practically the only means of study employed by philosophers; then came the experimental method. In this connection Toulouse emphasises the importance in our measurements of having physically and chemically defined standards. It is not only necessary to have a number to express our toil measurement, it must be a number determined by precise conditions. The difficulties under which various workers labour are pointed out, especially that of obtaining average subjects for experiments.

In asylums for the insane we have a vast and rich field of experience, where subjects are numerous and realise true natural experiments, so that the psychiatrist is, in truth, the best armed in this struggle of experimental psychology.

Toulouse concludes that the orientation of psychology, determined by the actual experimental tendencies, must be towards psychiatry as obtains in Germany.

H. J. MACEVOY.

The Influence of Alcohol on Handwriting [*Ueber die Beeinflussung der Schrift durch den Alkohol*]. (*Psychologische Arbeiten*, Bd. iii, H. 4, 1901.) Mayer, Martin.

Previous investigations have shown—in harmony, indeed, with daily experience—that alcohol renders more difficult the perception of sensory impressions and the associated mental activity, while, on the other hand, it makes voluntary operations easier. At the same time, in apparent apposition with the latter result, alcohol has little or no influence in increasing work done with the dynamometer or ergograph. In order to follow out the workings of alcohol in a field where its finer influence could be precisely traced and measured, Mayer has investigated its effects on handwriting in accordance with the exact methods of Diehl. In one series of experiments the dose of absolute alcohol taken was 30 grammes, in another series 60 grammes. The results are recorded in full detail in this paper. It was found that alcohol has a slowing influence on writing movements; in small doses the pauses are shortened and the pressure increased; in large doses the pauses tend more to be increased, while the pressure is decreased; there is no recognisable influence on the way of writing. These results are recorded in detail with the precision that the instrumental study of handwriting now renders possible. Incidentally, Mayer introduces an interesting discussion of the resemblance of alcoholic intoxication to mania, which has often been pointed out. In both there is diminished attention, a flood of ideas with tendency to sound associations, an inclination to arrogance, and increased facility in obeying impulses. As soon, however, as we begin to inquire into the details of psychomotor activity (as may be done by reference to Gross's study of the precise characteristics of the handwriting in mania) profound differences may be traced. Common to both states is the shortening of the pauses, the release of movement becoming easier. In mania, however, there is greater excitability, the shortening becoming more marked in the course of writing, while in intoxication the pauses soon tend to be increased. Movement itself is in both conditions slowed, but in mania with very great rapidity. In mania, also, the writing is from the first

large, and tends to become larger as writing is continued, while in intoxication there is no change in this respect. Pressure, again, is much more increased in mania, and rises as writing is continued. The finer variations do not disappear as they do in intoxication, but are still more marked than normally, and changes in pressure occur with undue swiftness. On the whole the phenomena of intoxication, as evidenced by the handwriting, present a picture of increased excitability succeeded by paralysis, while in mania no symptoms of paralysis appear at any stage in the writing process, but, instead, an increasing excitability overcoming a preliminary tendency to inhibition of movement.

HAVELOCK ELLIS.

On the Duration of the Psychic Action of Alcohol [*Ueber die Dauer der psychischen Alkoholwirkung*]. (*Psychologische Arbeiten, herausgeg. von Kraepelin, Bd. iv, H. 1, 1901.*) Rüdin.

This paper is a further contribution to the experimental study of the action of alcohol on mental function, which has already been the object of several valuable researches by the Heidelberg school.

The author's chief aim was to determine how long a single dose of alcohol continues to influence simple psychic processes. The same question was investigated by Fürer (*vide* communication to Congress for Prevention of Alcoholic Excess, Basle, 1896), who found that the effect of alcohol administered over-night lasted throughout the following day. As Fürer's experiments, however, were all made on a single individual, and with very large doses of the drug, control researches appeared desirable.

The experiments recorded in the present paper were made on three persons for a period of eight days, and on a fourth for a period of eleven days. The subjects were selected with due regard to similarity of age, education, habitual abstinence from alcohol, etc., and the conditions of the experiments were arranged on the usual lines. The alcohol was given in the form of wine, the dose being equivalent to 90—100 grammes of absolute alcohol. It was administered half an hour before the evening worktime of the fourth day, and in the longer investigation a second dose was given to the subject on the evening of the eighth day.

The experiments referred to addition of figures, learning by heart, reaction time, and rapidity of association. The results under the last head were analysed in the light of Aschaffenberg's classification of associations.

The results of the experiments are given in full detail, and are judiciously discussed. The author summarises them in the following conclusions:

1. The action of a large dose of alcohol on four different individuals showed marked differences in its direction, intensity, and duration.
2. In general, its effect was to decrease the amount of work in addition and in learning by heart, to cause a shortening of reaction time with increased tendency to errors (*Fehlreactionen*), and finally to accelerate associations resting chiefly on speech images. In one of the