

## SHORTER CONTRIBUTIONS.

### BLOTS OF INK IN EXPERIMENTAL PSYCHOLOGY.

The chance characters made by the compression of one or more drops of writing fluid between two small squares of paper seem to have a varied usefulness in experimental psychology. Rectangular pieces of paper twice as long as wide are folded transversely in the middle. Six centimetres by three is a convenient size for use when large series are employed. Small drops of rather thick common ink are then placed near the centre of one of the squares, and the two halves firmly pressed together with the moving fingers until the fluid has been absorbed. The shape and size of the blot may be determined to some extent by the finger and by the amount of ink applied; several small drops make more various blots than a large single drop.

There being no proper top or bottom to these characters, mere partial or complete reversal changes their apparent nature. Thus the two originals may be used as reverses of each other directly, or by quarter, half, or three-quarters turning of one of them, three other relative characters may be produced. If circular bits of paper instead of square be employed, theoretically infinite combinations are at the command of the experimenter. Direct reproduction of any character may be made by tracing its outline and filling this in with a brush and pen. If many reproductions are required, photography is the best means, and the negatives used in that process may be useful as stencils, behind which variously colored papers can be placed somewhat as in the ambrotypes of fifty years ago. If the blots be required in series, they are best made on heavy gummed paper squares and stuck upon sheets of the required shape and size. Paper not too smooth is best for the blots, that they may dry quickly and be colored uniformly. If copies larger or smaller than the original are desired they may be made with the pantagraph. Colors, of course, are as easily used as black, and variation in the way of shading is also unlimited.

The characters may be exposed behind a Münsterberg pendulum, attached by rubber bands to a kymograph cylinder, through an aperture, and used in many other ways.

It is suggested that these characters may be of use in at least the

following psychological researches: In the study of the content of consciousness as regards the relative ease of recognizing an object and its reverse, either when seen alone or in various series. In studies of memory, by measurements of the length of time after which a given blot, straight or reversed, may be recognized; also by the relative power of reproducing after an interval the outline of an exposed character. In the study of Imagination, qualitatively, in various ways, and quantitatively, by measurements of the relative times required for a presented suggestive blot to bring to mind its obvious likeness. In determinations of reaction time with choice. In study of the discrimination of minute formal differences. In the study of after-images of various colors, and positive or negative. In studying Association.

The advantages of blots or characters thus made seem to be these; The practical infinity of their variety; the ease, rapidity, and cheapness of their production in black or colors; the facility with which exact reverses are made; the lack of associational suggestiveness of many of them, and on the other hand the ease with which suggestive ones may be obtained; and the unlimited range in size.

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### THE IMAGERY OF ONE EARLY MADE BLIND.

I became blind at the age of five years and one month, in August of 1877. My home was then in New Brunswick, Canada. I have an image in my mind of many of the scenes which I saw before losing my sight. I remember how the trees looked across the river where they seemed to disappear into the sky and I believed they supported the sky. I remember how the small ships which used to come up the river looked. I also have a vivid picture of the falls in the river. I used to sit on the edge of the bank overlooking the falls and gaze down about fifty feet at the water. In fact I remember almost everything which I saw during the last summer while I possessed my sight.

*My Idea of Space.*—When I contemplate a geometric proposition, it is presented to my mind raised on a piece of paper. When I studied geometry I had all the diagrams used to prove the proposition raised on paper. Thick pasteboard was used so that the figure would endure. Any geometric proposition, therefore, appears to me raised on such a figure as I then used.

When I wish to represent to myself something infinitesimally small, I take a thin piece of paper and tear it in halves; then I tear one of the halves in halves and continue this process until I have the smallest