On Potentiality and Actuality in Man. By J. Stevenson Bushnan, M.D., Fellow of the Royal College of Physicians of Edinburgh; late Senior Physician to the Metropolitan Free Hospital; Resident Proprietor of Laverstock House Asylum, near Salisbury.

Potentiality refers to an idea sufficiently well known both in physiology and psychology. Thus, in physiology, a serous empty sac is a potential cavity; and, as respects potentiality, in reference to mental phenomena we may conveniently conceive it as parallel to the potentiality of the phenomena of life existing in the germ at the moment of its first detachment from the parent, previous to the commencement of uterine life.

Potentiality may be viewed as belonging either to the individual, as pointing to the particular mental history of one man; or, in a larger view, to men in general as constituting a species in the animal kingdom; or, lastly, to an individual as the type of a high standard of the human race. It is this last form of potentiality to which the following brief observations chiefly relate. To such a type of mankind the observations we have to make on actuality also belong.

Potentiality, as belonging to the germ, necessarily includes the susceptibility of every possible mode of mental existence which is to be realized in the future life of the individual into which the germ is to be developed.

The first potentiality to be noted is the great potentiality of consciousness. This great potentiality of consciousness with striking contrast distinguishes man from the most exalted member of the vegetable kingdom. Thus the most elaborate development of life does not in the least degree imply actuality of consciousness. It might even be conceived that the human germ might attain an actuality of life little inferior to that possessed by an ordinary full-grown man, without having attained the actuality of consciousness. Such a case at least is not to be described so much as impossible, as next to unattainable under the ordinary circumstances of life at the surface of the earth. How nearly such a case approaches to realization appears from the well known histories of the all but complete development of anencephalous fœtuses.

Of mere consciousness in its most limited degree, animals very low in the scale seem to be susceptible. Whatever

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animal is susceptible of pain, is, by the very terms of that proposition, declared to be susceptible of consciousness. But in the lower animals in which pain occurs, the consciousness of pain may occur for a moment and cease; it may again occur and cease, and so on for a number of times, and yet each pain may be, as it were, a separate existence. Such an animal may have no other consciousness than the consciousness of pain; in which case it will possess as many mental lives, of short duration indeed, as occasions during its bodily life occur on which it has suffered this consciousness of pain. The case of such an animal is not, however, altogether without a parallel in man; for there may be states of consciousness which occur but a few times during his life, at intervals so long, that, on each separate occasion, no reference is made to the other occasions on which the same consciousness took place. In the case of such an animal as that just referred to, it is manifest that there is no foundation for identity. The elements which compose the body may, or may not, remain the same throughout the whole period within which these several occasions of pain have arisen; but there is no foundation in its mental life for identity. Nevertheless there is manifestly no need for any other kind of consciousness of pain to establish a feeling of identity:—what is wanted is the susceptibility of recognizing each consciousness of pain as a repetition of a form of consciousness of pain. This consciousness is equivalent to mental existence, and if there be no connexion between several successive states of consciousness, then there are as many mental existences as there are consciousnesses, but no identity.

To return to man. The potentiality of consciousness implies the potentiality of a feeling of mental existence so long at least as each state of consciousness lasts, but does not imply identity.

The next great potentiality to that of consciousness is the potentiality of the notion of time. Every animal which can recognise a state of consciousness as resembling a consciousness which occurred before, has the potentiality of the notion of time, even although between the periods at which these successive states of consciousness arise, it may have been dead to all feeling. An animal may recognise several successive consciousnesses of pain as resembling each other, while each suggested those which preceded it, so as to have an imperfect notion of successive interrupted states of existence. The same animal may have

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successive consciousnesses of pleasure, each suggesting those which preceded it, and yet each of those consciousnesses of pleasure, may not suggest the consciousness of pain; and thus the animal may have two separate courses of mental existence each independent of the other, or even an indefinite number of such courses of mental existence corresponding to the several kinds of consciousnesses of which it is susceptible, provided each kind do not suggest the others, but only those of its own kind. The bearing of this view on some states of mental derangement is obvious, and to which, upon a future occasion, I propose to allude.

The third great potentiality is the potentiality of identity. This potentiality implies that each state of consciousness, of whatever kind, remembers the previous successions of consciousness.

The next great potentiality is the potentiality of the notion of space.

Of all the modes of consciousness, by far the most predominant, particularly in early infancy is sensation. In every sensation there is the generic consciousness common to all mental phenomena, with the additional element of an absolutely fixed locality. Let the sensation be produced by the most delicate touch of the finest possible needle in the infant but just born. This sensation consists of a consciousness and of a local seat, namely, in the minute area of space occupied by the point of the needle. This, then, is the character of all sensation; consciousness with a local seat. The human germ, then, unquestionably has the potentiality of existing in consciousness, combined with a feeling of locality. No anatomy is required to determine this truth. Pure metaphysical reasoning is but confused by reference to anatomical knowledge. The only evidence admissible in metaphysics is, reflection on the subjects of consciousness—whether direct or by testimony. It is certain that every sensation analogous in magnitude to that supposed to be produced by the point of a needle, has a local seat, just as definite, whatever be its origin.

The next great potentiality is the potentiality of the notion of motion. From an early period of life the muscular fibres of the locomotive system contract spontaneously in various automatic acts, as they are called, long before distinct motions are performed by volition. The contraction of every fibre, or at least of every minute portion of such a muscle, by affecting the nervous filament spread over it, produces a sensation. This sensation, like all other sensations, has a local seat, namely

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in the area where the impression is made by the contraction of the fibre. It is manifest, however, that a single fibre, or a minute portion of a muscle, cannot move without the nervous filament being at the same time moved. Hence the beginning of the sensation must involve one locality, and its termination another locality. Thus the sensations, which take place during the contraction of muscular fibres, leap, as it were, from one locality to another. This is the earliest actuality of motion; the realization of the potentiality and the notion of motion. "The element of motion is involved in the sensation attendant on the contraction of every portion of muscular substance supplied with a sentient nervous filament." (Dr. Seller. See *Report of the British Association for* 1850, p. 135.) When the hand passes over the surface of the body accidentally, or under automatic movements, there is another actuality of motion. When an object depicted on the retina changes its place with the movements of the eye, there is another actuality of motion. If any one doubts the existence of distinct sensations under the contraction of muscular fibres, let him attend to his own feelings in the act of yawning. In this act he exercises no volition, and for that very reason, perhaps he is more distinctly sensible of the distinctive feelings which attend the movement of the several muscular fibres concerned. In the early period of infancy, all the muscular movements are of the same character as the act of yawning, that is, movements determined by what physiologists name reflex or excito-motory acts. It is found that every individual possesses a perfect knowledge from his feelings of the attitude in which he happens to be at the moment; that is to say, he knows by the sensations attending the particular muscular acts, by which his present attitude is determined, the exact position in which the body stands, sits, or lies. If a man awake in the night in the most complete darkness, he knows at once in what attitude he is placed. This knowledge, doubtless, is the result of the attention given in early infancy to the sensations accompanying the muscular acts determined by reflex action, rather than by those which are, at a later period, the effects of volition.

If a sleep-walker were suddenly to awake in a particularly dark room while he stood in some unusual attitude, he would at once know with the most perfect accuracy what that attitude was. Let the metaphysicians say whether this knowledge be subjective or objective. No physiologist will for a moment doubt that such knowledge can only be subjective.

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