

A PORTABLE CHOICE REACTION TIME APPARATUS.

BY A. G. SILLITOE.

(From the Cambridge Psychological Laboratory.)

THE apparatus about to be described is a development of the instrument devised by the late Dr Stamm for testing the reaction-times of aviators during a flight. The special features of this development are: the lightness and portability of the apparatus, and the new electrical control of the stop-watch.

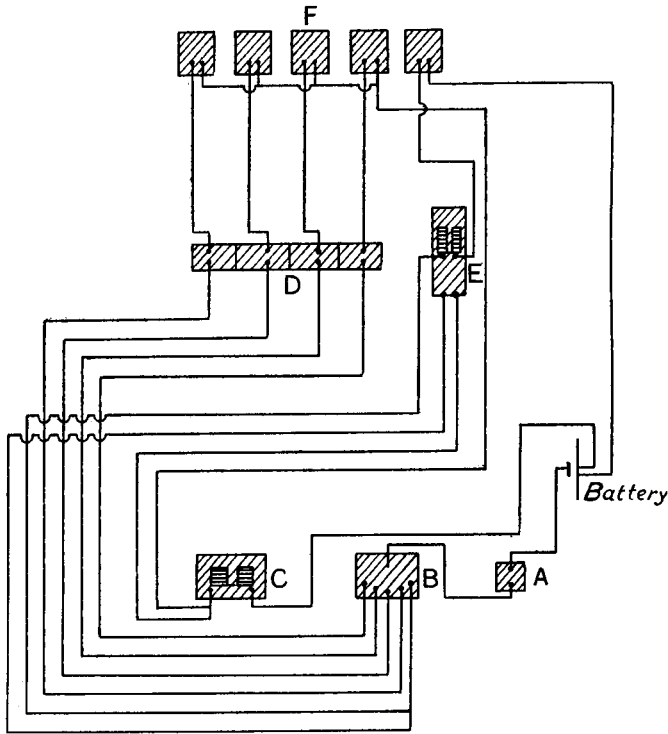
The whole is enclosed in a box $12'' \times 8'' \times 8''$, its total weight being about $8\frac{1}{2}$ lbs. Two opposite sides of the box are hinged, and may be opened outwards, so that when the apparatus is in use these sides lie flat on a table. To them most of the working parts of the apparatus are affixed: they will be referred to as the experimenter's side, and the subject's side respectively.

On the experimenter's side is a 100th secs. "Mikograph" stop-watch (*C* in diagram), firmly fixed in position, and controlled (as will be explained later) by an electro-magnet placed immediately below the watch. On the right of this is a five-way switch *B* connected with the various stimuli, and on the right of the five-way switch is the experimenter's switch *A* for exhibiting a given stimulus and starting the watch.

On the subject's side are situated, in a position convenient for the fingers, five keys *F* after the Morse key pattern. Any of these, when depressed, stops the watch and, if the correct reaction is made, interrupts the current which exhibits the stimulus, each key being connected with its own stimulus. Underneath the topside of the box and facing the subject are four small compartments *D*, each containing a 2 v. lamp, the front of the compartments being fitted with red, blue, green and white glass respectively. Fitted inside the box, on the subject's left, is a small specially constructed hammer *E* for use as a sound stimulus. The experimenter has then a choice of five reactions to one of five possible stimuli.

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The box contains two dry cells and two spare cells. The mechanism is satisfactorily operated by a current of approximately 2.5 volts.



A. Experimenter's Switch. B. Five-way Switch. C. Electro-magnet operating watch. D. Visual Stimuli. E. Sound Stimulus. F. Subjects' Reaction Keys.

DIAGRAM OF CONNEXIONS.

The mechanism for starting and stopping the watch may be briefly described. Connected with the armature of an electro magnet is a light lever which is fixed outside the watch, but passes through an opening drilled in the watch case. In the resting positions, when no current is passing through the magnet, this lever allows a spring which is a part of the ordinary mechanism of the watch, to exert pressure upon a revolving serrated wheel, thus bringing the wheel out of gear with a second serrated wheel. The second wheel is therefore now at rest, and as the hand which revolves around the dial-face is fixed on the pinion of this wheel, no time record is taken. At the beginning of the experiment, then, the watch is started, as in an ordinary stop-watch,

by pressure upon the lever at the top; but the hand does not revolve until the current is allowed to pass through the electro-magnet. When this happens, the attraction of the armature prevents the aforesaid spring from exerting pressure upon the revolving serrated wheel. The latter is therefore, by the operation of the ordinary starting mechanism of the watch thrown into gear with the wheel which carries the dial hand, and the time record at once begins to be taken.

In a long series of experiments either the watch may be kept going the whole time, the time of each reaction being read off as in the case of the Hipp Chronoscope, or, if it is preferred, the hand may be restored to zero after each reaction by pressure upon the lever at the top of the watch.

The apparatus has been given a large number of trials in practical work in the laboratory and has been found highly reliable and satisfactory. In a long series of trials with the control hammer, the mean variation for an average time of 526^{σ} was found to be 10^{σ} .

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