nautic congresses. The first section of the congress studied the problem of the organization of airports and the instruments used in aeronautics, including radio.

The experiences of flying in fog and mist and of ice formation on the wings of planes were exchanged. The number of papers read before the technical sections shows that special importance is attached to information of this sort. In the judicial section questions as to insurance responsibility and neutrality in war were taken up.

Several papers on the influence of flying on the human constitution as studied by physicians were read before the medical section. Air sickness was among the disorders discussed.

The official American observers included Major G. E. A. Reitburg, military air attaché at Berlin, Lieutenant Commander G. D. Murray, naval air attaché at London, and A. D. Douglas Cook, assistant trade commissioner at Berlin, all of whom contributed papers to the congress. There were also present John J. Ide, European technical assistant to the National Advisory Committee on Aeronautics; Professor Alexander Klemin, of the Guggenheim Foundation; Dr. W. G. Friedrich, research engineer of Hackensack, N. J., and Clarence M. Young, who addressed the congress on American airway practices.

Sir Sefton Brancker, air vice marshal, headed the official British delegation, which included eight officials of the British Air Ministry.

In the first section of the congress discussion centered on the best way to light air routes and the value of neon light for this purpose. This discussion followed the general lines of the resolutions adopted by the Berlin conference last April. Proposals to be made at the International Congress for Safety in the Air, which will meet in December, were examined, and a small editorial committee will formulate some amendments.

In the medical section standard nomenclature was advocated and discussed, and remedies in regard to sickness among aviators were considered. The air tourist section resolved to formulate a requirement that every town of 10,000 inhabitants shall in some way make its name visible to aviators in flight.

In the judicial section a resolution proposed by a Polish delegate was adopted providing that international conventions on the responsibility of passenger services for the lives of passengers can have no practical effect as long as they are not supplemented by the obligation of air services to insure the lives of passengers up to a maximum of 125,000 francs (about $5,000). This is designed to increase safety measures on the part of air services.

The Italian under-secretary of aviation, Signor Fiannini, proposed a resolution that the unification of laws in aeronautical matters should be furthered as much as possible. The technical section decided to treat meteorological subjects in a special committee of experts, who will meet under the chairmanship of the director of the official Dutch meteorological institutes.

GEOLOGIC SURVEY OF GEORGIA

MR. S. W. MCCALLIE, state geologist of Georgia, has announced the beginning of a survey that will require several years for completion and will give Georgia its first complete geologic map, according to a report in the *U. S. Daily*.

Several sectional maps have been made from time to time in Georgia, but the state has lacked a general and comprehensive chart of its geological resources.

Dr. G. W. Crickmay will be in charge of the survey in northern Georgia and Dr. W. S. Bailey, of the University of Illinois, has been retained to assist Dr. Crickmay.

In the southern part of the state, Dr. C. Wythe Cooke, of the United States Geological Survey, will complete this season a map showing the exact location of all classes of rocks and minerals in that section. This work will be coordinated with that in other quarters of the state in compiling the complete chart.

The last available report of commercial minerals in Georgia showed a total value of $16,683,011 for the year 1928, with brick and tile leading in the value of production, and marble and granite next in order. Other valuable minerals listed are bauxite, cement, clay, fullers' earth and manganese.

SCIENTIFIC NOTES AND NEWS

DR. FRANZ BOAS, professor of anthropology at Columbia University, has been elected an honorary member of the Wurzburg Geographical Society.

THE French Astronomical Society has decided to award a medal of honor to the Lowell Observatory at Flagstaff, Arizona, as an expression of appreciation and admiration for the discovery recently made by the observatory of the trans-Neptunian body, preparation for which was made by the learned research of Mr. Lowell.

DR. FRANCIS PENDLETON GAINES, formerly president of Wake Forest College, will be inaugurated as president of Washington and Lee University on October 25.

AMONG the honorary degrees conferred by the University of Liverpool were the following: doctor of laws, Mr. R. L. Mond, honorary secretary to the Davy-Faraday Research Laboratory of the Royal Institution; doctor of science, Professor G. Barger, professor of chemistry in relation to medicine in the University of Edinburgh.

DR. J. S. PLASKETT, director of the Dominion Astrophysical Observatory, has returned to Victoria after a trip through the United States and to England, during which he received the Rumford Medal and the medal of the Royal Astronomical Society.

DR. HANS SACHS, professor of immunology at Heidelberg, and Dr. Ernest Meinicke, of Hagen, Westphalia, have been awarded the Ludwig-Darmstädter Prize with the Paul Ehrlich medal.

THE Bruce Prize of the Royal Society of Edinburgh for the period 1928–30 has been awarded to Mr. N. A. Mackintosh for his researches into the biology of whales in the waters of the Falkland Islands Dependencies. This prize is awarded by a joint committee consisting of representatives from the Royal Society of Edinburgh, the Royal Physical Society and the Royal Scottish Geographical Society.

DR. JEAN CHABRY, Paris, who lost his right arm as a consequence of his early work in radiology, has received the Cross of the Legion of Honor.

M. J. REY has been elected a member of the Paris Academy of Sciences.

PROFESSOR WILLIAM H. WELCH, of Johns Hopkins University, has been elected an honorary member of the Berlin Medical Society.

MR. G. A. SUTHERLAND, principal of Dalton Hall, University of Manchester, and special lecturer in physics in the university, has been invited to be president of the section of acoustics at the twelfth International Congress of Architects at Budapest next September.

DR. F. H. EWERHARDT, of Washington University, was elected president of the American Congress of Physical Therapy for the year 1931–32. Dr. Gustave Kolischer, Chicago, was elected first vice-president; Dr. Luther A. Tarbell, New Haven, second vice-president, Dr. J. S. Hibben, Pasadena, third vice-president, Dr. F. H. Morse, Boston, fourth vice-president, Dr. F. L. Wahrer, Marshalltown, Iowa, secretary, and Dr. John S. Coulter, Chicago, treasurer.

ON September 13 the Reverend Aloysius J. Hogan became president of Fordham University to succeed Reverend William J. Duane, who on July 30 completed his term of six years as the head of the university.

CANON PIERRE DE STRUYCKER, president of the College of Pope Adrian VI, Brussels, is named to be rector of the American College at Louvain, where he was formerly vice rector. He succeeds Monsignor de Becker, who retired after fifty years as a professor.

PROFESSOR C. FLOYD JACKSON, professor of zoology at the University of New Hampshire, has been named dean of the college of liberal arts at the university by President Edward M. Lewis and will assume his new duties immediately. He succeeds Albert N. French, who resigned as head of the college last spring to devote all his time to his work as professor of sociology.

THE school of engineering of the Pennsylvania State College announces that Professor Fred C. Stewart, of the Georgia School of Technology, will take charge of the mechanical laboratory in place of the late Professor C. C. Cochran.

THE new Brooklyn College, which combines the borough's branches of the City College of New York and Hunter College, will open in the near future, with Dr. William A. Boylan, formerly associate superintendent of schools, as president, and Dr. Adelbert G. Fradenburgh as dean of the college. Evening classes will be divided in two divisions as follows: Meta E. Schurtz, assistant director, will have charge of the women's division and James W. Park, also an assistant director, will be in charge of the men's division.

THE following new appointments have been made at Drexel Institute: Mr. Walter Lord Obald, formerly research associate for the Marine Underwriters at the Department of Agriculture, has been appointed assistant professor of biological science; Mr. William E. Mann, instructor in mathematics, and Mr. H. P. Simons, instructor in chemistry.

DR. SAMUEL GELFAN, formerly research fellow in physiology at the University of Chicago, has become assistant professor of physiology and pharmacology at the University of Alberta in Canada.

A. P. BJERREGAARD, until recently chief chemist for the Empire Refineries Division of Cities Service Company and lately doing consulting work, has been appointed professor of chemistry and dean of the science department in the Bryan Memorial University, Dayton, Tennessee.

ALBERT B. STEVENS has become a member of the faculty of the University of Southern California as instructor in general engineering.

DR. KIMBALL YOUNG and Dr. Ralph Linton, formerly associate professors of sociology and social anthropology, respectively, at the University of Wisconsin, have been promoted to full professorships.

ACCORDING to *Nature* the following appointments have been made: At the University of Aberdeen, Dr. James Ritchie, keeper of the natural history department of the Royal Scottish Museum, Edinburgh, to be Regius professor of natural history in succession to Professor J. Arthur Thomson, and Dr. David Campbell, Pollok lecturer in pharmacology and therapeutics in the University of Glasgow, to be Regius professor of materia medica in succession to Professor C. R. Marshall; Dr. R. T. Dunbar, lecturer in physics, to the chair of physics at the University College of South Wales and Monmouthshire, in succession to Professor H. R. Robinson, who has been appointed professor of physics at East London College (University of London), and Dr. John Walton, lecturer in botany in the University of Manchester, to be Regius professor of botany in the University of Glasgow in succession to Professor J. M. F. Drummond, whose resignation takes effect on September 30.

PROFESSOR HENRI ROGER, dean of the Paris School of Medicine since 1912, having retired from active duty on account of age, the council of the faculty has elected as his successor M. Balthazard, professor of legal medicine and director of the medicolegal institute. He received thirty-four votes as against thirty-three cast for M. Roussy, professor of pathologic anatomy and director of the Cancer Institute. The appointment is for seven years.

PROFESSOR V. C. FINCH, professor of geography at the University of Wisconsin, has been appointed a member of the geography division of the National Research Council's science advisory committee.

DR. COOPER CURTICE, veteran parasitologist of the Bureau of Animal Industry, retired from the service on August 31, at the age of seventy-four years.

DR. MALCOLM H. SOULE, associate professor of bacteriology at the University of Michigan, has spent the summer in Europe as United States delegate to the International Congress of Microbiologists at Paris and guest of the Hygienic Institutes at Prague and Warsaw.

DR. ALEXANDER MEIKLEJOHN, chairman of the experimental college at the University of Wisconsin, has been appointed one of the nine American delegates to the International Congress of Philosophers at Oxford.

PROFESSOR PAUL M. LINCOLN, director of the School of Electrical Engineering of Cornell University, has returned to Ithaca from a trip around the world, during which he attended the World Engineering Conference at Yokohama and the World Power Conference at Berlin.

THE following American chemists were appointed by the National Research Council to attend the tenth meeting of the International Union of Pure and Applied Chemistry which was held at Liége, Belgium, from September 14 to 20. Councilors were appointed as follows: Charles L. Reese, consultant, E. I. du Pont de Nemours and Company, Wilmington, Delaware, *chairman* of the delegation; Edward Bartow, professor of chemistry and chemical engineering, State University of Iowa, Iowa City, Iowa; Marston T. Bogert, professor of organic chemistry, Columbia University, New York City; James B. Conant, professor of chemistry, Harvard University, Cambridge, Massachusetts; Austin M. Patterson, professor of chemistry, Antioch College, Yellow Springs, Ohio; Claude S. Hudson, professor of chemistry, U. S. Hygienic Laboratory, Washington, D. C. The following delegates were appointed: C. A. Browne, assistant chief, U. S. Bureau of Chemistry and Soils, Washington, D. C.; J. V. N. Dorr, president, Dorr Company, 247 Park Avenue, New York City; John B. Ekeley, professor of chemistry, University of Colorado, Boulder, Colorado; Gustavus J. Esselen, research and development chemist, Boston, Massachusetts; William Lloyd Evans, professor of chemistry, Ohio State University, Columbus, Ohio; Joel H. Hildebrand, professor of chemistry, University of California, Berkeley, California; J. R. M. Klotz, American Cyanamid Company, 535 Fifth Avenue, New York City; G. M. Norman, technical director, Hercules Powder Company, Inc., Wilmington, Delaware; Alexander Silverman, professor of chemistry, University of Pittsburgh, Pittsburgh, Pennsylvania. Dr. Esselen was also appointed by the council to attend the tenth Congress of Industrial Chemistry held at Liége from September 7 to 13.

THE nineteenth Italian congress for the advancement of science opened at Bolzano, Italy, on September 7. The inaugural address was delivered by Professor Pietro de Francisci. The congress continued until September 10, when it was transferred to Trento, where Guglielmo Marconi made the inaugural speech on "Phenomena Accompanying Radio Transmission." A number of government ministers, including the secretaries of agriculture and of corporations, read papers.

HAMBURG was host from September 7 to 15 to the twenty-fourth International Amerikanisten Congress, members of which are students of all that pertains to America, its history, political and historical, geography, geology, archeology and culture, or research workers in these fields. The following are the most important subjects considered: "The American Indian and His Relations to Other Americans"; "Customs and Habits of the Indians, Their Origin and Extension in the Old and New World"; "The Language of the American Indian, Beginnings of American History. With Especial Consideration of

the Time of Discovery and the First Settlers"; and "Geographical and Geological Problems in Connection with Man's Work." "The Culture of the Indians before Their Contact with Europeans and in the Present" was the main subject of discussion of the congress under the leadership of Professor Dr. Sapper, Wurzburg. The congress will meet in Buenos Ayres in 1932.

THE work of the Philippine Bureau of Agriculture, for the past thirty years charged with the regulation and promotion of agricultural industries in the Philippines, according to the *Experiment Station Record,* has been divided into two parts and assigned to bureaus of plant industry and animal industry. Dr. Manuel Luz Roxas, head of the department of agricultural chemistry of the Philippine College of Agriculture, a 1911 graduate of this institution and a recipient in 1917 of the Ph.D. degree from the University of Wisconsin, has been appointed director of the Bureau of Plant Industry.

DISCUSSION

THE NEED FOR AND THE PROPOSAL OF A NEW GENETIC TERM

A PHASE in the development of genetics which is just getting under way is the analysis of genetic effects over the range of a controllable variable. The data on the effects of temperature upon facet number in the bar series of Drosophila may be quite satisfactorily fitted to the equation $y = ae^{rt}$, in which r is the relative rate of change; t, the temperature in degrees Centigrade; e, the base of the natural logarithms, and a, a constant which gives the value of y, that is, the number of facets when $t = 0$. The first derivative is given by the equation $\frac{dy}{dt} = yr$. Its value at 15° for reverted full females is -21.51 facets. Similar values for bar, ultra-bar and infra-bar females are, respectively, -12.66, -3.76 and $+8.48$ facets. It is held that such values form a better basis for the characterization and analysis of the genetic differences than average facet number, since they take into account at one and the same time not only the number of facets but also the relative rate of change with respect to temperature. From an analysis of the bar series in terms of the first derivative of facet number with respect to temperature new and interesting relations emerge.[1] The point at present, however, is that in such analysis the need is felt for a new term—one to refer to the first derivative of the phenotypic quantity (in this case, facet number) with respect to the controllable variable (temperature).

In analyzing some data on the effect of temperature upon wing-area in homozygous and heterozygous vestigial females it is found that the same equation applies. The value at 30° of the first derivative of wing-area with respect to temperature for long-winged females is -0.0564; for long × vestigial females, -0.0501, and for vestigial females, $+0.0112$ sq. mm. As in the case of the facet-temperature relation, one requires here a term to refer briefly to the first derivative of the wing-area with respect to temperature. As soon as one attempts to speak about the first derivative of such quantities a need is felt for a simple general term.

The convenience and value of a general term for such quantities is well demonstrated by the special terms used for designating the derivatives of various physical quantities with respect to an independent variable, among which may be recalled velocity, acceleration, current, specific heat, modulus, pitch.

In a conversation with Mr. Francis S. Haserot during which several possibilities were discussed he suggested that it might be well to reduce pheno-derivative (abbreviation for phenotypic derivative) simply to *phene.* The following considerations seem to indicate—if the need for such a term be granted—that the situation is perhaps adequately met by the term *phene.* (1) Its relation to the phenotypic expression of the genetic constitution is sufficiently obvious. (2) The nature of the independent variable may be readily indicated by the use of a suitable adjective or prefix, *e.g., thermophene.* (3) That it is but one syllable readily allows for its use in compounds as occasion should arise. Bar facet-thermophene and bar bristle-thermophene clearly distinguish the first derivative with respect to temperature of two different phenotypic quantities on which the bar gene produces an effect. (4) The proposed term allows easy reference to the two related quantities, the first derivative and the original quantity. The inverse of the derivative is the anti-derivative, hence *anti-phene.* For example, the phene for reverted full at 15° is -21.51 facets, and the corresponding anti-phene is 935.4 facets. (5) The word *phene* is not preoccupied, although it happens to be an obsolete chemical term. (6) It is free from any indication of a theoretical interpretation regarding how the genetic factors produce their effects.

In conclusion, the term *phene* is proposed as a word to refer to the first derivative $\frac{dy}{dx}$, in which y is a phenotypic quantity, and x an independent variable. The economy of expression attained by the use of this

[1] A. H. Hersh, "The Facet-temperature Relation in the Bar Series of Drosophila," *Jour. Exp. Zool.* (in press).