cussion at a meeting to be held early in 1941. Following this meeting, the less readily accessible (chiefly unpublished) data will be sought by direct contact with individuals and geological survey organizations in every state and province.

The committee members are aware that, aside from the actual gathering and compilation of data, troubles await them in regard to stratigraphic correlation. It was partly for this reason that the membership was made as broad as possible, and representative of various opinions. The discussion of glacial problems that will take place repeatedly among members of the committee, and, it is hoped, with many others as well, should prove to be not the least valuable asset of the project. It appears likely that field conferences on critical or controversial problems may be desirable, leading toward a coordinated attempt to clear up major uncertainties.

It is the desire of the committee to make the map useful in as many ways as possible to as many interested persons as possible. To that end we cordially invite helpful criticism and specific suggestions regarding any part of the project, and we earnestly ask for contributions of unpublished glacial data suitable for inclusion on the map. Information for the map should be addressed to individual members according to the allocation given above. Information on Canadian areas should be addressed to Dr. Young.

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THE ORIGIN OF THE BALLISTOCARDIOGRAPH

WITH each heart beat, blood is propelled toward the head, and then, rounding the arch of the aorta, a lesser amount flows toward the feet. If a person's body is freely suspended so that external forces are minimized, its center of gravity will remain fixed. In this situation, to adjust for the pulsatile flow of blood from the heart, the body must move in an opposite direction to that of the blood mass: the body recoils from the flow of blood like a hydraulic gun.

Ingenious use of this principle has been made by Starr, Rawson, Schroeder and Joseph[1] to measure the outflow of blood for each stroke of the heart without disturbance to the subject. Their instrument, the ballistocardiograph, measures the movements of a light horizontal table on which the patient reclines.

Credit for the invention is given to Yandell Henderson,[2] who described an apparatus for recording the motions of the body in a vertical direction. Professor Henderson wrote: "So far as the writer has been able to learn, no observations on this subject are recorded in physiological literature, except a brief statement accompanied by a few tracings, which were presented by the writer before the American Physiological Society at its meeting in December, 1904."

I was, therefore, greatly interested to come across a complete description, overlooked by Henderson, of a simple but effective vertical ballistocardiograph in Leonard Landois' "Lehrbuch der Physiologie des Menschen," Vienna, 1880. The originator referred to is J. W. Gordon,[3] who in 1877 reported both a vertical and a horizontal ballistocardiograph, and correctly appreciated the latter's advantages. He recorded the vibrations of a rigid bed, suspended by four ropes, on a "sphygmograph" and wrote: "It does not appear that this phenomenon has heretofore been anticipated by any process of theorizing, or turned to any useful account."

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THE EARLY HISTORY OF RESEARCH WITH DROSOPHILA

THE recent death of Professor C. W. Woodworth, of Berkeley, California, calls to mind that while studying in the Harvard Zoological Laboratory in 1900–1901 he suggested to Dr. W. E. Castle that the rapid breeding pomace fly, Drosophila, had distinct advantages in breeding experiments over the laboratory mammals which Castle was then using.

Profiting by this suggestion, Castle and his pupils, F. W. Carpenter, A. H. Clark, S. O. Mast and W. M. Barrows, in the years 1900–1906, developed the banana technique for culturing Drosophila and carried out a series of experiments on the effects of inbreeding, crossbreeding and selection upon the fertility and variability of Drosophila.

At the opening of the station for Experimental Evolution at Cold Spring Harbor, Dr. F. E. Lutz took up the breeding of insects there, and to him Castle communicated information as to the breeding techniques in use at Harvard. Lutz worked with Drosophila for two or three years at Cold Spring Harbor, as reported in year books 6–8 (1906–9) and in Publication No. 143 of the Carnegie Institution of Washington, being concerned principally with the inheritance of wing variations.

While he was thus engaged, Professor T. H. Morgan visited his laboratory and was interested in the speed with which generations followed each other, and asked for material to use in his class to demonstrate heredity. Lutz gave to Morgan a stock of the red-eyed wild type, in which he had observed the occurrence of a white-eyed individual. This apparently was Morgan's

[1] Isaac Starr, A. J. Rawson, H. A. Schroeder and N. R. Joseph, *Am. Jour. Physiol.*, 127: 1, 1939.
[2] Yandell Henderson, *Am. Jour. Physiol.*, 14: 287, 1905.
[3] J. W. Gordon, *Jour. Anat. and Physiol.*, 11: 533, 1877.