

ON WRITER'S CRAMP AND OTHER OCCUPATION  
NEUROSES.

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IN a previous communication the subject of training was considered, and the deduction made that a trained act differed from an untrained act in respect of the composition of the excitation processes mediating the act (*t*). That is to say, though the formula  $H + L = T$  can be applied to both the trained and the untrained act, the trained act contains more *L* and less *H* than the untrained act. In other words, training adds *L* and diminishes *H* (*t*).

When next we consider the various trained acts we daily perform, it becomes obvious that some of these require more conscious effort than others. Walking, for example, is entirely an unconscious act for a normal person, though it can come back to consciousness when the *L* in the excitation processes mediating the act has been diminished by fatigue, disease, or senility. On the other hand, the trained act of writing is never normally unconscious, which implies that the excitation processes mediating the act must always contain adequate *H*.

Co-ordinating, then, the simple facts that I can walk and think of something else, but cannot write and think of something else, with my fundamental equation—

$$H + L = T,$$

we find that, so long as the sum of the two factors *H* and *L* falls within the limits of *T*, the trained act of writing must always contain more *H* and less *L* than the trained act of walking.

But training implies an addition of *L* to excitation processes, and so the next inference is that the excitation processes mediating the act of writing cannot normally possess as much *L* as those of walking, simply because they contain more *H*. If, however, training and use imply the development and maintenance of the factor *L*, it would follow that excessive use would develop an abnormal amount of *L*.

The amount of  $L$  which could be considered excessive would be the amount which, when normal  $H$  were added to it, would give a sum greater than the value  $T$ . And we have to appreciate two possible danger-points where they are most likely to be in excess. The first danger-point is at the inception of the act, for even with such a highly automatic action as walking we give conscious attention, or extra  $H$ , to the action when it is initiated. Then, having initiated the process, the extra  $H$  of attention is withdrawn elsewhere, and the act left to be carried on more automatically, or with less  $H$ .

The consequences of the sum of  $H$  and  $L$  being in excess, or greater than  $T$ , were previously examined and found to be the production of spasm (2). We appreciate, therefore, that when spasm follows an attempted initiation of an act, the sum of the factors  $H$  and  $L$  in the excitation processes mediating the act must be greater than the value  $T$ . The factors favouring this spasm are :

(1) That it should be an act requiring conscious attention—much  $H$ .

(2) That it should be highly trained—much  $L$ .

A second danger-point would seem possible to be reached some little time after an act has been in action. In this case the start out is made near the danger-line, and the line itself reached when the  $L$  developed by the exercise has become large enough as the patient warms up to his work. Also when working near the danger-line, *i.e.*, when the machine is running approximately all out, a little extra conscious attention, or added  $H$ , would precipitate the crisis, or spasm.

Exercise, or training, do not, however, form the only means of adding  $L$  to the excitation processes mediating an act. Emotional tone, or  $L$ , can also be added by sepsis, or hysteria, or simply by emotion (2). But in all cases the spasm signifies that the sum of  $H$  and  $L$  is greater than  $T$  (2).

As regards treatment, it should be noted that rest alone should suffice to cure the case which has arisen through excessive use of the neuro-muscular system concerned, the rest, as the "Monday effect" in industry, or forgetting, shows, sufficing to allow some  $L$  to subside (3). On the other hand, when the excessive  $L$  is due to some septic, emotional or other process, while rest may ameliorate, it obviously does not touch the cause of the trouble.

There are also skilled movements made in sport and industry, in which the skill or judgment implies the possibility of applying adequate  $H$  to adequate  $L$ . If these movements be overtrained, the

content of their excitation processes in the factor *L* will become so large as to leave no room for the adequate *H* for judgment.

The affected individual will then be considered "off his game," or "off his work"—a state of affairs unfortunately hitherto confounded with fatigue, a quite different phenomenon. And when the condition has been brought about solely by overtraining the cure lies in rest until the excessive *L* has subsided.

This state of affairs may also be considered in terms of memory (3), or seeing (4).

The content of the excitation processes in the factor *L* then emerges as the memory trace, or the data for judging, which, when excessive, makes good judgment, or adequate *H*, impossible. The subsidence of *L* is, thus, equivalent to forgetting (3).

Again, as with writer's cramp, the content of these excitation processes in the factor *L* may be increased not only by overtraining itself, but also by any general emotional disturbance, in its turn produced by sepsis, or any other cause. In other words, "going off one's work" may represent an early stage of what, in more developed form, we term "mental disease."

*References.*—(1) Burrige, *Journ. Ment. Sci.*, 1929, lxxv, p. 371.—(2) *Idem, ibid.*, 1929, lxxv, p. 395.—(3) *Idem, ibid.*, 1930, lxxvi, p. 96.—(4) *Idem, ibid.*, 1930, lxxvi, p. 103.