the following: (a) To receive from the advisory committee on education by radio its files and collected documents, to keep this material up to date and available for reference by the many students of the subject; (b) to organize some of the material into bulletins to be issued as demand warrants; (c) to outline techniques for research and carry on investigations into the best methods of broadcasting and compare the results of lessons sent to schools by radio with the results obtained by other means; (d) to keep the educational interests of the country fully posted on and alive to the importance of this new instrument as an educational tool; (e) to attempt to prevent conflicts and duplication of effort between various broadcasting interests; (f) to furnish advice on the educational soundness of programs suggested and to supply typical programs upon the request of any station whether educational or commercial.

2. That the funds necessary for financing such a section in the Office of Education be provided in the regular budget for the Department of the Interior.

3. That there be set up in connection with this unit an advisory committee representing educational institutions of commercial broadcasters and the general public. This committee should consist of 9 to 15 persons whose residence is such that they can meet from time to time for actual consideration of problems arising in the Office of Education. This committee may well administer any funds remaining in our budget to promote research into the techniques of radio education.

4. That an effort be made to secure from interested persons or foundations an amount of money sufficient to bring to the microphone, for a period of two to three years, a high grade program in certain formal school subjects and to check carefully the results obtained. The committee believes that as much as $200,000 per year for a period of three years may be wisely expended in this manner, under direction of a non-partisan committee of educators and laymen.

5. That the secretary bring to the attention of the Federal Radio Commission the importance of the educational interests in broadcasting, and that he keep the President of the United States informed of the desirability of having on this commission spokesmen for programs which will tend to improve the general well-being of the American people.

APPROPRIATIONS FOR GRANTS-IN-AID BY THE NATIONAL RESEARCH COUNCIL

AT its meeting in October, the National Research Council's Committee on Grants-in-Aid made the following eleven awards:

Arthur A. Bless, associate professor of physics, University of Florida, for a study of diffraction of X-rays by polar molecules subjected to high steady and alternating fields; Perley A. Ross, professor of physics, Stanford University, for study of the width, intensity and structure of the modified line in the Compton effect.

E. M. Kindle, chief, division of paleontology, Geological Survey of Canada, Department of Mines, Ottawa, for a study of criteria for the correlation of Devonian formations; Chester K. Wentworth, associate professor of geology, Washington University, for comparison of glaciated and river-worn cobble stones.

L. R. Cerecedo, assistant professor of biochemistry, University of California at Berkeley, for investigations on the purine fraction of the nucleic acid molecule; Harry J. Deuel, Jr., professor of biochemistry, University of Southern California Medical School, for a study of the relative antiketogenic value of various carbohydrates; Ernest W. Goodpasture, professor of pathology, Vanderbilt University Medical School, for investigations on the etiology of *Granuloma inguinale;* Reginald D. Manwell, assistant professor of zoology, Syracuse University, for a study of avian malaria.

F. E. Chidester, professor of zoology, West Virginia University, for studies on the endocrines of nutrition; James B. Lackey, professor of biology, Southwestern College, for a study of the effects of variation in environmental factors and in cytological technique upon selected types of cells.

Roland C. Travis, associate professor of psychology, Western Reserve University, for investigation of the speed and characteristics of reflex and voluntary eye movements as indicators of the adequacy of adaptive behavior in children and adults.

SCIENTIFIC NOTES AND NEWS

DR. ROBERT GORDON SPROUL was installed as president of the University of California on October 22, filling the vacancy caused by the retirement of Dr. W. W. Campbell. In connection with the ceremonies the doctorate of laws was conferred on Dr. Thomas Hunt Morgan, director of the Kerckhoff Laboratories of the Biological Sciences of the California Institute of Technology, president of the National Academy of Sciences and of the American Association for the Advancement of Science; on Dr. Arnold Bennett Hall, president of the University of Oregon; on Dr. Albert Russell Mann, dean of the College of Agriculture, Cornell University, and on Charles Derleth, Jr., dean of the College of Civil Engineering of the University of California.

THE John Fritz gold medal, regarded as the highest honor of the engineering profession in America, has been awarded for 1931 to Rear Admiral David Watson Taylor, retired, "for outstanding achievement in marine architecture, for revolutionary results of persistent research in hull design, for improvement in many types of warships and for distinguished service

as chief constructor of the United States Navy during the world war." The award was made unanimously by the John Fritz Medal Board of Award, composed of four representatives each of the four American societies of civil, mining and metallurgical, mechanical and electrical engineers. Recent recipients of the medal include Ralph Modjeski, Herbert Hoover, John J. Carty, Elmer A. Sperry, Edward Dean Adams, John F. Stevens and Ambrose Swasey.

DR. WALTER B. CANNON, George Higginson professor of physiology at the Harvard Medical School, has been elected a foreign honorary fellow of the Royal Society of Edinburgh.

DR. MAX HARTMANN, professor of protozoology at Berlin, and Dr. Eduard Reichenow, professor of protozoology at Hamburg, have been awarded the Fritz Schaudinn Medals.

THE address at the opening session of the School of Pharmacy of the Pharmaceutical Society of Great Britain was delivered on October 1 by Dr. Arthur W. Hill, director of the Royal Botanic Gardens, Kew. The Pereira Medal of the society was presented to him on this occasion.

SIR JOHN RUSSELL, director of Rothamsted Experimental Station, England, has been elected president of the International Congress of Soils. The next congress will meet at Cambridge, England, in 1935, at which time it is proposed to follow the plenary sessions with a soils tour of the Mediterranean countries, including Spain, Algiers, Egypt, Palestine, Greece, Italy and France.

AT the recent meeting of the American Ornithological Union held at Salem, Massachusetts, the following officers were elected: Dr. Joseph Grinnell, University of California, president; A. C. Bebt, Taunton, Massachusetts, and J. H. Fleming, Toronto, vice-presidents; Dr. T. S. Palmer, Washington, D. C., secretary; W. L. McAtee, Washington, D. C., treasurer; James P. Chapin, New York City; Ruthven Deane, Chicago; Harry C. Oberholser, Washington, D. C.; James L. Peters, Cambridge, Massachusetts; Charles W. Richmond, Washington, D. C.; Thomas S. Roberts, Minneapolis, and Percy A. Taverner, Ottawa, members of the council.

AT the annual meeting of the Board of Directors of the Boyce Thompson Institute for Plant Research held at Yonkers, New York, on October 15, Mrs. William Boyce Thompson was unanimously elected chairman of the board to fill the vacancy left by Colonel Thompson's death last July. During his life Colonel Thompson had endowed the institute to the extent of ten million dollars, and had large plans for the further extension of its usefulness, which Mrs. Thompson takes a keen interest in furthering. The other members of the board are: Charles F. Ayer, Raymond F. Bacon, William Crocker, Caleb C. Dula, Frederick H. Ecker, Robert A. Harper, Lewis R. Jones, Thomas Lamont, Fred J. Pope and Margaret Thompson Schulze.

MR. DONALD BISHOP PRENTICE, dean of the department of engineering at Lafayette College, has been elected president of the Rose Polytechnic Institute at Terre Haute, Indiana.

DR. L. R. JONES, of the University of Wisconsin, who has been in charge of plant pathology since the organization of this work, retired in June as chairman of the department, but will continue his other duties on a part-time basis. Dr. G. W. Keitt has been appointed chairman.

DR. F. L. PICKETT, head of the college department of botany of Washington State College, has been appointed dean of the graduate school.

DR. JOSEPH O. CRIDER, dean and professor of physiology and histology at the University of Mississippi School of Medicine, has resigned to become associate professor of physiology and assistant dean in the Jefferson Medical College, Philadelphia. Dr. Crider has been succeeded at the University of Mississippi by Dr. Philip L. Mull, professor of anatomy at the school.

DR. JAMES A. DOULL recently resigned his position as coordinator of the study of common cold which is being conducted at the Johns Hopkins University School of Hygiene and Public Health, to become professor of hygiene and public health at Western Reserve University Medical School. Dr. Doull had been granted a leave of absence as professor of epidemiology at Johns Hopkins to carry on this work.

DR. LEROY C. ABBOTT, chief surgeon at Shriners Hospital for Crippled Children, St. Louis, has become head of the department of orthopedics at Stanford University.

DR. ADDISON GULICK, who has been teaching at the University of Missouri since 1912, since 1921 as professor of physiological chemistry, has been appointed head of the department of biological chemistry.

WE learn from the *Experiment Station Record* that Dr. J. J. Willaman, chief in research in chemistry at the Agricultural Experiment Station at Geneva, New York, has tendered his resignation to enter commercial work. Dr. W. H. Rankin, associate in research (plant pathology) has been granted six months' sabbatic leave to carry on special studies at Cornell University. Dr. P. J. Chapman, entomologist at the Virginia Truck Station, has been appointed chief in

research in entomology. He will direct the new entomological investigations on the apple maggot in the Hudson Valley. Other appointments include George W. Pearce, as assistant in research in entomology, for chemical investigations with insecticides, and H. L. Durham as dairy technologist.

DR. X. HENRY GOODENOUGH, chief engineer of the Division of Sanitary Engineering, Massachusetts, has retired, and Dr. Arthur D. Weston has been appointed his successor.

DR. S. HERBERT ANDERSON has resigned from the department of physics, University of Washington, to accept the position of physicist in charge of the Signal Corps Laboratories, Fort Monmouth, New Jersey. For the past two years Dr. Anderson has been on leave from the University of Washington at the request of the Daniel Guggenheim Fund for the Promotion of Aeronautics, to investigate the problems of fog flying, at the Wright Field.

DR. L. I. SHAW has been advanced to the rank of assistant superintendent of manufacturing development in charge of chemical photographic laboratories, cable development application, raw materials and ceramic development of the Western Electric Company, Chicago.

MR. NEIL M. JUDD has been put in charge of the new division of archeology of the U. S. National Museum, as curator. It is made up of the former divisions of American archeology and old world archeology.

DR. HENRY ARNSTEIN, who is acting in advisory capacity to the Governments of Argentina, Brazil, Cuba and Colombia, has sailed for South America to deliver a series of lectures on the utilization of natural resources, the elimination of waste and recovery of by-products. Dr. Arnstein expects to return to the United States in January.

LEAVE of absence has been given by the University of California to Associate Professor R. W. Hodgson to enable him to accept an invitation by the Government of France to visit Tunisia and Morocco and report on the horticultural possibilities of these districts.

DR. M. L. NICHOLS, assistant professor of analytical chemistry at Cornell University, has returned to Ithaca after a year's study at the Universities of Leipzig, Graz and Rostock, as a fellow of the Guggenheim Foundation.

DR. GEORGE R. JOHNSTONE is on sabbatical leave for the first semester of the present academic year from the department of botany of the University of Southern California at Los Angeles. Professor A. C. Life, of the same department, will be on sabbatical leave the second half of the year. His work will take him abroad and he will return to the university in the autumn of 1931. Dr. H. de Forest is again chairman of the department, following the custom of a revolving chairmanship.

DR. H. H. MANN, assistant director of the Woburn sub-station of the Rothamsted Experimental Station, is shortly leaving England for south Russia, to advise as to the possibility of the extension of the tea-growing industry. Before joining the Rothamsted staff, Dr. Mann was engaged in tea research in India.

ON October 23 at Boston the Forsythe Lecture was delivered by Dr. Henry C. Sherman, Mitchill professor of chemistry at Columbia University, on "The Significance of the Protective Foods."

THE Cutter Lecture on Preventive Medicine of the Harvard Medical School was delivered on October 28 by Professor M. W. Weinburg, of the Pasteur Institute, Paris, on "Anaerobic Infections and their Serotherapy."

DR. ARCHIBALD V. HILL, Foulerton research professor of the Royal Society, lectured on "The State of Water in Tissues" at Northwestern University Medical School on October 20.

AT the meeting of German scientific men and physicians held at Königsberg from October 7 to 10 the principal addresses were made by Dr. David Hilbert, professor of mathematics at Göttingen, and Dr. F. Paneth, professor of chemistry at Königsberg. Dr. Hilbert's address was entitled "Naturkenntnis und Logik." Dr. Paneth's address was a memorial to Lothar Meyer.

THE International Institute of Agriculture, which owes its existence to the Californian economist, David Lubin, celebrated the twenty-fifth anniversary of its foundation on October 14 in Rome in the presence of the King of Italy, its founder and patron; representatives of the seventy-four states adhering to the institute, and all the highest Italian officials. Premier Mussolini made the principal speech, which was answered by M. Zameta, president of the Council of the League of Nations; M. Vassileff, the Bulgarian Minister of Agriculture; M. Poczinsky, Minister from Poland; Marcel Heraud, under-secretary of the Presidency of France; Sir Daniel Hall, first delegate of Great Britain, and Senator Demuchelis, president of the Institute of Agriculture.

ACCORDING to an announcement sent by the secretary, Professor Charles P. Berkey, Columbia University, the forty-third annual meeting of the Geological

Society of America will be held Monday, Tuesday and Wednesday, December 29 to 31, 1930, under the auspices of the University of Toronto. The scientific sessions will be held in the Mining and Physics Buildings. The address of the retiring president, Dr. R. A. F. Penrose, Jr., will be delivered Monday evening at the Royal York Hotel, on "Geology as an Agent in Human Welfare," followed by a complimentary smoker. The annual dinner of the society will be held on Tuesday evening. Accommodations are available in the residences of the University of Toronto and meals may be obtained at Hart House. All sessions are open to the general public, but the council requests each fellow to send to the secretary as soon as practicable, and not later than December 15, the names and addresses of advanced students or other persons who are seriously interested in geology and are deserving of recognition as visitors. The council will then invite them to attend the meeting. Visiting ladies should register as arrangements are being made for local entertainment. In conjunction with the society the Paleontological Society will hold its twenty-second annual meeting and the Mineralogical Society of America its eleventh annual meeting. The Society of Economic Geologists will also hold meetings under the same auspices. Section E of the American Association for the Advancement of Science will hold meetings in Cleveland, Ohio, Wednesday, Thursday and Friday, December 31 to January 2. A joint session with the Geological Society of America is being arranged for January 1.

THE second annual Conference of Donors of the Johns Hopkins National Fellowship Plan will be held at the university on November 7. After the speech of welcome by President Joseph S. Ames, the conditions of the annual renewal of fellowships will be discussed under the leadership of Mr. C. G. Campbell, president of the Kewaunee Manufacturing Company, and of Mr. H. A. B. Dunning, president of Hynson, Westcott and Dunning. In the afternoon the selection, education and testing of students who possess creative ability will be considered under the leadership of Mr. Martin Matheson, director, John Wiley and Sons, Incorporated; Professor J. C. W. Frazer, chairman of the Johns Hopkins University department of chemistry; F. O. Clements, director of research, General Motors Corporation, and Dr. A. A. Backhaus, vice-president of the U. S. Industrial Alcohol Company. There will be a luncheon for donors, faculty and fellowship students and a dinner to the donors in the evening. An after-dinner address will be made by Dr. Arthur D. Little, on "Leadership," and a sound picture on "Cosmic Rays," by Dr. Robert A. Millikan, of the California Institute of Technology, will be presented.

UNDER the auspices of the Iowa chapter of Sigma Xi, with Professor G. W. Stewart, national president of the society, presiding, a symposium on the navigation and flood control problems of the Mississippi River was recently presented by A. C. Trowbridge, professor of geology at the University of Iowa; F. A. Nagler, professor of hydraulic engineering, and S. M. Woodward, head of the department of hydraulics.

THE United States Civil Service Commission states that the position of senior toxicologist, Bureau of Chemistry and Soils, Department of Agriculture, is vacant, and that the following method of competition will be used to fill the vacancy. Instead of the usual form of civil-service examination, the qualifications of candidates will be passed upon by a special board of examiners, composed of W. W. Skinner, assistant chief, Chemical and Technological Research, Bureau of Chemistry and Soils; M. X. Sullivan, biochemist, Hygienic Laboratory, and A. S. Ernest, examiner of the United States Civil Service Commission. The entrance salary for this position in Washington is $4,600 a year; if appointment is made to the Field Service the entrance salary may be at any rate within the salary range of $4,600 to $5,400 a year, varying with conditions obtaining at the headquarters where the vacancy exists. For the following-named open competitive examinations applications should be received before November 19: senior technologist (cellulose) with salary range from $4,600 to $5,400 a year; technologist (foods) and technologist (textiles) from $3,800 to $4,600 a year. Applications for geologist for reservoir and dam site investigations must be on file not later than November 26, 1930. The entrance salary is $3,800 a year. This examination is to fill vacancies in the Bureau of Reclamation, Department of the Interior, for duty in Washington, D. C., Denver, Colo., and elsewhere in the field. Competitors will be rated on their education, training and experience, and on writings.

THE Alpha Chi Sigma dinner at the fall meeting of the American Chemical Society was attended by one hundred and twenty members of the fraternity. H. E. Wiedemann, consulting chemist, St. Louis, and a national vice-president of the organization, served as toastmaster. Among the speakers were the national president, Charles A. Mann, head of the department of chemical engineering, University of Minnesota; M. C. Jewett, Procter and Gamble Co., and secretary of the Cincinnati professional chapter; Harry A. Curtis, National Research Council and fraternity historian; Gunnar Carlson, president of Alpha Delta, the local chapter at the University of Cincinnati; E. F. Farnau, professor of chemistry, University of Cincinnati; H. B. Stevenson, Procter and Gamble Co., and associate

editor of *The Hexagon* of Alpha Chi Sigma, and Dr. E. K. Rideal, of Oxford University.

A MEETING of the American Section of the Société de Chimie Industrielle was held at Chandler Lecture Hall, Columbia University, on October 24, 1930. Mr. Arthur H. Sleigh, who as a boy had met Michael Faraday and whose father was intimately acquainted with him, gave his personal recollections—incidentally bringing out the fact that Faraday was greatly interested in botany. Mr. Sleigh exhibited Atkin's book on the flora of Great Britain, published in 1823, which his father and Faraday had jointly used in identifying the plants they found. Dr. René J. Dubos, of the Rockefeller Institute for Medical Research, then addressed the meeting on "Enzymes from Microorganisms and their Application to Industrial and Medical Problems."

A LABORATORY for the study of fresh-water animals of the United States is being installed at the University of Missouri at Columbia under supervision of Dr. Max M. Ellis, director of interior fisheries investigations for the United States Bureau of Fisheries and professor of physiology in the University of Missouri. Its completion within the next few weeks will provide a central point for the observation of chemical and physiological phenomena of fresh-water animals, to which various fresh-water problems of the Bureau of Fisheries will be referred. In order to provide adequate space for carrying on necessary experimental work, the University of Missouri has turned over a section of one of the medical buildings to the work. Funds for the installation of the laboratory were subscribed conjointly by the university and the Bureau of Fisheries.

DISCUSSION

GIBBS'S PHENOMENON

IN May 30, 1930, issue of SCIENCE there appeared a communication from Professor Tomlinson Fort, objecting to the use of the term "Gibbs's phenomenon" for series other than Fourier's series. As the only name which he cites in this connection is my own, readers may possibly infer that I am responsible for this extended use of the term. As this is quite contrary to the fact, I feel that I should make some comment on the point that Professor Fort has raised.

The various developments in orthogonal functions, such as Laplace's functions, Legendre's functions and Bessel's functions, which occur in mathematical physics, present so many analogies to the better-known Fourier's series that it is quite natural and logical to use for the former series an identical terminology in the case of similar properties. So far as Gibbs's phenomenon is concerned this was done as early as 1910 by Weyl[1] in two papers dealing with the behavior of developments in Laplace's functions, Legendre's functions and Sturm-Liouville functions. The extended meaning of the term in the case of Bessel's functions was used by at least one writer[2] prior to my own use of it. The terminology to which Professor Fort objects is therefore not a recent innovation, as his communication may suggest, but a well-established usage on the part of investigators in this field.

Aside from this point, however, I can not agree with several of Professor Fort's contentions. In the first place, the phenomenon in the case of Fourier's series was not first noticed by Gibbs, as he states. It is now well known that it had been pointed out some fifty years earlier by Wilbraham.[3] In the second place, while I entirely agree with Professor Fort as to the fundamental importance of Osgood's classical papers on the general theory of non-uniform convergence, I can not admit that they treat the same point as that involved in Gibbs's phenomenon. In Osgood's discussion the peaks of non-uniform convergence only occur in cases where the limit function is continuous. The examples which he gives of non-uniformly convergent series with discontinuous sum exhibit no peaks. One of the most essential characteristics of Gibbs's phenomenon is the appearance of peaks in the neighborhood of a point of discontinuity of the function developed. I think that it would be quite appropriate to use the term "Osgood's phenomenon" in the case where the limit function is continuous, but not in the situation where the term "Gibbs's phenomenon" has been generally used.

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[1] *Rendiconti del Circolo Matematico di Palermo*, 29 (1910): 308; 30 (1910): 377.

[2] *Cf.* R. G. Cooke, *Proc. London Math. Soc.*, 27 (1928): 171.

[3] *Cf.* historical notes by H. S. Carslaw and C. N. Moore, *Bull. Amer. Math. Soc.*, 31 (1925): 420, 417.

THE PRESENT STATUS OF LACTENIN

MENTION was made in an earlier number of this journal of our work on a bacteriostatic substance in milk. To avoid misunderstanding it seems well to summarize the properties and discuss the possible uses in so far as the present status of the problem permits.

It has been known for some time that milk which had not been heated above 60° C. will inhibit the growth of certain bacteria. We have studied the effect of this material on the mastitis streptococcus. It prevents growth for about six hours, after which