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# INSTINCT AND THE UNCONSCIOUS

II

BY

CHARLES S. MYERS

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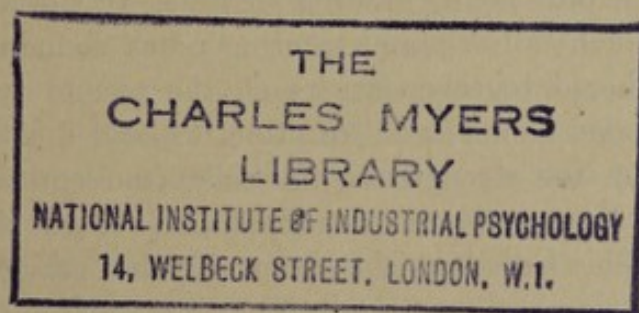
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# INSTINCT AND THE UNCONSCIOUS<sup>1</sup>.

## II.

By CHARLES S. MYERS.

AN important initial aim of Dr Rivers's paper is to find a satisfactory psychological definition of instinct, and he bases it on the 'all-or-none' principle. To me this result is of special interest, as it recalls an earlier Symposium, on the nature of sensation intensities, in my contribution to which<sup>2</sup> I endeavoured, mainly on the results of Sherrington's researches, to apply the same principle to a differentiation of various classes of sensation and of reflex action. On that occasion I pointed out that three classes of reflex action are easily recognisable. There is (i) the simple 'all-or-none' reaction, illustrated by the extensor thrust reflex which is obtainable by pressing the skin beneath the pads of a dog's hind foot and is practically unaltered by varying, within certain wide limits, the strength of the ingoing stimulus. The same 'all-or-none' principle has been found in the striated muscle of the frog, and there can be little doubt that it holds for medullated nerve fibres also. "Their increase in *intensity* of function seems to depend on a greater *quantity* of elements (muscle fibres or nerve fibres) taking part in the action... Each element follows the 'all-or-none' principle<sup>3</sup>," although different elements may be differently sensitive, needing a weaker or stronger stimulus to excite them. In this sense only is any grading possible. If, therefore, we can imagine groups of such 'all-or-none'-reacting reflex elements, of varying sensitivity, gathered together, we reach the second type of reflex action, (ii) the 'graded monophasic' reaction, which I illustrated by the scratch reflex, where the strength of the reflex movements can be graded in amplitude, force and frequency, according to the intensity of the stimulus. This I distinguished from (iii) the 'graded diphasic' reaction, where two simple diametrically opposite reflexes (*e.g.* those of flexion and extension of a joint) are so integrated that the activity of the pair is balanced, as it were, on a knife edge, in a state of continuous tone or (else) posture,—“a condition which may be described as a state of active equilibrium of the double reflex.” From this state the activity of the reflex “may be made to swing in one or other of two opposite directions as between two poles,” and a condition of temporary equilibrium or

<sup>1</sup> A contribution to the Symposium presented at the Joint Meeting of the British Psychological Society, the Aristotelian Society and the *Mind* Association, in London, 12 July, 1919.

<sup>2</sup> This *Journal*, 1913, vi. 137-154.

<sup>3</sup> *Ibid.* 143.



adaptation may be set up within wide limits of such swing. The "afferent impulses which cause (or are set up by) reflex *contraction* of a group of muscles governed by one centre of the double reflex simultaneously cause *inhibition* of contraction in the antagonistic group of muscles governed by the other centre of the same reflex. It is the special rôle of such reciprocal graded inhibition to procure an exact adjustment between the strengths of incoming stimuli and outgoing discharge<sup>1</sup>."

The 'all-or-none' and 'graded monophasic' reflexes are characteristic of the spinal cord; each reflex element is easily fatigable and shows a well-marked 'refractory period,' during which the movements produced by it are inexcitable. The full-blown 'graded diphasic' reflex, on the other hand, occurs in the decerebrate animal, in which the spinal cord retains its connexion with the bulb, pons and mid-brain; it is devoid of refractory period: its activity is continuous and, within certain limits, it is indefatigable. The outgoing impulses, instead of being periodically cut short, outlast the stimulus, so as to produce continuous, instead of intermittent, reflex muscular contraction. Moreover, prolonged excitation of one member of the double reflex, accompanied by prolonged inhibition of the other member, tends to give way to a reversal of these processes: the balance, when disturbed, swings sooner or later in the opposite direction.

It is not difficult to imagine that far more complex groupings of reflexes occur in higher regions of the central nervous system, giving rise, for example, to what may be described as (iv) the 'graded polyphasic' reaction, where one complex reflex action may be followed by one or other of a variety of complex, not necessarily wholly antagonistic, reactions, according to the condition of the centres concerned.

My object in such classification of the reflexes was to point out (a) that the 'heat and cold spot' systems of cutaneous sensibility bear a striking analogy to the first class of reflex actions, in respect of the 'all-or-none' principle, the absence of adaptation, the easy fatigability of the spots and the different degrees of sensitivity of different spots; (b) that in the 'warmth and cool' system of cutaneous sensibility (and in the paired 'blue and yellow,' 'red and green' systems of retinal sensibility) we can find an equally striking analogy with the third class of reflex actions, in which gradation, adaptation and (in vision) reversal are such characteristic features; (c) that auditory sensations—where neither the fatigability and 'all-or-none' principle of (a) occur, nor the bi-polarity and adaptability of (b),—may be likened to the second class

<sup>1</sup> This *Journal*, 1913, VI. 146-7.



of reflexes. And it seems possible that the peculiar contrast relations and possible fusions between the taste sensations of sweet, sour and salt<sup>1</sup>, may prove analogous to the behaviour of the fourth class of reflex actions which I have sketched in this paper.

But Dr Rivers has now enlarged this series of attempted analogies; he has ingeniously extended it to instincts. He considers that in instincts may be recognised the 'all-or-none' principle, "the crudeness, the vagueness of spatial reference, and the immediacy and uncontrolled character of the response, which are shown by the protopathic form of cutaneous sensibility."

I propose to try to cast the net even wider. Can we usefully bring still other modes of mental activity into analogy with the various reflex and sensory systems already classified? Let us turn first to pleasure and displeasure. There can be no doubt that they are finely graded, and are hence not analogous to the first simple 'all-or-none' class. There can equally be no doubt that pleasure and displeasure must be grouped as antagonistic, incompatible, incopresentable members of a pair, that they are set as on a swinging balance, and that they are readily susceptible to equilibrium and to adaptation. Their likeness to the third or 'graded diphasic' class is therefore unmistakeable.

Now we have a considerable body of evidence that pleasure and displeasure are intimately dependent on the activity of the optic thalami. But the striking characteristic of thalamic activity is its 'protopathy.' When through injury or disease cortical control is removed, 'thalamic' affective and sensory experience becomes grossly exaggerated, diffuse, practically gradeless, with little reference to subject or object. We conclude, then, that although in the intact human organism pleasure and displeasure belong to the 'graded diphasic' class, they are nevertheless built up from the more lowly 'all-or-none' class<sup>2</sup>.

But the optic thalami are concerned not only with protopathic sensibility and affectivity but also with the emotional experiences which Dr Rivers agrees to include in the term instinct. If, as has been just pointed out, sensory and affective experiences become graded owing to cortical control, there seems *a priori* no reason why (at least some) emotional experiences should not acquire similar gradation, and yet retain their specific character. Moreover if, as has been previously maintained, we can distinguish several classes or levels of reflex actions, there

<sup>1</sup> Cf. my *Text-book of Experimental Psychology*, Cambridge, 1911, I. 103, 105-6.

<sup>2</sup> I suggested a similar complex origin of colour sensations in the Symposium on sensation intensities (*loc. cit.*).



seems *a priori* no reason why different instinctive (including emotional) experiences should not belong to different classes or levels, some obeying the 'all-or-none' principle, others being graded.

Certain emotions, sentiments and attitudes are clearly on the same plane as the graded affections of pleasure and displeasure,—for example the antagonistic pairs of self-assertion and self-abasement, self-confidence and self-distrust, certainty and doubt, familiarity and strangeness. But Dr Rivers would probably exclude these experiences from his definition of instinct. He accepts "the position . . . that such emotions as fear and anger . . . belong to the domain of instinct"; these, however, are the only emotions which he expressly cites as characterized by complete absence of gradation.

Now it is quite obvious that fear, anger and, I would add, sexual and maternal love stand on a different plane from pleasure and displeasure and from the other pairs of antagonistic experiences just mentioned. They are far more potent and passionate, they obtain far stronger hold over the individual, they are of rarer occurrence, and they are of greater importance for the preservation of the species. They cannot be grouped in pairs of incompatible, incopresentable members; there is no single emotion exactly antagonistic to fear, anger or love; indeed in their later development, organization and combination, a variety of mental states, not necessarily antagonistic, may ensue from any one of them. They thus come to resemble the fourth or 'graded polyphasic' class of reaction.

I find it difficult to accept Dr Rivers's contention that in children and animals fear and anger obey the 'all-or-none' principle. Surely children and animals may experience mere timidity and annoyance, on the one hand; or they may suffer uncontrollable terror and anger, on the other; or any grade may occur between these extremes. Nevertheless, within certain limits I believe Dr Rivers's view to be practically correct, for it seems to me that *at their first appearance* fear and anger cannot but *tend* to follow the 'all-or-none' principle. This also occurs in the case of adolescent 'falling in love' or 'becoming religious.' At their first entry such experiences must *tend* to react 'for all they are worth.' If one could assume that the experiences were *entirely* new, I would omit the words 'tend to.' But although no experience can ever be entirely new, so close is the approximation in these cases that the two words have hardly more than a theoretical value. Still, with the further growth and repetition of such instincts, with the increasing prominence of intellectual factors, and with the developing powers of comparison and self-control, the 'all-or-none' principle quickly gives way, these instincts become graded, and



analogy to the first class of reflex actions is replaced by analogy rather to the fourth.

But, we may ask, does not every experience obey the 'all-or-none' principle on the occasion of its first occurrence? Does not the first pleasure or the first sensation of sound obey the same principle? No doubt the impossibility of determining the moments (if they exist) when such experiences *first* occur, must rob our answer of any practical importance. Yet it can hardly be ruled out of theoretical consideration, if my agreement with Dr Rivers's definition of instincts is limited practically to the first occasions of their appearance. Indeed I am disposed to think that Dr Rivers is fundamentally in agreement with me, for he writes: "as soon as an animal has acquired experience of any kind, it becomes a matter of the greatest difficulty to distinguish between the innate and the acquired conditions."

In a previous Symposium on instinct and intelligence, I gave reasons<sup>1</sup> for regarding their separation as a convenient but purely artificial act of 'abstraction.' I maintained that in the intact organism "there is not one nervous apparatus for instinct and another for intelligence<sup>2</sup>." For me, instinct wholly severed from intelligence is indistinguishable from reflex activity. Let me endeavour to justify this psychological standpoint on the grounds of further physiological parallelism.

The optic thalami, the probable seat of 'abstract' instinctive experience, never function in the intact 'individual' without some measure of cortical control. The cerebral cortex and the thalami have evolved from a common origin,—the prosencephalon, which contains within it the rudiments of later cortical and thalamic structure<sup>3</sup>. Only from injury or disease can the thalami act independently of the cortex. Now just as the prosencephalon has become differentiated into the optic thalami and cerebral cortex, so, I suggest, 'abstract' instinct and intelligence have evolved from a common origin, neither having a separate existence in the intact organism. Herein, I think, lies the *crux* of the difference between Dr Rivers's views and mine. He regards instinct as having "led the animal kingdom a certain distance in the line of progress," whereupon "a new development began on different lines,"—a *new path* being

<sup>1</sup> This *Journal*, 1910, III. 209-218, 267-270.

<sup>2</sup> *Ibid.* 267.

<sup>3</sup> Since this has been printed, I have come (mainly from correspondence with Prof. Elliot Smith) to realise that it has embryological rather than functional significance. But the general argument is unaffected: in lower vertebrates some common 'organ' is doubtless mainly responsible both for 'intelligent' and 'instinctive' activity, and these functions in the highest vertebrates have become more fully differentiated and transferred to two different 'organs,' the cerebral cortex and the optic thalami.



started, "which utilised such portions of the old as suited its purpose...." In other words, he regards intelligence as something later added to instinct, while I regard both as differentiated out of a *common origin*. His is broadly a synthetic, mine an analytic concept of mental evolution.

I am prepared to go even further. I doubt whether not only 'abstract' instinct, but also the pure 'all-or-none' principle, by which Dr Rivers seeks to define it, exists in the intact human organism. For it is only in the 'spinal' animal (*i.e.* when the cord has been severed from the brain) that the 'all-or-none' principle of the extensor thrust reaction has been purely studied in the dog. It is only under abnormal 'clinical' conditions that heat and cold spots have been completely studied and the 'all-or-none' principle of their reaction fully and cleanly laid bare; and even in these circumstances the 'all-or-none' principle is only approximately obeyed. In the (intact) lower animals we have no evidence that this principle exists to the complete exclusion of graded forms of sensibility<sup>1</sup>.

Dr Rivers is quite ready to admit that the 'all-or-none' principle does not hold for many instances of instinctive behaviour among insects. He attributes it to some unknown controlling process, distinct from intelligence. But despite the profound differences in the structure of the invertebrate and vertebrate nervous systems to which he invites our attention, I prefer to subscribe to an earlier sentence in Dr Rivers's paper,—“The behaviour of animals does not differ from that of Man in kind, but rather in the relative degree and importance of the different kinds of reaction of which the behaviour consists.”

I have little space to consider whether it is correct to state that instinctive reactions are thrust into the unconscious because, being 'protopathic' in character, they are incompatible with maturer 'epicritic' experience. I do not think we have adequate evidence that in the intact organism the protopathic (*p*) and epicritic (*e*) systems of cutaneous sensibility have undergone 'dissociation,' in the sense in which the term is here used as implying the more or less independent, subconscious survival of a suppressed, non-utilised portion of experience. We find merely a composite unity  $p + e$ , the constituents of which, as I have just pointed out, are only clearly differentiated and separable after neural lesion. So, I maintain, 'abstract' instinct (*ins.*) and intelligence (*int.*), though neurally differentiated, are inseparable in the intact organism; they occur as a composite unity  $\overline{ins. + int.}$ . It seems to me that the protopathic element is 'fused' rather than 'dissociated.'

<sup>1</sup> I am confident that protopathic sensibility will not be found in a pure state on the normal human nipple and glans penis where typical epicritic sensibility is absent.



Moreover, I cannot agree that what is dissociated in any conflict between instinct and intelligence consists merely in the protopathic characters of the former, and that it is these characters that "emerge in sleep or in such states as hypnotism" or after excessive shocks and strains in which the control of intelligence is supposed to be in abeyance. Loss of control is not, I think, to be confused with protopathic reaction. The dreaming or hypnotised person exhibits graded instincts.

Whilst I agree fully with Dr Rivers that dissociation and repression occur through incompatibility and incopresentability, I would point out that the former are not the only solution for the latter. When *p* and *e*, or *ins.* and *int.* are opposed, fusion and integration, instead of dissociation and repression, may well arise from their compresence. Repression *may*, of course, occur when instinct meets intelligence, but it is not confined to such conflict. It may also occur when a lower form of instinct meets an uncompromising, incompatible, higher form, when one affective experience meets another diametrically opposite to it, or when two uncompromising, incompatible, cognitive or intellectual experiences strive independently to coexist. What is then thrust into the unconscious is not merely or necessarily the protopathic constituents, but the entire experience (cognitive, conative and affective, intellectual, emotional and 'instinctive') which is involved in the incompatible conduct. While I am writing this article, a clock strikes or some one asks me a question. I am 'not at home' to these experiences. They are temporarily inhibited or repressed, but a little later I may become aware of them<sup>1</sup>. Or I may forget an experience because it is unpleasant. Yet what is dissociated, what returns when control is in abeyance, is in neither case an instinct, nor is it characterized by protopathic features.

What returns from the unconscious has often suffered strange metamorphosis. I have already written at too great length to discuss the causes of incomplete repression, or the purposes of the sublimation, condensation, symbolism, etc., which dissociated experiences undergo in the unconscious. But it is clear that out of the unconscious there emerge not merely the more or less imperfectly repressed activities which have been dismissed thither through dissociation from consciousness, but also fresh activities, intellectual as well as instinctive. In the unconscious germinate (perhaps in accord with Mendelian conceptions) new instincts for the species and the creative flights of individual genius, which, when the time is ripe, sprout forth into consciousness for its use.

<sup>1</sup> I am, of course, fully aware of the differences in fate that may attend an inhibited cognitive and a dissociated emotional experience.







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