

The Curtiss Company will be among the first to acknowledge a properly authenticated record beating the one it now holds and in a true competitive spirit and for the benefit of aviation attempt to better it at the first opportunity.

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CONCERNING BALLISTICS

TO THE EDITOR OF SCIENCE: For sufficient reasons I was unable to attend the meeting of the American Association, and so was not so fortunate as to hear Major Hull's very valuable and interesting address on ballistics, nor Professor Ames's extremely scholarly and clear address on Einstein's theory. However I have read Professor Hull's address in SCIENCE with great pleasure. In it he is good enough to speak of my pressure gauge for guns, but says that its use appears to be limited to the cases of guns that can be rigidly clamped during the explosion. I hope to demonstrate shortly that there is no such limitation. Over a year ago I was offered the use of a six-inch gun at Aberdeen to put my gauge on, and Admiral Earle has at last taken an interest in my results and has manifested a willingness to assist me. The coming of the armistice, however, removed so much money and personnel from Aberdeen that nothing came of it.

I should have been pleased if Major Hull could have seen fit to call attention to the fact that I was the first person to publish trajectories of "la grosse Berthi" that bombarded Paris two years ago. The bombardment began on March 23, 1918. The next week I began to deliver lectures on exterior ballistics, and in a few days we had a number of trajectories calculated. In four weeks from that date I read a paper at the meeting of the American Philosophical Society in Philadelphia, at which I showed a number of trajectories. I used the height function for the density as given in Major Hull's address, and at that time it had never been used by either the United States Army or Navy. I showed my results to Major Moulton, who was just be-

ginning his distinguished service in the army, and he showed much interest. Later he advised me not to publish them, as such calculations were now "a matter of routine."

I reminded him that although they may be such now, they were not when I read the paper. I have also seen in French journals pictures with articles apparently written by experts which would lead one to believe that there are discontinuities in the atmosphere, or that it stopped suddenly a few miles up. In a recent letter from M. Henri Le Chatelier, regarding my paper, he says that the French had made guns with an initial velocity of 1,200 meters per second, but had not thought of using them for high fire, as they were intended for penetration of ships armor. We also constructed curves showing the decrease of density upon both the isothermal and adiabatic hypotheses, neglecting and taking account of the variation in gravity, as given in my book on Dynamics, and also the observed values as kindly furnished me by Professor Humphreys. Unfortunately I was requested to keep the number of figures down, and these were not printed. I should be glad to send the paper to any one interested. The gauge paper is unfortunately exhausted. I may say that M. Sugot, the chief engineer of the Commission de Gâvre, told me last summer that ballisticians had been waiting fifty years for my instrument, and that the publication of my curves had rendered useless all the theoretical work of ballisticians on interior ballistics. Of course that is not so, but I hope next month to show how this gauge answers all questions that can be asked on the subject. I think I was the first professor to give lectures on ballistics, both interior and exterior, at an American university.

My ballistic institute is having hard sledding. At first encouraged by a vote of the Naval Consulting Board, turned down by the Honorable the Secretary of the Navy (without a word of regret), financed by a great arms company for awhile, helped by the Bache and Rumford Funds, it looks as if it would have to be given up for lack of money. When we began I had one assistant, one machinist and

three students, who all went to work vigorously. Last year I hired several assistants, and when I returned from France I had to put my hand in my pocket. That is I borrowed money at six per cent. This method of high finance may do for high trajectories, but it can not continue forever. I hear much of the National Research Council, but I do not see any money. I am an elderly man, and have experienced three disillusionments connected with the names of great millionaires. "Timeo Danaos et dona ferentes"—I fear organizations even when they offer me money—much more when they don't! Last year I gave a paper at the American Philosophical Society on the work of our ballistic institute, but I have never had the time to have it published.

I did not get to the front in the war—not till last summer. I had no uniform, and few helpers. So I got no glory, but some debts. A propos of Professor Wilson's letter about the University of Strasbourg, I should like to say that I visited it last year, and was shown all over it, and that the French are making it first class. Professor Pierre Weiss is going to have the best facilities in the world for the study of magnetism. I made about two hundred and fifty lantern slides of the places visited by our mission, and have been giving lectures on it ever since. Strasbourg figures largely in them.

ARTHUR GORDON WEBSTER

SCIENTIFIC BOOKS

KNOWLTON'S CATALOGUE OF FOSSIL PLANTS:

IN 1898 Dr. Knowlton published "A Catalogue of the Cretaceous and Tertiary Plants of North America." We now have from the same pen a work with the very similar title of "A Catalogue of the Mesozoic and Cenozoic Plants of North America." This is a far more comprehensive work than the former, or than its title indicates. To say that it about doubles the number of known species is but a slight indication of the way in which it mirrors the progress that paleobotany has made in Amer-

¹ Bulletin U. S. Geological Survey, No. 696, 815 pp., 1919 (1920).

ica in the past twenty years, for while very many significant new forms are added, many others that existed in name only have disappeared from the literature. Botanical determinations in many cases have been placed on a firmer footing during the interval and geological occurrences are now given with much greater precision, in fact, in so far as the progress of stratigraphic and areal geology is concerned with plant-bearing units, the present work may be said to show the progress made in stratigraphy during the past two decades.

Only those who know the drudgery of such compilations can appreciate the vast labor that has gone into the making of this book. The author has been one of the most influential factors in the progress of paleobotany in this country during the present generation and that he should have found the time to place this epitome of its present status before the public is a cause for sincere congratulation, not alone to him but to all who may have occasion to refer to the work. Fellow geologists will probably not need to have its merits or usefulness called to their attention, but botanists are not so likely to scan the lists of publications of the U. S. Geological Survey.

There is a stratigraphic table, a bibliography, followed by the body of the catalogue arranged alphabetically. In this part references are given to the original description of each genus, type species are indicated and under each species the synonymy, principal citations and geological and geographical distribution are given. Following the body of the catalogue, the included genera are given in their biological arrangement. This is followed by floral lists for each of the North American Mesozoic and Cenozoic plant bearing formations—a most useful feature of wide interest.

EDWARD W. BERRY

NOTES ON METEOROLOGY

THE WEST INDIAN HURRICANE, OF SEPTEMBER, 1919

This hurricane, which seems to have been the largest that has occurred in the Gulf of Mexico since the U. S. Weather service was