

Die Wirkung akustischer Sinnesreize auf Puls und Athmung.

P. MENTZ. Philosophische Studien, Bd. xi. pp. 61-124, 371-393, 562-602.

The attempts to judge indirectly the quality and intensity of psychological states by means of the accompanying vasomotor and respiratory change have, unfortunately, produced meager results and the present investigation emphasizes the fact that such attempts meet many difficulties which with our present limited knowledge are insurmountable. The complicated nature of the purely physiological phenomena concerned is by no means fully understood and the results depend upon so many and varied conditions that exact measurement is out of the question. The author found that the changes which appeared to furnish the most reliable basis for judgment were the increase and decrease of in the rapidity of the pulse, in other words the shortening or lengthening of the abscissa of a single pulse curve. The respiration curves are less constant and for the most part neglected. This may be regarded as a deficiency in the investigation, since it is true beyond a doubt the circulation is very much influenced by the breathing and the question is at least open whether the changes in the action of the heart and arteries may not in reality be largely secondary phenomena depending on respiration.

The first series of experiments was made with single noises and tones of moderate intensity as stimuli, with the result that the pulse and often the breathing showed a decrease in rate. These well-known accompaniments of agreeable sensations are attributed in this case to the pleasure arising from the mere exercise of the function. When the stimulus was repeated the decrease was less marked. If the intensity of the sound was increased, a limit was reached where the indications of pleasure disappeared and after a period of indifference the pulse rate increased. The pleasure produced by musical notes was most intense at middle *c* and gradually diminished as the ends of the scale were approached until, after passing through a point of indifference, signs of unpleasant sensation became apparent. When the sensation was received passively, that is without any strain of attention, the pulse rate, as above noted, decreases; when, on the other hand, the subject voluntarily concentrates the pulse increases in rapidity. In regard to tempo it was found that a certain rate, which varied with the individual, gave pleasure, and from this rate in both directions—when the tempo was made faster or slower—the pleasure passed through an indifferent stage into its opposite. When series of sounds are used the rhythm of inspiration and expiration tends to coin-

cide with that of the sounds. The same results appear when the subject represents to himself a certain rhythm without hearing it. Attempts to deal with the higher emotions, such as surprise, etc., produced nothing definite. When musical compositions were passively heard, the effects were those above pointed out as the result of involuntary attention to agreeable sensations; when, on the other hand, the subject made an effort to analyze, in other words voluntarily strained the attention, the result was a quickening of the pulse.

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Untersuchungen über Temperaturempfindungen. FRIEDRICH KIESOW. Philosophische Studien, Vol. XI. 135-145. 1895.

The author used, for searching out temperature points on the arms of seven persons, the brass cylinder (9 cm. \times 3 cm. with conical ends tapering 1 cm.) of Goldscheider. Cylinder was passed through a piece of cork or rubber tubing; warmed by a gas-flame, for qualitative experiments, and in warm water the temperature of which was read from a Celsius thermometer for quantitative determinations; cooled in a solution of salt and chlorcalcium. For marking the points three colors were used. A square was marked on the arm and the points within it searched out and marked. The doctrine of separate temperature-points was thoroughly confirmed; they remained constant for 1½ months. There is a marked difference in intensity of different points. A figure in the text shows the square of one subject. Intervals between points are at first indifferent, but after 3 seconds diffusely and superficially cold. The importance given to hair-cells by Goldscheider as points of temperature sensation is at least questionable.

For testing the 'specific energy' of temperature-points four kinds of stimuli were used—mechanical, electrical, needle-point stimulus, and the reversed or opposite stimulus. All the experiments demanded exercise in both the experimenter and subject, the mechanical succeeding first. For these a wooden suitably-pointed cylinder was used. Following Goldscheider, the skin was somewhat stretched. The cold points 'blaze' out when touched, while the warm rather glow; the latter are the more difficult to locate. As to cold points, the author is convinced of their existence. After two weeks, out of 46 possible cold points 21 proved to be positively cold. In another case, 9 out of 30 possible ones proved positive. The warm points took a longer time and were less clear. Finally 10 out of 30 on the author proved positively warm; on another subject, 5 in 15; another had only cold sensations; another, for two days, had 10 cold and 10 warm points.