transferring the appointment of the managing editor to the editorial board.

8. The report of the managing editor of the *American Journal of Physiology* to the council which was transmitted to the society showed a progressive recovery from the war time deficit in the issue of the successive volumes of the journal. At the present time the cost of publication per volume is only slightly greater than the income for the same. The net balance in the journal fund is $9,659.62.

The council announced that in order to overcome the delay in publication a free volume of the journal would be issued immediately, and beginning with the next current volume the size of the journal would be restored to the standard of 600 pages.

9. The first issue of the first volume of *Physiological Reviews* was announced together with the encouraging report that subscriptions had so far exceeded anticipation that reprinting of the first number had already been accomplished.

The following board of editors for *Physiological Reviews* for the year 1922 was reported by the council:

William H. Howell, Baltimore, *chairman;* J. J. R. Macleod, Toronto; D. R. Hooker, Baltimore; Reid Hunt, Boston; Frederic S. Lee, New York; L. B. Mendel, New Haven; H. Gideon Wells, Chicago.

10. The following officers of the society were elected at the business meeting on December 29:

J. J. R. Macleod, University of Toronto, *president;* C. W. Greene, University of Missouri, *secretary;* Joseph Erlanger, Washington University, *treasurer;* J. A. E. Eyster, University of Wisconsin, member of the council for the years 1922-25.

11. The following scientists were elected to membership during the session:

Edward Frederick Adolph, A.B., PhD., instructor in general physiology, University of Pittsburgh.

James Percy Baumberger, B.S., M.S., Sc.D., instructor in physiology, Leland Stanford Junior University.

Henry Cuthbert Bazett, M.A., M.D., F.R.C.S. (Eng.), professor of physiology, University of Pennsylvania.

G. E. Burget, B.S., Ph.D., professor of physiology, University of Oregon.

Mary Elizabeth Collett, A.B., A.M., Ph.D., instructor in physiology, University of Buffalo.

Helen Copeland Coombs, A.B., Ph.D., instructor in physiology, Columbia University.

D. J. Edwards, Ph.D., assistant professor of physiology, Cornell Medical College.

Carl Hartley Greene, A.B., Ph.D., M.D., assistant in medicine, Mayo Foundation.

Carl G. Hartman, A.B., A.M., Ph.D., professor of zoology, University of Texas.

Henry F. Helmholz, A.B., M.D., professor of pediatrics, Mayo Foundation.

Paul Dudley Lamson, A.B., M.D., associate professor of pharmacology, Johns Hopkins University.

Carl H. Lenhart, Ph.B., M.D., associate in surgery, Western Reserve University.

Clarence A. Mills, A.B., Ph.D., instructor in bio-chemistry, University of Cincinnati.

Stuart Mudd, B.S., A.M., M.D., fellow in medical research, Harvard Medical School.

Harry Sidney Newcomer, A.B., A.M., M.D., research assistant, Henry Phipps Institute.

Leonard B. Nice, Ph.D., professor of physiology, University of Oklahoma.

Stanley P. Reimann, M.D., assistant in experimental pathology, University of Pennsylvania.

Mrs. Mary Davis Schwartz Rose, A.B., Ph.D., associate professor of nutrition, Teachers College, Columbia University.

Clarence A. Smith, B.S., M.S., Ph.D., associate in physiological chemistry, Jefferson Medical College.

Joseph Treloar Wearn, B.S., M.D., instructor in pharmacology, University of Pennsylvania.

Russell M. Wilder, B.S., Ph.D., M.D., assistant professor of medicine, Mayo Foundation.

At the close of the last general session the appreciation of the society for the material facilities and social arrangements of the local committee was expressed in the following resolution:

The American Physiological Society wishes to express its sincere thanks to the Yale University and to the local committee for the splendid facilities offered for the scientific meetings, and for the cordial hospitality extended to members attending the meetings.

SCIENTIFIC SESSIONS

The scientific sessions of the annual meeting were of high merit throughout. Perhaps the most profitable feature of the meeting was the vigorous discussion which characterized a large majority of the subjects presented. Too many themes were introduced for the time available, thus crowding the program. It was evident that more restriction would have to be used if representative reports of the activities of American physiologists are to be discussed within the limit of a three days session. The entire list of titles reported at the meeting or announced in the printed program is as follows:

The effect of thyroidectomy on heat production following injury to the suprarenal cortex in rabbits: David Marine and Emil J. Baumann.

Metabolism studies with enemata of dextrose and levulose: Thorne M. Carpenter.

Reasons for believing that respiratory X is not Ch: Yandell Henderson.

Does the partial pressure of oxygen in arterial blood during progressive anoxemia support the secretary theory? C. W. Green and Carl H. Greene.

Determination of the acid base balance of the blood: Donald D. VanSlyke.

The acid base equilibrium in the blood after parathyroidectomy: D. Dwight Wilson and C. L. Krantz.

Carbon dioxide as an inhibitent of cell growth: G. H. A. Clowes and Homer W. Smith.

Injury, recovery and death. Lantern: W. J. V. Osterhout.

Elective localization of bacteria following various methods of inoculation and the production of nephritis by devitalization and infection of teeth in dogs: E. C. Rosenow and J. G. Meisser.

A new factor in drug analgesia: H. G. Barbour and D. S. Lewis.

On the physiological cause of evolution: Albert P. Mathews.

Integumentary changes in the sheep following thyroidectomy and administration of thyroxin: Sutherland Simpson.

The blood-flow and oxygen metabolism of the thyroid gland: F. P. Knowlton, M. S. Dooley and A. N. Curtiss.

Results on an enlarged thyroid gland nine years after obstructing the veins: C. C. Guthrie.

The after effects of prolonged fasting on the basal metabolic rate (man, dog): Margaret M. Kunde.

Studies on the relation between nutrition and ovulation: an invariable and characteristic disturbance of the œstrous cycle of the rat as a result

of fat vitamine. A deficiency which may nevertheless give normal growth: Herbert N. Evans and Katherine Scott Bishop.

The oxygen capacity of bird's blood: Theodore Kruse.

The reflex control of the lower esophagus and cardia: A. J. Carlson, J. F. Pearcy and E. T. Boyd.

A comparison of the respiratory and circulatory effects of anoxemia and carbon dioxide: E. C. Schneider.

Effects of carbon dioxide on protoplasmic viscosity: M. H. Jacobs.

Water intoxication: L. G. Rowntree.

Blood volume changes in dogs following water deprivation: N. M. Keith.

Some factors modifying the ejection and filling curves of the ventricles under different circulatory conditions: C. J. Wiggers and L. N. Katz.

Physiological aspects of experiments on mitral regurgitation: H. Feil and C. J. Wiggers.

The thermocardiogram, and the relation of its waves to the events of muscle contractions: C. D. Snyder.

The specificity of gastrin and secretin: A. B. Luckhardt, S. C. Heine and W. L. Palmer.

The penetration of dyes into living cells: Marian Irwin and W. J. V. Osterhaut.

Electrical conductivity of animal tissues under normal and pathological conditions: George W. Crile, Helen H. Hosmer and Amy F. Rowland.

The relation of the ammonia content of the blood in Eck's-fistula dogs to meat poisoning: S. A. Matthews.

The hepatic factor in choloroform and phosphorus poisoning: C. S. Williamson.

The excretion of water, chlorides and urea by the human kidneys: E. F. Adolph.

The Glomerular circulation in the frog's kidney: A. N. Richards and Carl F. Schmidt.

Observations on the composition of glomerular urine: Joseph T. Wearn.

The inhibition of erection by decerebration: E. G. Martin and M. L. Tainter.

Changes in osmotic pressure in crabs during the molt-cycle: J. M. D. Olmsted and J. P. Baumberger.

The relative stimulating effect of light of different wave-lengths in an equal energy spectrum: Henry Laurens.

An experimental criticism of the pignet formula for physical efficiency: E. G. Martin, H. S. Wells and A. H. Beede.

The relation of the adrenals to fatigue: F. A. Hartman.

The calorigenic action of adrenalin in dogs: W. M. Boothby and I. Sandiford.

Hibernation: John Tait.

The effect of cocaine on growth of lupinus alba: a contribution to comparative pharmacology of animal and plant tissues: David I. Macht and Marguerite Livingston.

The production of CO_2 by the smooth muscle of sea-anemones: G. H. Parker.

The rôle of the sodium ions in the contraction of the isolated duodenal segment of the albino rat by sodium carbonate: F. S. Hammett and J. E. Nowrey, Jr.

The central heat regulating mechanism: H. G. Barbour and E. Tolstoi.

Physical fatigue and susceptibility—an experimental study: Reynold A. Spaeth and Ella Hutzler Oppenheimer.

The effect of some salts on the growth and experimental amœbocyte tissue near the iso-electric point and after addition of acid and alkali: Leo Loeb and K. C. Blanchard.

On the increased weight of spermatazoa in egg-secretion: O. C. Glaser.

The effects of Roentgen rays upon glandular activity. I. The submaxillary gland: A. C. Ivy, B. H. Orndoff and A. Jacoby.

The applicability of the gasometer method for the determination of the heat production in dogs with and without urethane: W. M. Boothby and F. C. Mann.

Relation between number of hours of sleep and muscular efficiency: Lillian M. Moore, Lu Marie Jenkins and J. Lucile Barker.

Variations in muscular efficiency in women: Lillian M. Moore and J. Lucile Barker.

The regulation of respiration: F. H. Scott, C. C. Gault and R. Kennedy.

The effect of pulmonary congestion in lung ventilation: Cecil K. Drinker, Francis W. Peabody and Hermann L. Blumgart.

Voluntary stimulation of the thoracic autonomic nervous system: N. B. Taylor.

Some relations of vagus and spinal afferent nerves in respiratory control: F. H. Pike and Helen C. Coombs.

Observations on cerebellar stimulations: F. R. Miller.

The possibility of the application to physiology of an inertialess method of observing currents of short duration: H. S. Gasser and J. Erlanger.

The electrical resistance and reactance of suspended unicellular organisms: S. C. Brooks.

Pseudo-paradoxical pupil-dilatation following afferent path lesions: Joseph Byrne.

The catalase content of normal and atrophied muscles: A. E. Guenther and S. Morgulis.

The mode of action of physical work, cold weather and cold baths in increasing the oxidative processes: W. E. Burge.

An experimental study on the significance of fertilization in spathidium spathula: L. L. Woodruff and Hope Spencer.

The relative alcohol content of blood and urine: W. R. Miles.

What are viscera? C. Judson Herrick.

A further study of the effect of total removal of the liver: F. C. Mann and T. B. Magath.

The beneficial influence of certain pancreatic extracts on pancreatic diabetes: J. J. R. Macleod, F. C. Banting and C. H. Best.

A comparison of normal cats and cats deprived of the greater part of the adrenals, with special reference to their reactions to morphine (hyperthermia, hyperglcemia) and to muscular exercise: G. N. Stewart and J. M. Rogoff.

The cardio-accelerator agent produced by hepatic stimulation: W. B. Cannon and F. R. Griffith.

Latent period in reciprocal innervation: J. M. D. Olmsted and W. P. Warner.

Physiological entities in inheritance and evolution: Ernest L. Scott.

DEMONSTRATIONS

A radial transmission sphygmograph with rigid support: C. J. Wiggers and W. R. Baker.

A model demonstrating the dynamics of mitral regurgitation: C. J. Wiggers and H. Feil.

The distribution of the vagus nerves to the sino-auricular junction of the mammalian heart, photographs and tracings: G. Bachman.

The glomerular circulation in the frog's kidney: A. N. Richards and Carl F. Schmidt.

NH_3 production in the nerve during passage of the nerve impulse: Shiro Tashiro.

A simple method of demonstrating glomerular and tubule secreting functions: E. G. Martin and G. D. Shafer.

A new type of recording spirometer: R. Burton-Opitz.

Liver, spleen and bone-marrow of rats treated with germanius dioxide: F. S. Hammett and J. E. Nowrey, Jr.

A two-wedge colorimeter for the comparison of solutions containing two colors, as in the colorimetric determination of the hydrion concentration: Victor C. Myers.

Some new apparatus: D. E. Jackson and J. V. Lawrence.

The effects of parathyroidectomy on the incisors of the albino rat: F. S. Hammett.

PAPERS READ BY TITLE

Vascular reaction to epinephrin in perfusates of various Ch. II. The portal systems of the terrapin: C. D. Snyder and Louis E. Martin.

Source of the water of hemodilution evoked by hot environments: H. G. Barbour, W. J. Craig and E. C. Wakeman.

A study of blood platelets: Theo. Kruse.

A study of alimentary glycemia curves in rabbits: Ernest L. Scott and T. H. Ford.

The contour of the pressure variations in the portal vein: D. D. Forward and H. Feil.

A study of fibrinogen following removal of the the liver: C. S. Williamson, F. J. Heck and F. C. Mann.

A comparison of the different methods of ablation of the liver: F. C. Mann and T. B. Magath.

The production of chronic liver insufficiency: F. C. Mann and T. B. Magath.

The effect of total removal of the liver in some lower vertebrates: T. B. Magath and F. C. Mann.

Smooth muscle responses when subjected to alcohols: F. M. Baldwin and B. M. Harrison.

Pulse rate and blood pressure responses of men to passive postural changes. II. Under low oxygen: Max M. Ellis.

The effect of prostatectomy on integration of muscular movements in the white rat: D. I. Macht and J. L. Ulrich.

The relation of parathyroid tetany to the intestinal flora: Lester R. Dragstedt.

The influence of a beri-beri diet upon the metabolic rate of the white rat: Addison Gulick.

The rôle of the vagi on gastric tonus and motility in the necturus: T. L. Patterson.

The hormone of the posterior lobe of the pituitary gland; its probable nature and its great physiological activity as compared with that of B-iminazolylethylamine: John J. Abel, Charles A. Rouiller and J. S. Vander Lingen.

NH_3 production during muscular contraction: Shiro Tashiro and Olive Pearl Lee.

Observations on the relation of endocrine disorder to early embryonic death in birds: Oscar Riddle and E. R. Rose.

The rôle of the change in hydrogen-ion concentration in the motor activities of the small intestine: Frederick S. Hammett.

Photo reaction currents of the optic nerve: W. T. Bovie.

CHAS. W. GREENE,
Secretary