as based on analogies of the most superficial kind. Thus: memory implies related parts; it corresponds, therefore, to growth in the structure. Visualization is the mental struggle for complementary ideas; it corresponds, therefore, to a physical process of regeneration in a disrupted structure. "Memory and visualization are thus at opposite poles of thought."

Perhaps the most startling bit of psychology is found in the chapter on 'The Inner Organs of Expression.' The general thesis of the chapter is to the effect that, as there has been a parallel development between the outer body on the one hand, and an inner neural body on the other, we may expect the inner as well as the outer to retain some traits characteristic of more primitive stages, and these may become the organs for acquired characters. The physical basis of reasoning is sought for along this line: Reasoning is a process of rejecting dissimilars and accepting a similar. Now recoil from the dissimilar and the acceptance of the similar is a tendency of unicellular organisms, like the *amœba*. Reasoning has no new element. Here consciousness shows its elementary and primitive character, whereas digestion demands a hundred independent reactions. The naïveté with which the process of reasoning is here conceived is scarcely to be matched this side of the earliest efforts of the Greeks, and while there are many problems proposed throughout the book which challenge attention, the author's psychology is certain to awaken distrust as to his solutions. If they are right it is not because of his processes.

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HEARING.

Der Tonvariator. L. WILLIAM STERN. *Zeitschrift f. Psych. u. Physiol. d. Sinnesorgane*, 30 (5-6), 1902, pp. 422-432.

The instrument is a blown bottle, made of metal, without a bottom, but with a movable piston in its stead. The piston is moved by means of a spiral in such a way that the increase or decrease of the vibration rate is proportional to the angular velocity of the spiral. More than one bottle may be combined on the same stand. The range of a single bottle is usually about an octave; less, if the pitch of the bottle is very low. The instrument is doubtless a very useful source of sound for many purposes.

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