

been pushed further and carried out systematically, but circumstances put it out of the question and it must be said also by way of apology that the experiments were made more to exhibit the apparatus than to obtain results and without the idea of publication. Nothing could have been more striking, however, than the clearness with which both gentlemen grasped the point at issue and described their states of mind. It would be interesting with longer series to interpret them in the light of the peculiar musical training and characteristics of the two artists which are said to be diametrically opposed.

As it is, one can only say that, so far as single observations are of value, their reactions argue vigorously for the affirmative in the debated question of the existence of types of reaction.

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As Professor Wundt devotes many pages of the fourth edition of the *Physiologische Psychologie* to sensory and motor reactions, I hope that he will find space in the fifth edition to include cases such as these. He writes in the fourth edition "Cattell (*Phil. Stud.*, viii, S. 403) * * * konnte weder bei sich, noch bei einigen andern Personen einen von der Richtung der Aufmerksamkeit abhängigen Unterschied finden." But of the three cases reported by me in the article published in Professor Wundt's *Archiv*, one had a motor reaction nearly half again as long as the sensory form with corresponding differences in the mean variations. Professor Wundt indicates that I was not competent to react in a sensory fashion. He writes further "Dies schliesse ich aus der Vergleichung meiner eigenen Versuche, in denen ich sensoriell reagirte, mit denen Cattell's, der sich offenbar der muskulären Reactionsweise bediente."¹ Now Professor Wundt can evidently make an '*experimentum crucis*' for his own case by going to his laboratory, directing attention to the movement and reacting in half the time and with half the irregularity of his early experiments.

Of Dr. Farrand's cases Rosenthal is a performer of extraordinary technical expertness. His fingers are so perfectly trained that he does not need to give them the least attention. Sieveking, on the other hand, is impulsive and emotional. I do not think that we should be justified in concluding from these experiments that Rosenthal is an 'audile' and Sieveking a 'motile.' It seems to me rather that my or-

¹As a matter of fact my reactions are not 'motor.' They are 'sensory' when the stimulus is very weak or very strong, but in general the attention is diffused, but little being directed to the experiments.

iginal suggestion is supported—namely, that people react most quickly and regularly in the way in which they are used to reacting, and that when the reflex character of the reaction is disturbed the times become longer and more irregular.

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It may be added that Professor Wundt's position remains unchanged in his later published *Outlines* (pp. 198 ff.), while Professor Warren has indicated (*PSYCHOLOGICAL REVIEW*, Nov., 1896) the same attitude in Professor Titchener's excellent *Outline*. It seems worth while to say this since cases *galore* have now been reported (by Flournoy, Angell and Moore, and myself, besides those reported above, and under more exact experimental conditions) ; and they seem fully to meet the call for 'facts' made by the last-named writer, at least, several times over (see his *Mind* articles). The existence of 'types' of simple reaction can no longer be ignored by any one.

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