Short Notes and Clinical Cases.

THE BIOLOGICAL ORIGIN OF WEEPING.

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IN a former article entitled "Biological Aspects of Laughter" (*Southern Calif. Practitioner*, March, 1920) I endeavoured to prove that laughter always indicates a triumphal state of consciousness or an effort to attain to that state, and has its origin in an altruistic impulse which impels members of a herd of gregarious animals to express their triumph upon seizing prey, or overcoming an enemy, in such a manner as will summon other members of that herd to join in the spoils, as well as temporarily distracting the triumphant individual from selfish enjoyment of those spoils until the rest of the pack arrive. Analysis of any comic situation in modern life can always elucidate the fundamental cause of triumph in the laughter which ensues.

Now 'weeping' is much more difficult of analysis and is also of more primitive origin. Weeping is primarily egoistic, whereas laughing is normally social and altruistic. Infants come into the world to weep, or at least with that facial expression, and not to laugh at the streaks of sunrise or flickers of a tallow candle. Also, normally, they yell vociferously. We are not, for the moment, concerned with the yell, but we are deeply interested in the facial expressions which suggest tears. Physiologically, the facial expression is adapted to protecting the eyes against irritation and stimulation as well as against increased intra-ocular tension (according to Darwin), and the tears (if and when they make their appearance) to wash away irritants from within the lids, and to moisten the cornea. Now in the lower animals, such as the dog, excessive lachrymal secretion is indicative of (1) fatigue, especially from prolonged vigilance on behalf of the pack; (2) certain diseased states; (3) foreign matter within the lids. All of these conditions are disabling from the hunter's viewpoint, and also of temporary duration. Especially is fatigue common to all members of the herd at times, and the presence of lachrymation is probably the first indication to the herd that one of their members is on the verge of exhaustion, and needs relief and forbearance. Now, what holds good for the dog and wolf pack should also hold good for our anthropoid ancestors, who were also gregarious,

aggressive hunters, almost certainly carnivorous. These views receive support from an editorial in this JOURNAL (February, 1924), which stresses the importance of fatigue, exogenous and endogenous, in the production of the neuroses, in which conditions weeping is common. It may be remarked, too, that in yawning, even without forcible closure of the eyes, tears may be produced at times—a fact which suggests a central origin for the phenomenon and lends some support to the 'fatigue' theory here outlined.

Hence it appears that a function of the nervous system, originally intended as a response to physical disorder, has gradually evolved into an expression of psychological helplessness. Expressing the idea in anthropomorphic language, we might say that the forbearance of the herd towards such outward signs of incapacity has gradually led Nature to simulate those symptoms as an expression of psychological inadequacy in the human herd, being at times produced at will by the individual. Physiologically, this has probably meant a shifting upwards of the nerve centres concerned, gradually over a period of thousands of years, from the diencephalon to the cortex, where some authorities now place them (cf. Kinnier Wilson, this JOURNAL, February, 1924, p. 299). From the standpoint of this paper, however, the question of prime importance is the effect of the phenomenon upon the herd rather than upon the individual presenting it.

For the purpose of analogy, let me illustrate, firstly, the purely biological, and then the purely psychological aspect.

The wolf pack is about to hunt; one of the members has broken his leg and can neither run nor defend himself; so, likely as not, his fellow-wolves will, with crude mercy, tear him to pieces.

Another member of the pack is sound in wind and limb, but, having been sentry, indicates some weariness by lachrymation, or his vision is similarly obscured as the result of dust or pollen thrown into the eyes during the last hunt. He can run with the pack, and is formidable at close quarters, but is not much good for the immediate purpose of hunting; so, by common consent, he runs at the rear of the pack and is urged and guided by his neighbours. They instinctively know that he is a good warrior and will recover, but is in need of forbearance.

And now to consider the purely psychological aspect.

Self-pity lies at the base of man's tears, and when we see these tears we decide that he is self-confessedly inadequate and is making an appeal for forbearance and even for a greater power than his own to take up his burdens. Hence the emotional centres in the brain have gradually acquired the power of responding to this state of consciousness by producing such physical appearances as have led innumerable generations of gregarious animals in æons past to exercise forbearance towards one of their number. Thus, a simple protective reflex originally designed

to moisten the cornea of an over-vigilant animal has become elaborated to suit the exigencies of herd life, and more particularly of martial herds.

The fact that some weep on behalf of others merely means that they can appreciate the state of consciousness of the afflicted one and intensify his appeal by the addition of their tears. As in all forms of emotional expression, individuals vary greatly in their power of control, as well as in the irritability of their emotional centres and the appreciations in consciousness.

When tears are unheeded by such members of the herd as happen to be around, the process is apt to progress to 'sobbing.'

Sobbing consists of a spasmodic form of respiration closely resembling laughter, and the fact that the quick component is mainly expiratory suggests at once that it is but a counterfeit of the real fatigue or febrile respiration. Unlike tears, I believe that sobbing has, from quite early in the scale of evolution, been in part a cortical function. Most of us have observed that dogs, unwilling to run, do, on occasion, simulate extreme exhaustion by a similar change of respiration, which appears to the observer to be decidedly voluntary in its initiation. Unfortunately long association with man has rendered the dog a somewhat unsafe biological premise from which to argue. Be that as it may, the purpose of sobbing appears to be to summon a larger jury from amongst the herd, and is analogous to taking the case to the court of appeal. In this respect sobbing is a far more sane reaction than 'hysterical' laughter, which is likely to occur in some individuals under precisely the same circumstances, for such hysterical laughter is often a subconscious effort by the sufferer to create in his own mind an illusory sense of triumph over conditions with which he is utterly unable to cope. This type of person is, to a great extent, asocial, and, having no faith in the herd, chooses the path of illusion rather than a frank appeal to the herd. It invites contempt rather than pity, for even the primitive herd would be amazed at an exhibition of triumphant gesture which had no objective support to offer. It might frighten the herd, and achieve something thereby. The physiological components of sobbing and the tracts involved are fully described in the paper by Dr. Wilson above referred to.

The æsthetic tears which well up in some persons in response to the strains of exquisite music open up a much larger field of speculation. Briefly, it may be surmised that, at times, the individual experiences a feeling of helplessness in the face of those deeper problems of the universe, of which some music brings us within the range of intuition; and, again, some music suggests spiritual joy or peace to which we feel unable to attain.

Weeping, therefore, throughout the ages expressed helplessness to the observer. Originally a physiological response to actual physical

fatigue or disorder, it is now an elaborate counterfeit of that response engendered by a state of consciousness.

I have throughout referred only to conditions obtaining in the animal or man with physiologically perfect brains, and mainly in **relation** to the herd.