

Let  $S$  be an element of the sustaining surface,  $\alpha$  its angle of attack,  $z$  its distance from the plane of symmetry. Then the lifting power of the surface is proportional to  $\sum S \sin \alpha \cos \alpha$ , while the tendency to bank up at the outer side in rounding curves is proportional to a coefficient which I call  $L_q$ , and is proportional to  $-\sum Sz^2 \sin \alpha \cos \alpha$ , being negative in the ordinary case where an aeroplane tends to rise excessively on the outer side when rounding corners. Now the principle of the "negative wing tip," as Dunne calls it, is represented symbolically by the fact that by making  $\alpha$  positive when  $z$  is small, and  $\alpha$  negative when  $z$  is large, you can make—

$$\begin{aligned} \sum S \sin \alpha \cos \alpha &\text{ positive,} \\ \sum Sz^2 \sin \alpha \cos \alpha &\text{ zero or negative,} \end{aligned}$$

thus giving lift and yet neutralising or reversing the banking action.

There is much to be said for Mr. Dunne's remark: "Finally I must remind you that all my work has been done by practical experiments. It is not the experimental facts which are in question, but the theory which I have evolved to cover these facts, which theory I submit to this learned Society for criticisms. But the facts are unquestioned. The aeroplane does do these things, and if the theory does not give warranty for the practice, then it is the theory which is wrong."

G. H. BRYAN.

#### THE ATLANTA MEETING OF THE AMERICAN ASSOCIATION.

THE sixty-fifth meeting of the American Association for the Advancement of Science was held at Atlanta, Georgia, during the week December 29, 1913, to January 3, 1914, under the presidency of Dr. E. B. Wilson, of Columbia University. It was the first meeting which the association has held in the Southern States since the New Orleans meeting of 1905, and was marked by an important series of papers relating indirectly to the industrial advance in the south, to health conditions existing among its people, and to its geological and other resources. The attendance was not large, only about 400 members and fellows registering.

Nine of the national societies affiliated with the American association met at the same time and place, as follows:—

Astronomical and Astrophysical Society of America, Botanical Society of America, American Association of Economic Entomologists, Entomological Society of America, American Microscopical Society, American Physical Society, American Phytopathological Association, School Garden Association of America, Southern Society for Philosophy and Psychology.

The address of the retiring president, Prof. E. C. Pickering, Director of the Harvard College Observatory, was on the subject "The Study of the Stars."

The addresses of the vice-presidents, or chairmen of sections, were as follows:—

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A, "The Influence of Fourier's Series upon the Development of Mathematics," E. B. Van Vleck, University of Wisconsin; B, "The Methods of Science: To What Do They Apply?" A. G. Webster, Clark University; C (on account of the absence of Vice-President Miller the address was omitted); D, "Safety and the Prevention of Waste in Mining and Metallurgical Operations," J. A. Holmes, Bureau of Mines; E, "Pleistocene History of Missouri River," J. E. Todd, University of Kansas; F, "The Story of Human Lineage," W. A. Lacy; G, "The Evolution of a Botanical Problem," D. S. Johnson, Johns Hopkins University; H (the address was omitted on account of the absence of Vice-President Fewkes); I, "The Development of our Foreign Trade," J. H. Hammond, New York; K, "The Physiological Instruction of Medical Students," J. J. R. Macleod, Western Reserve University (read by title); L, "Science, Education, and Democracy," J. McKen Cattell, Columbia University.

Two public lectures complimentary to the citizens of Atlanta were given—the first by Dr. C. W. Stiles, of the U.S. Public Health Service, on the subject "The Health of the Mother in the South." In this address, in which some very remarkable facts were told in a very plain way, the speaker urged in a most emphatic manner the segregation of the races in the south, an idea which has heretofore received little attention in the United States, although British sanitarians in the tropical British colonies have appreciated its importance for some years.

The second public lecture was by Prof. C. E. Munroe, of the George Washington University, on the subject "The Explosive Resources of the Confederacy during the War and Now: A Chapter in Chemical History." Prof. Munroe, one of the American authorities on explosives, and for a long time Professor of Chemistry at the United States Naval Academy at Annapolis, dwelt upon the extraordinary activity of the south, isolated as it was from other countries by the blockading vessels of the northern fleet, in developing such resources as they were known to possess, and in manufacturing from them the enormous quantity of explosives which were used by the large southern army during its four years' struggle for independence.

The papers read before Section E (geology and geography) were devoted practically entirely to the geology of the Southern States, and the council of the association has made a grant to secure the publication of these papers in a single volume.

An important symposium was held under the auspices of Sections D and I, on highway policies and engineering, and other joint meetings were held between the Section of Zoology and the American Entomological Society, and between the Section of Botany and the American Phytopathological Association. Under the Botanical Society of America was held a symposium on temperature effects.

Probably the most important symposium of the meeting was held under the auspices of Section K (physiology and experimental medicine), on the subject of Pellagra. The subject was opened by



a paper by Dr. J. W. Babcock, Superintendent of the State Hospital for the Insane at Columbia, S.C., on the medico-local relations of pellagra. Dr. E. Bates Block, of Atlanta, discussed the mental disturbances of this disease. Dr. G. M. Niles took an unusually optimistic stand in his discussion of prognosis. The main paper of the symposium was presented by Dr. W. J. Macneal, of the New York Post-graduate Medical School, for himself and his colleagues, Dr. J. S. Siler, Medical Corps, U.S.A., and Dr. P. E. Garrison, Medical Corps, U.S.N., and comprehended an announcement of the later studies of the Thompson-McFadden commission on the etiology of pellagra. During the summer of 1913 the commission has been actively at work at Spartanburg, S.C., and has accumulated and digested a mass of facts bearing upon the etiology which seem to discredit completely all questions of diet, either as to character or amount, and to place the responsibility for the disease upon unsanitary conditions as regards the disposal of excreta; in other words, upon food contamination. The remaining paper was entitled "The Entomological Aspects of the Pellagra Investigation of the Thompson-McFadden Commission," by Mr. A. H. Jennings, of the Bureau of Entomology, U.S. Department of Agriculture. Mr. Jennings having worked for two seasons with the commission at Spartanburg, practically absolved Simulium from any relation to the disease, and stated that if any insect is the vector of pellagra it is in all probability the stable fly (*Stomoxys calcitrans*).

Among the actions by the council were the acceptance of the Society of American Foresters as an affiliated society, the adoption of a resolution looking with favour upon the organisation of a Brazilian division of the association, the authorisation of the establishment of local branches of the association, the continuance of the associate secretary for the south, and the authorisation of the preparation of a directory of the funds available for research work.

A report of progress from the Committee on Expert Testimony was received. The movement to bring the force of the association, composing in its membership so many hundreds of scientific men constantly called upon to give expert testimony in the courts, towards a modification of the present system of employing experts by opposing parties in courts of law, was begun two years ago at Minneapolis. The committee in charge of the work consists of Prof. E. C. Pickering, of Harvard, chairman; Dr. E. B. Wilson, of Columbia; Dr. W. H. Welch, of Johns Hopkins; United States Senator Elihu Root; Dr. A. D. Little, formerly president of the American Chemical Society; and Dr. J. A. Holmes, of the U.S. Bureau of Mines. The committee reported a compilation of the laws of the different States of the union on this subject, and stated that a compilation of the laws of the different nations of the world is in hand. Positive recommendations are to be expected from this committee at the next meeting of the association, and, com-

prising as it does some of the most eminent scientific men in America, together with one of its most eminent lawyers, the report will carry great weight.

It was decided to hold the next meeting of the association during Convocation Week, 1914-15, at Philadelphia, with a summer meeting to follow in August, 1915, at San Francisco. The general committee recommended to the next general committee that Toronto, Canada, be chosen as the place of meeting for 1915-16, on invitation from the University of Toronto.

The officers elected for the coming year were as follows:—

*President:* Chas. W. Eliot, president emeritus of Harvard University. *Vice-Presidents (or Chairmen of Sections):* A. H. S. White, Vassar College; B. A. Zeleny, University of Minnesota; C (no election); D, A. Noble, New York; E, F. R. Lillie; G, G. B. Clinton, New Haven; H, C. Wissler, American Museum of Natural History; I (no election); K, R. M. Pearce, University of Pennsylvania; L, P. H. Hanus, Howard University; M, L. H. Bailey, Cornell University. *General Secretary:* W. A. Worsham, jun., Athens State College of Agriculture. *Secretary of Council:* Henry Skinner, Academy of Sciences. *Associate Secretary:* R. M. Ogden, University of Tennessee.

#### DR. S. C. CHANDLER.

DR. S. C. CHANDLER, whose death we recorded with regret last week, was not the least conspicuous in that earnest band of American astronomers whose energy and resource have done so much to advance astronomical science. He began his scientific career in the United States Coast Survey, a school that has trained many brilliant observers, who, in positions of greater independence, have rendered valuable service. Dr. Chandler's claim to a place among the most famous of these rests upon three notable achievements. First, the invention and use of the Almacantar, an instrument in which the small circle perpendicular to the meridian passing through the pole is adopted as a fundamental circle of reference, and gravitational action round an imaginary vertical axis is substituted for the motion of rotation round the pivots of the horizontal axis in the case of a vertical circle. Secondly, for his valuable catalogues of variable stars, in which he systematised the results collected by many observers, thereby encouraging and facilitating further observations. His work in this direction was by no means confined to simple compilation. He was both an indefatigable observer and the fortunate discoverer of many interesting objects of this class, ever directing attention to a branch of astronomy that has proved both suggestive and fructiferous.

This habit of industrious examination and critical scrutiny, acquired in discussing many series of observations, proved of remarkable assistance in the successful inquiry with which his name will ever be associated, the detection of the variation of latitude, due to the want of exact coincidence between the axes of the earth's figure and of rotation. This work was exceedingly laborious,