

in saying that practically all the fats in milk are products of digestion, and none of them results of simple translation through the digestive organs of fats already present in food. On the other hand, we have undoubted evidence of the translation of other substances directly from the food of the cow to the butter-fat, as is shown in the presence of the aldehyde in cotton-oil, which reduces silver, in the butter of cows fed on these substances. Among other studies on the influence of the food on the composition of butter, I might cite the paper of Ladd, already noted; and also one by C. J. von Lookeren, published in the *Milch Zeitung* (No. 3, 1889, p. 47); and the paper of Mayer, published in *Die Landwirtschaftlichen Versuchs Stationen* (vol. xxxv. p. 261). These studies are of such practical interest, that it is my intention to continue them during the coming year on an extended series of feeding experiments, in which I hope to interest experimenters in different parts of the country.

THE STING OF THE JELLY-FISH.

DR. B. W. RICHARDSON writes on the above subject in the last number of the *Asclepiad*, giving a personal experience of his own. He says, —

"In my case I was caught by the shoulders and chest in the tentacles of a large medusa, and had really for a minute or two a difficulty in freeing myself. The surface of the skin touched by the tentacles began to smart at once, and, by the time I was out of the water and partly dressed, the skin was covered, over the surface attacked, with a bright erythema, accompanied with a sense of extreme heat and irritation. The sensation was much the same as that brought on by the application of a mustard poultice, except that it was not so uniformly diffused, but was rather in the form of wheals in slightly raised lines, with a considerable number of points at which the tingling and heat were most severe. Unfortunately, I had no clinical thermometer by me with which to take the local temperature, but, judging by the touch of the hand, the local temperature was raised at least two or three degrees. The redness and irritation lasted seven hours, and did not absolutely subside until after a night's rest; but, during the time it was on in the acute form, it was soothed considerably by the application of water, rendered alkaline by common washing soda in the proportion of an ounce of the soda to about two quarts of water.

"A friend of the writer suffered far more severely. He was bathing where a number of jelly-fish were present, and got so entangled amongst them, that, as he said, he was 'stung over almost all the surface of his body.' He suffered from an acute erythematous eruption, which lasted over sixteen hours, attended with two degrees of general fever, and followed by malaise that lasted three days.

"A still more important case happened in a very singular manner to another friend and patient. I had gone down to a bathing-place in the summer of 1872, not knowing that my friend was there. I had not been on the spot two hours, when a messenger came to me, asking if I would go at once to Mr. G., the friend in question, because he had been 'stung in the throat by a jelly-fish, and they were afraid he would not live.' On reaching my friend, who had accidentally heard I was near to him, I learned that about two hours before, while he had been floating on his back in the sea, with his mouth open, the tentacles of a jelly-fish swept into his mouth, and stung him severely in the back of the throat. There could be no doubt about the mischief, for the throat over the whole of the pharynx was intensely red, and the surface was rough and raised. With this condition there were considerable heat and irritation, amounting to acute pain, and attended with inability to swallow any thing except fluids cooled with iced water. The idea of extreme danger was present in the mind of the sufferer, and I believe my firm assurance that he would take no harm contributed as much to the recovery that succeeded as the simple alkaline remedies which formed the chief part of the medical treatment. In this case also there was a rise of two degrees of temperature, and during convalescence there was marked depression of both mind and body for a period of two or three days.

"In describing these phenomena," he adds, "I have used the

ordinary word 'sting' for the want of one more accurate. Really, I do not know whether it is a sting, like that of a wasp or a nettle, that is inflicted, or whether a secretion, acrid in kind, is thrown upon the surface, and acts directly as an irritant fluid. On the whole, I suspect it is a fluid, or organic acid, which is the cause of the irritation. For the resultant erythema, local alkaline treatment is particularly effective. In the throat case, bicarbonate of soda with *mel boracis* proved very grateful and useful."

MENTAL SCIENCE.

The Energy and Rapidity of Voluntary Movements.¹

M. FÉRÉ, whose volume upon the relations of sensation and movement, upon the phases of hypnotism and kindred topics, has given him a deserved reputation, has recently investigated the relation between the energy or physical power at the disposal of the individual and the rapidity of his re-actions to simple physical processes. His main thesis is, that great energy and great quickness of movements are concomitant, and vary in the same way under similar circumstances. He has studied this relation among the hysterical and epileptic (as typical instances of abnormal sensori-motor organisms) as well as in normal individuals.

M. Féré had shown that in hysteria the influence of certain emotions, pleasant in their nature, was to increase the maximum power of exertion, as tested by the "squeezing" of a dynamometer, which action he terms "sthenic;" while opposite emotions decrease such power, and are "asthenic."² He now studies the variations in the re-action times to an electrical shock under the same influences, and the concomitant variation in dynamometric power. In five subjects re-acting from the forehead and the back of the hand, both on the right side and on the left, the average re-action times were, T .61, M .61, V .42, R .28, and B .27 of a second, when the dynamometer registered respectively, T, 24; M, 24; V, 28; R, 28; and B, 29. Furthermore, the side of the body from which the re-action is quickest (the subjects are affected with partial anæsthesia) also claims the hand with greatest dynamometric force.

If these subjects are put into the somnambule stage of hypnotism, the effect upon the re-action time may be either to shorten it or lengthen it, or leave it unaltered; but in every case the power of the maximum contraction is affected in the same way. The re-action times are, for T .61, for V .61, for R .35, for B .25, for M .20, of a second; and the strength of squeeze respectively, 24, 25, 30, 36, 40. Under the influence of an "asthenic" or strength-depriving unpleasant emotion, such as fear, B's re-action time increased from the normal of .29 to .44 of a second, and his muscular force decreased from 29 to 20; M's re-action time of .61 becomes .65 of a second, and his dynamometric record of 24 becomes 25. Similar changes for V are from .42 to .51 of a second, and from 28 to 24; for R, from .28 to .45 of a second, and from 28 to 16; for T, from .61 to .62 of a second, and from 24 to 30. We notice the individual variations, but in general the law is maintained. Under the influence of a "sthenic" or strength-giving emotion, the re-action times decreased and the squeeze increases as follows: for B, .13 of a second and 40; for M, .16 of a second and 46; for V, .28 of a second and 37; for R, .14 of a second and 42; for T, .19 of a second and 38. Essentially similar results are shown for two hysterical patients re-acting to sound instead of to touch impressions. M. Féré records the form of the contraction of the hand, and finds, that, when the effort is powerful and the re-action quick, the curve of contraction rises suddenly, while in the opposite case it rises slowly. He notes, too, many other mainly physiological conditions into which we cannot here enter, but all of which go to show that the speed of re-action times depends upon the rate at which the nutritive processes of circulation, etc., proceed. Essentially similar results were obtained in epileptics. In one case the re-action time to a touch impression was .34 of a second; to a sound impression, .28 in the normal condition; one hour after an

¹ Revue Philosophique, No. 7, 1889.

² It is interesting to compare this action with the re-enforcement of the patellar-tendon reflex or knee-jerk by similar means. Any impressive sensation will cause an increase in the response to a simple blow below the knee. Both may be regarded as very sensitive and quickly registering indices of the effect of stimuli upon the nervous system, and have the extreme value that the great rarity of such indications gives them (see Lombard, in Vol. I. No. 1, of the American Journal of Psychology).