now has 4,000 employees, was formed to manufacture the Welsbach patents. The invention by Karl von Welsbach of the osmium filament lamp followed in 1897, and six years later he invented the ferro-cerium compound used in pocket lighters. Many scientific bodies in his own country and abroad conferred their honors upon him, and he himself endowed a number of social and scientific institutions."

SCIENTIFIC EVENTS

THE BOTANIC GARDEN OF THE UNIVERSITY OF CAMBRIDGE

THE syndicate appointed last January to consider the organization and finance of the Botanic Garden and the relations between the garden and the department of botany and other scientific departments have made a report to the university. The appointment of the present syndicate was a consequence of the urgent need of the Botanic Garden for increased financial support. In response to the report on the situation made by the regular Botanic Garden syndicate, doubts were expressed in some quarters, not only as to the need for some of the existing expenditure associated with the garden, but also as to whether the garden itself was worth what it cost to the university. Such a point of view, if seriously held, demanded a very full treatment. The syndicate have held five meetings, and have interviewed both the director and the superintendent of the garden. In the result, the syndicate make the following recommendations:

(1) That the Botanic Garden should become an integral part of the department of botany.

(2) That the responsible head of the garden should be the professor of botany and that the actual director of the garden should be either the professor himself or a member of his staff, nominated by and responsible to him.

(3) That the duties of the director should be general responsibility for the management of the garden and particular care for its development as an aid to the study of botany, this work being regarded as a part-time occupation only.

(4) That the stipend attaching to the office of director should be reduced from its present value of £500 per annum in addition to a house and allowances to a value not less than £200 nor more than £300 per annum, inclusive of a house and allowances.

(5) That the stipend attaching to the office of the director should be variable according to the nature of the other offices held simultaneously by the director.

(6) That a new university lectureship should be created for the teaching of systematic botany and that the duties of the new lecturer should include as a part all teaching work hitherto performed by the director of the garden.

(7) That the office, duties and emoluments of the present superintendent of the garden should continue unchanged.

(8) That a permanent sinking-fund should be established into which an annual amount should be paid to meet normal depreciation in the glasshouses and heating services of the garden.

(9) That in addition to the annual amount referred to in the last preceding recommendation, steps should be taken to provide a capital sum of £2,000 within six years, and a further £2,000 within twelve years, to meet the cost of urgent reconstructional work.

(10) That consideration should be given by the university to the fact that a part of the land adjoining the garden could be sold under suitable restrictive conditions without detriment to the present or probable future needs of the garden.

(11) That, until appeals for benefactions for the garden can be launched and their results ascertained, the costs of the garden, beyond those which can be met by the present grant, should be met by an additional non-recurrent grant from the university chest.

(12) That consideration should be given by the university to the suggestion that the Town of Cambridge be invited to contribute to the cost of the garden, so long as it is made accessible to the general public.

(13) That the executive functions of the permanent Botanic Garden Syndicate should cease, that their duty should be periodically to inspect the garden from the point of view of amenities, and to report to the university, and that their constitution should provide for the representation of the interests of the Town of Cambridge.

DEMONSTRATIONS OF BIOLOGICAL WORK AT WOODS HOLE

FOREIGN members of the Thirteenth International Physiological Congress visited Woods Hole on Saturday after the adjournment of the Boston meeting. They were entertained at luncheon and at a clam bake in the evening. In the laboratories of the Marine Biological Laboratory and the Bureau of Fisheries the following demonstrations were arranged:

MARINE BIOLOGICAL LABORATORY

RUTH B. HOWLAND, Micro-injection of the Vacuolated Problem of the Digestion of Fats.

Cytoplasm of Actinosphaerium with Reference to the

JEAN T. HENDERSON, Micro-injection of Indicator Dyes into Fibers from the Sartorius Muscle of the Frog.

CHARLES W. METZ, Microscopic Preparations and Cultures of *Sciara* (Fungus Gnats). Slides Showing Chromosomes and Monocentric Spermatocyte Division with Selective Segregation of Chromosomes.

DOUGLAS A. MARSLAND, Micro-injection of Lipoid Solvents into *Amoeba dubia*.

FRANK FREMONT-SMITH, Charts Illustrating the Com-

position of Cerebrospinal Fluid and Serums in Elasmobranchs and in Man.

CLARENCE A. MILLS, Alternation in Visual Function of the Eye with Binocular Vision.

B. SEN, A New Type of Micro-electrode.

HENRY H. DONALDSON and MRS. W. F. GREENE, Drawings for an Anatomy of the Albino Rat.

E. NEWTON HARVEY, Luminous Animals of Woods Hole; Cypridina Luminescence.

ETHEL BROWNE HARVEY, Micro-injection of Arbacia Eggs; Microscopical Observation of Arbacia Eggs in Complete Absence of Oxygen.

ELIOT R. CLARK and ELEANOR L. CLARK, Studies on Monocytes and Macrophages in the Tail of Living Frog Larvae; Studies on Reactions of Blood-vessel Endothelium in the Tail of Living Frog Larvae.

E. R. CLARK, J. C. SANDISON and R. REX, Study of Living Cells in a Transparent Chamber Introduced into the Rabbit's Ear.

EDUARD UHLENHUTH, Methods of Studying the Physiology of the Salamander Thyroid Gland; Exhibition of American Endocrine Literature.

H. C. BRADLEY, Studies in Comparative Digestive Mechanisms; Viscosimetric Determinations of Pepsin, Trypsin, Amylase and Rennin in Marine Organisms.

P. BRANDT REHBERG, Apparatus for Determination of Carbon Dioxide in Air and Carbon Dioxide Tension in Sea Water.

LEO LOEB, Urease of Amoebocytes of Limulus; Demonstration of Amoebocyte Tissue of Limulus.

WARE CATTELL, Some Effects of the Direct Electric Current on Marine Animals and Their Eggs.

H. H. PLOUGH, Complete Developmental History of a Compound Ascidian, *Botryllus;* Living and Stained Preparations.

RUTH S. LYNCH, HELEN B. SMITH and ELSIE CLINE, Work in Progress on Genetics of Rotifera; Work in Progress on the Rodent Placenta with Special Reference to Vascularization.

M. H. JACOBS, Apparatus for Studying the Rate of Hemolysis.

HANS WINTERSTEIN, Micro-respirometer for Investigating the Metabolism of Local and Conducted Excitation.

W. J. V. OSTERHOUT, Bioelectrical Effects in Muscle and in Plant Cells.

LOUISE and MARCELLE LAPICQUE, Measurement of Chronaxie of the Mantle of *Loligo*; Modification of the Chronaxie of the Nerve by Tension on the Muscle (Frog).

D. J. EDWARDS and MCKEEN CATTELL, The Effects of Hydrostatic Pressure on the Contraction of Cardiac Muscle.

W. E. GARREY, The Heart-beat of *Limulus polyphemus;* Effects of Light on Muscle Tone in Insects.

C. G. ROGERS, Apparatus and Method for Determining the Rate of Beat of Cilia.

C. E. MCCLUNG, Preparations of Orthopteran Germ Cells.

W. H. F. ADDISON, Brains of Marine Vertebrates.

E. ELEANOR CAROTHERS, First Spermatophyte Chromosomes of a Short-horned Grasshopper, *Trimerotropis vinculata;* Preparations Illustrating the Use of Feulgen's Stain.

E. V. COWDRY and S. F. KITCHEN, Intranuclear Inclusions in Hepatic Cells Caused by the Virus of Yellow Fever.

A. FRANKLIN SHULL, Intermediates Between Gamic and Parthenogenetic Aphids.

SELIG HECHT and SIMON SHLAER, Visual Acuity at Various Intensities and Colors.

HARRY GRUNDFEST, The Rheotropic Reaction in Fishes Used for the Study of Various Photosensory Phenomena.

H. W. STUNKARD, The Complete Life Cycle of the Trematode, *Cryptocotyle lingua.*

SERGIUS MORGULIS, Methods for Bone Analysis.

JACK SCHULTZ, Eye Pigments and Eye Color Mutants in *Drosophila.*

H. MCE. KNOWER, Injected Blood-vessels and Lymphatics of Amphibian Embryos.

B. H. GRAVE, Reactions to Light of the Larvae of *Bugula flabellata;* The Swimming Ability of Spermatozoa; Method of Rearing Larvae to Metamorphosis upon Diatoms; Longevity of Unfertilized Gametes of *Hydroidea.*

MARGARET SUMWALT, Measurement of Potential Differences Across the Chorion of Single *Fundulus* Eggs.

ABBY H. TURNER, Studies by Tilting-table and Other Methods of the Effect of Gravity on the Human Circulation.

WALTER S. ROOT and CHARLOTTE HAYWOOD, The Effect of Carbon Dioxide upon the Oxygen Consumption and the Rate of Cleavage of Fertilized *Arbacia* Eggs.

L. MICHAELIS, Apparatus for Purification of Nitrogen from Traces of Oxygen and Measurement of a Reduction Potential.

E. S. G. BARRON, Respiration of Unfertilized Sea-urchin Eggs and its Increase by Methylene Blue as Measured with Warburg's Micro-respiration Apparatus.

PRISCILLA FREW, Living Specimens of *Lebistes reticulatus.*

JOSE F. NONIDEZ, Microscopic Slides Showing Vascular Innervation of the Thyroid Gland (Method of Golgi).

ANNA K. KELTCH, Specific Sperm Agglutinin (Lillie's Fertilizin).

T. H. MORGAN, Cultures and Mutant Types of *Drosophila.*

LORANDE LOSS WOODRUFF, Pedigree Cultures of Various Species of *Paramecium* Including *Paramecium aurelia* at 13,500 Generations (22 years).

C. B. BRIDGES, Chromosome Groups of *Drosophila.*

SAMUEL GELFAN, Microdissection Studies.

RALPH S. LILLIE, Activation, Transmission, Interference and Recovery in Passive Iron Wires.

ROBERT CHAMBERS, Microdissection Studies (Acid-Basic and Oxidation-Reduction Potentials).

C. C. SPEIDEL, The Production and Proliferation of Young Thrombocytes and Erythrocytes in the General Circulation of Splenectomized Salamanders. (Blood-smear Preparations and Drawings.)

JAMES E. KINDRED, Slides Showing Changes in the Kidney of the White Rat Following Ligation of the Major Blood Vessels.

L. V. Heilbrunn, The Measurement of Protoplasmic Viscosity; The Surface Precipitation Reaction.

Gary N. Calkins, Non-individuality of Chromosomes in *Uroleptus Halseyi.*

R. Bowling, Conjugation of Distomatous Forms of *Glaucoma scintillans.*

E. G. Conklin, Effects of Low Temperatures on Segmenting Eggs of *Crepidula;* Effects of Centrifugal Force on Development of Ascidian Eggs.

A. H. Sturtevant, Corresponding Mutant Types in *Drosophila melanogaster* and *D. simulans.*

W. Dobzhansky, Chromosomes of *Drosophila melanogaster* Involved in a Translocation.

Manton Copeland, Behavior of *Nereis:* Method of Keeping Worms; Methods of Inducing Conditioned Responses; Behavior of Worm without Brain.

Marie A. Hinrichs and Ida Genther, Ultra-violet radiation and Modification of Development in *Fundulus* and *Arbacia* and Rate of Heart Beat in *Fundulus.*

Margaret R. Murray, Cultivation of Planarian Tissues in vitro.

Wm. L. Dolley, Jr., Various Stages in the Life History of the Drone Fly, *Eristalis tenax;* Apparatus Used in the Study of the Effect of Intermittent Light upon the Eye of the *Eristalis tenax* and in the Study of Adaptation in the Eye of *Eristalis.*

Paul Reznikoff, Micrurgical Technique.

Kenneth Blanchard, Chemical Composition of *Arbacia* Eggs.

J. Mavor, Certain Effects of Alternating Currents of Extremely High Frequency (1.5 Meters Wavelength).

Henry J. Fry, Cytological Preparations of the Mitotic Mechanism in *Echinarachnius* Eggs.

Staff and Students of the Course in Invertebrate Zoology, Living Invertebrates of the Woods Hole Region.

Ivon R. Taylor, Measurement of Oxygen Consumption of Individual Pupae.

N. A. Cobb and J. R. Christie, Living Mermithid Parasites as a Controlling Factor in the Birth-rate and Sex of Certain Grasshoppers; (Alive) Marine Free-living Nemas; Microscope Installation on Masonry, Specially Adapted Among Other Things for Camera Lucida Drawings; Birefringents of Living Cells.

P. W. Whiting and Students; Anna R. Whiting, Genetic Work on the Parasitic Wasp, *Habrobracon juglandis;* Mutant Types and Methods of Rearing.

Lorna W. Thigpen, Microscopic Demonstrations of Skins of Hairless Mammals.

E. Alfred Wolf and Paul Henshaw, Effects of Alpha Rays on the Development of *Arbacia* Eggs.

Staff of the Botany Course, Selections of Living Marine Algae from the Woods Hole Region.

W. M. Shanklin, Specimens of Brains from Various Fishes.

E. B. Krumbhaar, Stained Blood Smears of 200 Varieties of Fishes.

Arthur W. Pollister, Slides Showing Cytoplasmic Phenomena During Mitosis in Pancreas Cells of the Dogfish.

Bureau of Fisheries Laboratory

O. E. Sette, R. A. Nesbit, E. W. Bailey, Biology of mackerel.

Paul S. Galtsoff, Physiology of *Lamellibranchiata.*

C. E. Cummings, Models of Local Fishes Showing Adaptations.

N. A. Cobb, Microscopic Installation; Birefringence in living cells.

Kendall W. Foster, The Use of the Silverman illuminator in the Direct Illumination of the Skin of the Fish, *Fundulus heteroclitus,* Showing the Chromatophores and especially the Iridocytes and Reflecting Layer.

Paul S. Conger, Diatoms.

John C. Hemmeter, Microscopic Structure of Isolated Langerhans Organ of *Lophius* by Microprojectoscope.

R. A. Nesbit, Biology of Middle Atlantic fishes.

F. G. Hall, I. E. Gray, R. W. Root, L. C. Chesley, Respiration of Marine Fishes.

INTERNATIONAL LIGHTHOUSE CONFERENCE

The first International Lighthouse Conference that has ever been held met in London in July on the invitation of Trinity House, the English lighthouse authority. Trinity House is an organization with a long record of high achievement in the lighthouse work of the world. It holds a charter granted in 1514, and it has carried out some of the most important lighthouse engineering works, such as the building of the lighthouses on Eddystone Rock and Bishop Rock. It has included among its engineers Smeaton and Douglas, and on the governing board, known as the Elder Brethren of Trinity House, have been many of the noted men of England.

The conference included representatives of the lighthouse authorities of twenty-four countries, and also of a number of local lighthouse organizations and interested industries. The conference was entirely informal, and its purpose was the exchange of information and the discussion of problems affecting lighthouse systems; it did not undertake to pass final judgment on any matter. The conference was opened under the presidency of the master of Trinity House, the Duke of Connaught, and the chairman of its meetings was Admiral Mansell, the deputy master. Sessions were held from July 8 to July 12, and during the following week inspection trips were made to various works. The principal topics of discussion were lighthouse illuminants, unattended lighting systems, aerial lights, floating aids to navigation, including lightships and buoys, lighthouse structures, fog signals, radio beacons and other related matters. Much interesting information was presented, both in formal papers submitted in advance, and in discussion at the conference. The proceedings will be published by