inaugurated, so that scientific workers may receive proper instructions and advice as to methods and conditions of life and travel. Instead of gathering his own experience in this regard he should be able to rely on that of others, and without waste of time devote himself to his scientific work. Every scientific investigator in the tropics knows that the information he received when he prepared for his journey of exploration into the primeval forest was practically valueless, and he had to learn for himself, often at considerable expense, loss of time and not infrequently of health.

An international, a Pan-American institution for the scientific study of the conditions of tropical America is needed. American scientists should take the lead and invite their colleagues of the Latin-American republics to join them in a systematic endeavor to study the tropics of this hemisphere, its natural riches and its diversified conditions. Such a course will be as important for the preservation of peace, for the mutual understanding between the peoples of the Americas, and for the progress of these countries as commercial treaties or diplomatic conventions.

I do not propose here to enter into details in regard to the organization of a Pan-American scientific institution for the systematic study of the American tropics. I do believe that the time is ripe for such an undertaking, and I have reason to think that if a suitable plan is defined and proposed it will meet with the ready response and approval of the public and the governments of all the American republics.

Pehr Olsson-Seffer
Tezonapa Botanical Station,
Mexico, D. F.,
December 20, 1910

Octave Chanute[1]

Octave Chanute was born in Paris, France, February 18, 1832. He was brought to this country in childhood, was educated chiefly in New York City and began the practise of his profession as civil engineer at an early age.

After having done efficient work in railway construction in New York, Indiana and Illinois, he became in 1863 chief engineer of maintenance of way and construction of the reorganized Chicago and Alton Railroad, remaining upon that line until 1867.

During this connection, having been invited to submit a design for the proposed Union Stock Yards of Chicago, his plan was selected in competition with a number of others and he built these yards as chief engineer. He was also awarded a premium for a competitive design for a bridge across the Missouri River at St. Charles, Mo. In 1867 Mr. Chanute went to Kansas City, Mo., as chief engineer of the bridge across the Missouri River at that point. This was the pioneer bridge across the Missouri River, and as the river pilots and riparian dwellers had given this stream a bad reputation, the successful completion of this bridge across it in 1868 attracted great attention and interest.

Later Mr. Chanute successively became chief engineer of the Kansas City, Fort Scott and Gulf, the Kansas City and Santa Fe, the Atchison and Nebraska, and the Leavenworth, Lawrence and Galveston railroads.

From 1873 to 1883 he was in the service of the Erie Railway as chief engineer. During this connection he readjusted the motive power of the road and lessened the grades so that the through freight trains, which averaged eighteen cars when he first became connected with the line, had grown to thirty-five cars when he closed his connection with the road in 1883, when he removed from New York to Kansas City, in order to look after his personal interests, and to open an office as consulting engineer.

In this latter capacity he took charge of the construction of the iron bridges during the building of the Chicago, Burlington & Northern Railroad between Chicago and St. Paul in 1885, and of those of the extension of the Atchison, Topeka & Santa Fe Railroad, from Kansas City to Chicago, in 1887 and 1888; the latter involving, besides a number of minor streams, the Missouri River bridge at Sibley

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and the Mississippi River bridge at Fort Madison.

In 1889 Mr. Chanute removed his office to Chicago, where he engaged in promoting the preservation of timber against decay, by chemical methods.

Mr. Chanute became a member of the American Society of Civil Engineers, February 19, 1868, and has contributed a goodly number of papers to its *Transactions*. In 1891 he was president of that society; in 1901 he was president of the Western Society of Civil Engineers, and was honorary member of similar societies in England, France and Chile.

In October, 1891, there appeared in *The Railroad and Engineering Journal*, of New York, the first of a series of articles on "Progress in Flying Machines," written by Mr. Chanute. The series was extended in the next two or three years, and in 1894 was published in book form under the above title. It is a volume of over three hundred pages and it tells both of failure and progress. The author, bringing all of his resources as a skilled engineer to bear upon the unsuccessful experiments, analyzed all of the more important work done by scores of men and tried to point out, as much as might be, the causes of failure.

In the preface to the book it is stated that one of the writer's objects in preparing the papers was "to satisfy himself whether, with our present knowledge and appliances, men might reasonably hope to fly through the air." He said that in his opinion "this question can be answered in the affirmative." It meant much to the believers in the possibility of mechanical flight to have the endorsement of an engineer of the highest standing given to a discredited line of research.

In 1892 Dr. A. F. Zahm, of Notre Dame (Ind.) University, now of Washington, D. C., proposed the holding of an International Conference on Aerial Navigation in connection with the World's Congress Auxiliary of the World's Columbian Exposition of 1893.

In this Dr. Zahm was heartily seconded by Mr. Chanute, who was made chairman of the committee, Dr. Zahm being chosen secretary. The officers of the World's Congress Auxiliary, of which Mr. C. C. Bonney was president, gave cordial cooperation to the plan.

The conference formed a division of the General Engineering Congress and took place in the Memorial Art Palace, in Chicago, August 1, 2, 3 and 4, 1903. It was the first aeronautical congress held in America, and the third international one.

Mr. Chanute presided over the session on the opening day, the topic for the day being "Scientific Principles." In opening the conference he said:

> It is well to recognize from the beginning that we have met here for a conference upon an unusual subject; one in which commercial success is not yet to be discerned, and in which the general public, not knowing of the progress really accomplished, has little interest and still less confidence.

The paragraph just quoted well shows the status of interest in aerial navigation in 1893. Though peculiarly conservative Mr. Chanute expressed his conviction that dirigible balloons would presently attain a speed of twenty-five miles an hour, an estimate which is fully justified by subsequent events. He likewise maintained the practicability of achieving mechanical flight by gradual evolution, utilizing the results of the accumulated labors of many scientific contributors. He indicated the chief component problems already solved and awaiting solution. "The equipoise," said he, "is, in my own judgment, one of the most important problems yet to be solved in aviation."

The papers read at and contributed to the conference fill a volume of more than four hundred pages. The attendance averaged about one hundred at each session, comprising the most prominent men in the engineering profession.

In the summer of 1896 Mr. Chanute began his now well-known experiments on the sand dunes with man-carrying gliders. These were continued in the following year. The accounts of this very important part of his work have been fully given in various magazines and pamphlets.

Beginning with the glider of the form which had been used by the German, Lilienthal, two

years of study and experiment enabled him to produce a type having great superiority in the matter of stability, efficiency and structural strength. This was the famous Chanute biplane glider which substantially forms the conspicous body feature of the present-day biplane flying machines.

For many years Mr. Chanute was in regular communication, personally and by correspondence, with the leading aeronautic investigators in both hemispheres. The help which he gave to such men can never be fully known; the counsel and encouragement which he gave the Wright brothers in particular have been gratefully and gracefully acknowledged by them. His valuable experience, information and advice were liberally and gladly furnished to them at the time when it was most needed, when they were at the foot of the unblazed trail, and these gave them the courage and confidence which were essential to enable them to persevere and to emerge at last at the summit, triumphant.

At the Boston meeting of the American Association for the Advancement of Science, held in December, 1909, Mr. Chanute read a paper entitled "The Present Status of Aerial Navigation." This paper was the expression of his maturest understanding of the science to which he had devoted so many years of his life.

Mr. Chanute died in Chicago on the twenty-third of November last. Three daughters and one son survive him. Those who knew him will always remember his lovable character and will think of the oft-repeated saying, "He was more willing to give credit to others than to claim any for himself."

We may well believe that whenever in the future the history of aviation shall be reviewed, the name Chanute will stand forth as that of one of the few great founders.

James Means

Boston, Mass.

The African Entomological Research Committee

With a view to furthering the work of the African Entomological Research Committee, Mr. Andrew Carnegie has placed at its disposal a sum of £1,000 a year for three years to defray the cost of sending a few suitably qualified young men to the United States to study the practical applications of entomology. Three of these Carnegie scholars, as they are to be called, have been selected, and two of them are already at work. Dr. L. O. Howard, chief of the Bureau of Entomology, is interesting himself in the matter and all possible facilities will be given to the scholars. It may be expected that the scheme will be of value to British administration in Africa and elsewhere by providing a body of well-trained entomologists available for employment in the services of the different colonial governments.

The Research Committee was appointed in June, 1909, by Lord Crewe, the then Secretary of State for the Colonies, with the object of promoting the study of the insects which play so prominent a part in the spread of disease among men, animals and plants in Africa, and Lord Cromer is its president. It includes some of the most eminent authorities on entomology and tropical medicine in Great Britain.

During the short period of the committee's existence satisfactory progress has been made. The scheme has been energetically taken up by the African colonies and protectorates, and the large quantity of material already received at the committee's office in the Natural History Museum at South Kensington has very materially increased our knowledge of the insect pests of Africa. The collections of insects, after being properly identified and recorded, are being distributed to the schools of tropical medicine, universities, museums, or other institutions where they are likely to be of value for the purpose of teaching or scientific study. Two skilled entomologists are being employed under the direction of the committee in East and West Africa respectively, for the purpose of interesting and instructing the local officials in the work, and also of carrying out special investigations.

The committee has issued quarterly a scientific journal, entitled the *Bulletin of Entomological Research,* of which the first volume is