

*A Theory of Time-perception.* W. P. MONTAGUE. *American Journal of Psychology*, Vol. XV., No. 1, pp. 1-13.

The author has formulated the problem of the 'specious present' in the question, 'How is it that at any one moment there can appear to be present several moments?' The author points out that there is a difference in the change-rate of the particular contents of consciousness and of the general state of consciousness, and that the amount of perceived time is measured by a finite differential ratio between these two changes.

Every psychosis may be considered as made up of two inseparable aspects, the objective and the subjective, the former being the content of consciousness which is the object of attention, the latter the whole system of conscious contents, including the incoming content. This incoming content is perceived as an object only as projected on a subjective background of pre-existing states. These two phases of a psychosis exhibit differing rates of change. A change in one conscious state is necessarily attended by a change in the system of states of which that one is about to form a part, but the change in this one state is greater than that in the system of states. The perception of a change undergoes modification less rapidly than the change that is perceived.

Now, although the time in which these changes take place and the changes themselves may be infinitely small, yet the ratio of the one to the other remains finite. This ratio may be represented by  $\frac{do}{ds}$   $o$  and  $s$  being respectively the objective and the subjective aspects of the psychosis. When this ratio is greater than unity, finite portions of time and change are perceived. When this ratio increases, *i. e.*, when  $\frac{d^2o}{ds^2}$  is positive, the specious present seems to increase; when the ratio decreases and the second differential is negative, the specious present seems to decrease.

The *value* of these second differentials marks the perceived *rate* of time. Just as  $\frac{s}{o}$  varies as  $\frac{do}{ds}$  so do the first and second differentials vary inversely, and, the longer an event endures, the greater the value of  $\frac{do}{ds}$  and the less the value of  $\frac{d^2o}{ds^2}$  the rate of change. The further past an event is, the more slowly does it increase in pastness, a conformity of time-perception to Weber's law.

The rhythmic character of consciousness results from the change in the specious present. The specious present tends to increase, but soon this tendency is counterbalanced by the inability to attend to a larger number of things; the degree to which each thing is attended is inversely proportional to the number of things. The ~~time~~ comes when we can not attend to the content if it is extended, and so a new present is built up about a new sensation as center.

True memory differs from this sort of immediate consciousness of the past, (1) because the remembered event is projected upon a subjective background very hazy and purely schematic; and (2) because the remem-

bered event is less noticeably projected upon the concrete background of the specious present in which the act of memory takes place. Familiarity is an experience of the present with a fringe of the past; memory is an experience of the past with a fringe of the present.

To meet a possible difficulty, the author considers the question: 'What subjective background has a single sensation which arises when one is aroused from a state of unconsciousness?' The background for such a sensation, after its origin, would be composed of the image-traces of the sensation itself. Before such a background has developed, the background must be composed of the physiological concomitants of the sensation. The symbol for the specious present, taken physiologically, may thus represent a condition just antecedent to perception. In this way we can understand how it is that the time-form of a psychosis arises simultaneously with its content.

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REVUE DE PHILOSOPHIE. May, 1904. Pp. 519-642. *Un Caractère de la Philosophie Moderne: le 'Mathématisme'* (pp. 519-541): X. MOISANT. - The attitude of Spinoza and Leibniz, culminating in the present worship of mathematical symbolization in philosophy is like a group of barren rocks in an otherwise fertile soil. It is only materialism over again; it reduces spirit to body. *La Théorie Physique, son Objet, sa Structure* (2d Article) (pp. 542-556): P. DUHEM. - A physical theory represents a group of experimental laws as simply, completely, and exactly as possible; an economical classification. We have a natural *faith* that these theories have ontological validity; this is confirmed because they enable us to predict. *Sur la Matérialisme Scientifique (suite)* (pp. 557-567): P. VIGNON. - Phenomena of mimicry are explained by the very psychic factors (will) which M. Le Dantec calls epiphenomenal. Thus we recognize Cl. Bernard's 'directive idea.' What this really is remains to be determined (*à suivre*). *L'Abstraction Scolastique* (pp. 568-573): COMTE DE VORGES. - Reply to M. Bernies. The evidence for the intellectus agens lies in its necessity as a basis for thinking; of course it is not observable. Neither is the heart-beat, normally, yet being indispensable for life we believe in it. *Fénelon Métaphysicien (Oeuvres Inédits)* (pp. 574-597): E. GRISSELLE. - This gives the text of Fénelon's remarks on the 'Nature of Man explained by simple notions of Being in general' at the end of his *Lettre sur le culte interieur et exterieur (à suivre)*. *Analyses et Comptes Rendus*: Félix Thomas, Pierre Leroux: C. HUIT. E. Lambert, *Fonction du Droit Civil Comparé*: CH. B. E. Fournière, *Les Théories Socialistes au XIX<sup>e</sup> Siècle. De Babeuf à Proudhon*: E. BARON. N. Kostyleff, *Esquisse d'une Évolution dans l'Histoire de la Philosophie*: R. A. DUFF, *Spinoza's Political and Ethical Philosophy*: H. LÉARD. M. Salomon, *Collection des Grands Hommes de l'Église au XIX<sup>e</sup> Siècle*: Mgr. Dupanloup: TH. G.