

manifested, not only by organs recognized as active, but also by such as have hitherto been viewed as obsolete. In many of the lower organisms, where structural differentiation is ill defined, vicarious function is readily fulfilled. The animal may, for example, be turned outside in with impunity, the vital integrity of the organism being still maintained unimpaired—the endoderm, already but feebly specialized, although set apart for assimilation, performing with ease the function of the ectoderm, that of elimination; while the ectoderm, in turn, assumes forthwith the power of assimilation, and discharges effectually a function hitherto foreign to it and performed previously by the inner layer. In the animal economy we see constantly enunciated the fact, too frequently ignored, that functional activity and structural integrity proceed together, hand in hand, and are regulated by a mutual action and reaction upon each other.

If the functional activity of any organ be augmented, but not unduly, the structural integrity will be maintained and be rendered more perfect. Again, the more complete the structural arrangement has become, the more likely we are to find the function actively performed. All visceral activities are now, through habituation, fulfilled in a somewhat automatic manner; and although these transitional states may at one time have excited a conscious sensation, they are at the present stage of evolution wholly ignored by the higher cells of the cerebral lobes which participate in feeling. What is true of one organ of the body is likewise true of all the others. It is, therefore, more than probable that the physiological changes recurring from time to time in the uterus are anticipated by, and in reality the sequence of, a molecular disturbance arising spontaneously in some centre located in the higher part of the cerebro-spinal tract, possibly somewhere in the medulla oblongata. The mere fact that the functions of the uterus may be revealed uninterruptedly after the spinal cord has been completely severed in the dorsal region is no criterion, and cannot justify us in concluding that there exists no representative higher centre. Structural evolution itself forbids the acceptance of such an hypothesis. Like all other nerve-centres fulfilling a similar dispensation, this uterine centre is undoubtedly beyond all volitional control, but is, nevertheless, capable of being disordered by emotional impressions. With this fact everyone is familiar. A sudden shock experienced during menstruation, and apart from any bodily injury, will produce, as I have frequently noted in some females immediate cessation of the flow, and even interrupt for a more or less indefinite length of time thereafter its amount and periodic regularity. The resulting disturbance will depend essentially upon the state of the nervous system and its proneness to molecular instability.

With the approach and appearance of the monthly flow, the whole frame, as one would

naturally expect, participates more or less in the change, and the amount of disturbance experienced, as well as manifested, is commensurate with the power the organism possesses of adaptation, and hence of equilibration. The simple determination of blood, because of increased functional activity, to the genital and, in many cases, to the other pelvic organs, of itself produces a definite alteration in the waves of molecular motion proceeding therefrom, and which, radiated in all directions, must necessarily affect the vascular state of other very important structures. In many chronic disorders, of whatever system, affecting the female, every observer must have remarked that, according to the menstrual type of the individual, there is often, either in anticipation or with the appearance of the flow, a proneness to aggravation, or in some very exceptional cases, it may be, to alleviation of symptoms, and with the cessation or disappearance a corresponding gradual reversion to the original already stationary or slowly progressive state. In some few cases the loss of blood may account for much of the disturbance manifested, yet it cannot be the sole factor. In many women, where, from some inexplicable cause, there is for a more or less indefinite period a total suppression of the characteristic discharge, we may detect frequently such a regularly recurring alteration in the symptoms or manner of the patient as to place beyond denial a direct relationship. In no class of functional disorder do we find so regularly and markedly an interference with the outward manifestation of uterine activity as in *epilepsy*, a disease the pathology of which is still undetermined. It is more than probable, however, that as we may consider the *epileptic female* as *epileptic* throughout, even to the finger-tips, the interruption of the periodically recurring functional change in the uterus is the result of some occult condition of the corpuscular elements governing the activity of this organ, and wholly independent of any defective structural state of the viscus itself. The structural integrity of the uterus may, however, eventually suffer, for inaction and overaction alike tend to exert a prejudicial influence.

Gestation, as a rule, although not invariably, determines for a period of nine months a cessation of the monthly recurring flow. Not infrequently, however, we see women who throughout one or more pregnancies continue perfectly regular, the amount or character of the flow being unaltered by the physiological process going on in the uterus. Usually the fertilized ovum affects in some unknown manner the uterine organ, thereafter destined to be its source of nutrition, and the gradual molecular variations so produced are radiated to the uterine centre, alter the corpuscular state, and determine the sequence of events. During the period of lactation, and consequent activity of the mammary glands, we find not only the manifestation of the monthly recurring functional change of the uterus held in abeyance, but also the activity