

IV

"Second Wind"

What happens in people of fairly high energy who become exhausted and, shortly afterward, experience "second wind"? The physiology of the process is somewhat as follows: Each motor nerve reaching a muscle attacks the latter through its own special channels. The incoming neural current sets up metabolism there, and as the muscle is exercised, various chemical changes and decomposition products upset the local equilibrium so much that further reactions are impossible. This is the moment of complete muscle fatigue. But this condition, it now appears, is confined to certain tracts—or perhaps to certain chemicals—of each muscle fibre. If a different stimulus invades the latter, a fresh response occurs at once.

Does this not furnish a clue to "second wind"? You start off on a long walk over level ground. You hold your pace evenly, moving always in the same stride and manner. Soon you weary. Instinctively you change your stride. You may even walk faster, or trot, or run a little way. And lo! You have caught your "sec-

ond wind." You have tapped a new level of energy. By will power? By some mystic Yogi trick? Not at all! Simply by bringing into service a different set of integrators which switch off the old, worn motor nerves and switch in a fresh set. Remember that, when you move in one stride, you integrate your muscles in one pattern; and hence through a different set of spinal and cortical centers: and when you change to another stride, you integrate in another pattern, hence through the medium of some other centers. And, as in a kaleidoscope, a tiny change in the grouping of the elements involved in the integrative process develops an enormously different new pattern of action.

It seems likely, too, that "second wind" can be brought about in another way less favorable than the one just described. You are, for some reason, compelled to continue an activity without any marked variation of pattern; the work itself may be operating a machine in an automobile factory, every motion restricted to a nicety at every instant all day long. You must keep moving monotonously all day long and, perhaps, around mid-morning, begin to fatigue. The work becomes hideously distasteful; your mind wanders toward pleasanter things, your eye deserts its objective now and then for a fraction of a second. Suddenly something goes wrong. Your fingers do not make quite the right contacts; a piece of metal gets jammed in your machine, and you have to execute some

rapid emergency moves to save the apparatus from wreckage. This changes your stride by the very mechanism of fatigue itself. And here we see how the mind-wandering that is a well-known feature of all fatigue serves once more as a defense mechanism and also as a means of freshening you up by forcing a shift of action.

Least often the "second wind" is gained through a mental process. The routine worker in a factory, wearied by monotonous moves, may, as he fatigues, think of the disaster that will befall him if he does not keep plugging away at his dull job. He depicts in fantasy the wife and children going hungry and ill clad because he is out of work. He sees himself going from factory to factory seeking a new job and always failing because his last employer refused to give him good references, as a result of his botching his work when fatigued.

Now these random trends of mind are not so random as they seem; they are driving, *not always individually but as a mass*, in the direction of extemporaneous substitutes for the detested routine movements. And the livelier the worker's fantasy, the more probable the eventual upwelling of an adequate substitute. Some path of free association finally links up with the spinal nerve trunk which attaches to the motor nerves that have not been functioning in the routine work; and these fresh nerves now send their currents into the muscles. "Second wind" is now complete.

I have no doubt that there are many other channels over which shifting nerve currents may bring the same result to pass. The all but infinite complexity of the human nerve system makes that virtually certain. The tapping of "hidden reservoirs of energy" is not a whit more "spiritual" than the tapping of a keg of beer. A few more decades of research will, I suspect, enable us to see in the varieties of these double and triplex mechanisms of action the marks of some familiar types of personalities. Today the best we can say with safety is that *ease and rapidity of alternation in behavior bring with them an immense increase of effective energy, and hence that variability in motor action tends to make for "strong" personalities.* "Strength" here means, of course, the power to achieve desires. It has no moral implications. Weak personalities, on the other hand, are most often those which, *failing to fatigue easily and being sluggish in fantasy,* persist in monotonous behavior and hence, if they are poorly endowed with energy, soon break down or, if they have power aplenty, get nowhere with it or at least not very far. The "greasy grind" in college is such a specimen. So is the outwardly successful small business man who has won financial security by sheer plodding in one position.

If, then, you would learn to tap your energies to overcome certain types of fatigue, remember that you do not need new energy.

You merely need a new approach to the available energies. Your body is like an engine with a dual ignition system. Each cylinder contains two sets of spark plugs. But only one set is used at a time. When it becomes fouled by over-use, the engine begins to miss fire. Then the second set of spark plugs is switched in, and now your engine runs smoothly, on precisely the same supply of fuel as before. The throwing of a tiny central switch is enough to produce this immense improvement. No fresh fuel supply is tapped at all. All that is needed is an easy alteration of cortical activities. Cultivate a flexible attitude of mind which, at its best, we call open-mindedness. Then train yourself in versatility. Again and again we harp on this point. And we shall have still more to say about it later, when we study practical ways of economizing on energy.