

MEDICAL MATTERS.

INDUSTRIAL FATIGUE.

A most interesting abstract of a paper on "Industrial Fatigue," read before the Royal Society of Arts on January 12th by Dr. Charles S. Myers, Sc.D., F.R.S., Director of the Psychological Laboratory of the University of Cambridge, is published in the *Lancet*, of January 22nd. Dr. Myers says, in part:—

"We have no satisfactory definition and no satisfactory test of fatigue. If we define fatigue by its effects, by the diminished quality and quantity of work done, we confuse it with mere boredom, and we neglect the fact that in certain conditions fatigue may temporarily be accompanied by increased output, owing to deficient higher control and to abnormal nervous excitements, just as may occur in the early stages of alcoholic intoxication. For these reasons output is not a really satisfactory criterion of fatigue. Yet at present no better criterion is available.

FIVE FACTORS INFLUENCING THE INDUSTRIAL CURVE.

"The mental work curve has been analysed to show the presence and effect of five different factors—fatigue, practice, incitement, settlement, and spurt—which have been found of great importance in the curve of hourly or daily output by the worker.

FATIGUE AND PRACTICE.

"The mental work curve, in the case of an inexpert subject, will often fail to show signs of fatigue, because fatigue is masked by the varying amount of practice that continues, and comparison between successive periods of time is thus rendered impossible. With increasing experience the practice effects become less, and the fatigue effect would be expected to manifest itself earlier and more markedly; but with increasing experience the subject also begins to learn less fatiguing and more economical methods of working.

"Practice effects are invariably enormous at first and finally become minute. Conversely, when a subject loses a few days' practice the effects are hardly recognisable at first, but become more and more so later. As a celebrated pianist once observed: 'If I miss a day's practice, I notice the difference; if I miss two days' practice, my wife notices the difference; if I miss three days' practice, the public notices the difference.'

INCITEMENT, SETTLEMENT, AND "SPURT."

"Take a person away from his work for a few minutes and then let him return to it. He needs a short time to 'get going' again. The

effects of such a brief respite may be compared to the growing cold of an engine allowed to rest. Man likewise needs 'warming up' to his work. The inefficiency that occurs after such a brief period of rest is due to the loss of what has been technically termed 'incitement.' When work is resumed after a longer rest there occurs not only the loss of incitement, not only the loss of practice (*i.e.*, the decrease of manipulative or mental skill), but also the loss of a further factor which may be usefully distinguished as 'settlement,' the absence of which is responsible for the well-known 'Monday morning effect.' It occurs among those who have spent the weekend restfully as well as in those who have spent it in dissipation.

"The fifth and last factor is that of 'spurt.' No one puts forth his maximal power of work. Our muscular or mental capacity seems always to be held in restraint; our reserve powers are inhibited by higher control. In certain circumstances this higher control is itself fatigued or inhibited. Therefore, occasionally in conditions of fatigue an increased amount of work may be performed. Again, owing to extreme excitement due to emotional states, or as the result of increased interest or effort, a temporary spurt may affect the work curve. Two such spurts, 'initial' and 'end' spurts, may occur quite involuntarily. The first is the result of 'freshness,' analogous to the behaviour of a horse just released from its stall, while the end spurt may be likened to that of the tired animal approaching its stable.

"Initial spurts are inevitable, and end spurts do little harm, but intermediate spurts, especially when they follow annoying and worrying delays, are to be deprecated. They are apt to be succeeded by periods of reduced activity, just as the excitement produced by alcohol gives place to a state of depression.

"The analysis of typical industrial curves, in the light of these five factors, shows that in the fluctuations, for example, of a man employed eight hours a day in engineering work, there is no evidence of undue fatigue. Output rises uniformly in the first three hours of the morning; there is no undue fall during the last hour of the morning's or afternoon's work. . . . Comparing such an eight-hour work curve with a ten-hour work curve, also from a mechanic, we see that in the latter curve the morning's work starts from a much lower level, and the fall at the close of the morning's and afternoon's spells is far steeper. Here, indeed, we appear to see far clearer signs of fatigue; at all events, the efficiency in the eight-hour day work curve is distinctly greater than that in the ten-hour day work curve."

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