

LETTERS TO THE EDITOR.

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Automatic Actions.

IN the interesting paper on "Reflex Action" by Dr. W. Benthall, published in your issue of September 5, he speaks of acquiring some feat of manual dexterity in which, with practice, the required muscular action becomes automatic. It seems to me that the same rule applies to many operations which are generally regarded as purely mental, such as in the use of the first four rules in arithmetic, in writing grammatically and spelling correctly, and in speaking any language. If you think, the action becomes laborious and in all cases the result is uncertain. In the case of spelling this seems to occur to every one, so that if you have to look up one word in a dictionary, which shows that you have begun to think about spelling, you have immediately to look up a number of others. Many people who are employed as clerks, &c., no doubt in adding a column of figures have their minds completely blank without their knowing it. In my own case, both at school and afterwards, I was very slow at this process and very uncertain of the results if the figures were numerous, as in a money column, but I found out, more than twenty years after I left school, that by thinking, not of the figures, but of nothing, the process was easy and rapid and the results correct. In speaking, say, French, if a person has to think of grammatical rules, the gender of nouns, &c., he can never speak fluently; to do so he must think of what he intends to convey and let the words take care of themselves.

Lower down Dr. Benthall quotes Dr. Lewis Robinson, who says: "The horse roamed in a wild state, over plains of more or less long grass and low bushes. When a horse is alarmed he throws up his head to get as wide a view as possible. The cow, on the other hand, keeps her head low, as if to peer under the boughs which covered the marshy grass of her jungle home." Cases of terror are only occasional occurrences amongst domesticated animals, but in the wild state the necessity of caution in the first movements on awakening from sleep, for fear of attack by some lurking foe, is evident. Now when a horse rises he gets on his fore feet and lifts his head high, whilst the cow rises on her hind legs first and keeps her head low. The horse being naturally a timid animal and rather unweildy in the process of getting on his legs has learned to sleep mostly standing and so be ready to move off at once, or kick as required; hence a stableman always speaks to a horse before approaching him from behind to make sure that he is awake and so unlikely to kick.

WILL. A. DIXON.

Sydney, October 14.

Does Man use his Arms in Locomotion?

THE letter by Mr. Martin under this heading in your issue of November 28 raises the two interesting questions, (1) whether the swinging of the arms in walking and running serves any useful purpose as an aid to progression, and (2) whether this movement is a vestige, as Mr. Martin suggests, of the progression on all-fours of man's ancestors.

The following considerations may be of interest, though they are probably not put forward for the first time.

The movement of the legs in opposite directions in different planes involves a reaction, in the form of a couple, upon the trunk, tending to rotate it alternately in opposite directions about a vertical axis. That such a rotation does take place normally, when the arms are at rest, can be seen if the latter are folded upon the breast over a long light horizontal rod to serve as an indicator. This is very obvious when running. Now the swinging of the arms, each in unison with the leg of the other side, introduces an opposing couple which more or less completely balances, about a vertical axis, the reciprocating motion of the legs. The importance of the efficient "balancing" of the reciprocating and revolving parts of a railway locomotive, if steady and economical running is to be obtained, is well known.

That children and even adults, when compelled to crawl upon all-fours, naturally and unconsciously adopt the movements of the limbs common with four-legged animals is generally considered an indication that man has retained the instinct for

this mode of progression, though the conditions for its adoption may seldom occur. It seems reasonable to suppose that the swinging of the arms in walking and running is a modification of this instinct for a modified purpose.

C. O. BARTRUM.

17, Denning Road, Hampstead, N.W., November 30.

Folklore about Stonehenge.

I HAVE been waiting for more able pens than mine to corroborate Rev. Osmond Fisher's letter on the *culthes lapidum* in a recent issue of NATURE.

The same tradition about a loaf being placed on each stone to facilitate counting occurs in other places where sarsens have been objects of reverence in bygone ages. In April, 1895, Mr. Albany F. Major (hon. sec. Viking Club) and myself went on a visit to Kits Coity House above Aylesford, Kent. At the foot of Blue Bell Hill on the way to Kits Coity there are a number of sarsens in a field. On inquiring of a rustic as to their whereabouts, in directing us to them he informed us that a baker had made a bet he would count them and placed a loaf upon each stone in order to count them correctly. This is a slight variant of Mr. Fisher's statement about Stonehenge, but the underlying idea is the same.

R. ASHINGTON BULLEN.

The Vicarage, Pyrford, Woking.

PRESERVATIVES AND COLOURING MATTERS IN FOOD.

THE report of the Departmental Committee upon this subject was issued last week and will be assuredly welcomed by all interested both in the public health and also in the trades concerned. The work of the Committee has been noticed at length in the lay Press and we think, speaking generally, has given satisfaction. Here we shall refer more particularly to the scientific aspects of the report. The Committee was practically a committee of experts, and we venture to think this precedent might be followed more frequently in the appointment of committees upon kindred subjects; trade interests are safe in the hands of impartial experts, and the exclusion of the trade from a committee of the kind saves time and, we think, also tends to the attainment of a most important desideratum, viz. unanimity.

For some time past there has been a large and apparently influential party of alarmists with regard to the use of preservatives. These have all been heard at length by the Committee which has just reported. Their evidence consisted for the most part of elaborate *a priori* argument, in support of which the most profound erudition was occasionally produced; but, as the report politely says, the opinion expressed was not always based directly upon fact. In fact, if an inquirer turns the 500 pages of the Blue-book over in search of unequivocal instances of injury to health from preservatives or, indeed, colouring matters in food he will be lucky if he finds a single one. There is no doubt some difficulty in fastening definite injury upon so subtle a cause, especially since heretofore the presence of preservatives has not even been declared. Yet, nevertheless, for the last two years practically the whole medical profession has been well alive to preservatives in food being a possible source of injury to health, and yet no definitely ascertained case, or practically none, has been forthcoming. Upon such data it is obvious that the prohibition of preservatives *en masse* was out of the question, and the recommendations of the Committee practically resolve themselves into the regulation and control rather than the prohibition of preservatives. There are, however, two exceptions to this; formaline or formic aldehyde is prohibited altogether, and all preservatives and colouring matters are prohibited in milk. The decision with regard to formic aldehyde might strike the casual observer in that nowhere in the report is it directly stated that this substance in the quantities necessary is injurious to health; a peculiar difficulty, however, arises with regard to it, viz., the practical impossibility of quantitative control. It is obvious that a substance of such

potency in unlimited quantity could not be sanctioned in food. The other exception, milk, is obviously also upon a different level; the fact that it forms the staple diet of invalids and children renders it especially important that it should be as pure as possible. It was, further, quite apparent from the evidence that the milk supply of London could be adequately maintained without preservatives, and, further, that these substances tended to mask uncleanly dairying. For the prohibition of colouring matter in milk there seems less reason. Annatto is admittedly harmless, and if the recommendations of the Milk Standardising Committee be adopted the fat standard will be uniform, and hence the colour will no longer be, at any rate in this regard, deceptive. Anything which improves the appearance of food, without it is harmful or done with direct intent to defraud in the physiological sense, that is to mask an actual nutritive deficiency, should be encouraged in that by pleasing the senses we can often help the digestion and, further, often save actual waste, as people will not eat what does not look nice.

This brings us to one point upon which, apparently, the Committee do not agree, viz., the use of copper sulphate for rendering preserved vegetables and fruits permanently green. Three members of the Committee recommend the prohibition of this practice, but Prof. Tunnicliffe is of the opinion that the amount of copper should be restricted to half a grain per pound and declared. The difference seems to be one of general principle *versus* specific fact. The Committee regard the addition of a substance to food which in certain quantities is undoubtedly poisonous to be undesirable in any quantity. It appears, however, that it is very questionable whether the copper compound actually present in the green peas is poisonous. Prof. Tunnicliffe's experiments show clearly that only a relatively small moiety of the copper is absorbed, or at any rate remains in the human system, when it is ingested in the form in which it occurs in preserved peas. These results are practically identical with those obtained by Brandl in the German Gesundheitsamt. People have taken peas greened with copper for almost half a century and no case of chronic or acute copper poisoning has so far been traced to this cause. We cannot agree that evidence of the injurious effect of copper would be difficult to obtain; copper chemically is one of the easiest substances to detect, and physiologically it produces well-marked and fairly characteristic symptoms. Had copper poisoning from coppered peas occurred, we think it would not have escaped detection. It is at any rate to be hoped that we shall not be consigned everlastingly to brown peas without further investigation.

Some surprise may perhaps be felt that salicylic acid was not prohibited, as this substance is undoubtedly possessed of active medicinal properties; it is, however, stringently controlled, only one grain per pound or per pint being allowed. This substance is a very active antiseptic, and is especially useful in jam making and temperance beverages. The complete sterilisation of jam is very apt to break up delicate fruits which it is certainly a pleasure to have whole. Many experiments have been made with salicylic acid, and in the quantities recommended by the Committee it seems quite harmless.

The appendices to the report will be full of interest to the expert; they comprise reports on very complete physiological experiments handed in by Prof. Tunnicliffe, being his own work in collaboration with Dr. Rosenheim and others, also reports of visits to Ireland and Denmark and many other invaluable reference data.

The work of the Committee must certainly be designated as thorough in the extreme, and their recommendations as eminently sensible. In particular we consider the suggestion as an excellent one that machinery should be provided either by the Local Government Board or by the formation of a separate Board of Reference for

exercising control over the use of preservatives and colouring matters in food. It is sincerely to be hoped that legislation on the lines of the report will not be delayed; the necessity for it is urgent, as anyone can see who follows the conflicting decisions given in the law courts under the present Sale of Food and Drugs Act.

PRZEWALSKIS HORSE AT WOBURN ABBEY.

A PERIOD of twenty years has elapsed since Poliakoff described an apparently new species of wild horse obtained by the late Colonel Przewalski in the deserts of Mongolia, under the name of *Equus przewalskii*. Although only a single example was then obtained, much interest attached to the discovery, as the animal appeared from the description to be in several respects intermediate between the domesticated horse and the wild asses, or, at any rate, the Asiatic representatives of the latter. For a long period nothing more was heard of the animal, and zoologists were uncertain whether they had to do with a real species or a hybrid, or possibly with one of the feral or wild representatives of the common horse. Within the last few years, however, other specimens—some alive—were received in Russia, and one skin was sent to the Paris Museum. Although no very detailed or well-illustrated description of them has hitherto appeared, these specimens appeared to demonstrate that Przewalski's horse was entitled to rank as a distinct species.

Still, without making a visit to Paris or Moscow, English naturalists had no opportunity of satisfying themselves by actual inspection as to the distinctness of this interesting animal, and the figures hitherto published left several important features in obscurity. The acquisition by the Duke of Bedford of a drove of twelve fine colts (imported by Mr. C. Hagenbeck, of Hamburg) has brought this unsatisfactory state of affairs to a close, and it is now possible to study the characters of the species (in an immature state) with some approach to exactness.

The colts at Woburn Abbey, which were foaled last spring or summer, are about the size of Shetland ponies; and, if we may judge by the absence of "legginess" in their build, do not seem likely to grow very large. In general appearance they are much more like ponies than donkeys, the ears being short and the tails haired to within a comparatively short distance of the root, although there appears to be a certain amount of individual variation in this respect. Eleven out of the twelve have, however, white muzzles, which communicate to the head a somewhat asinine appearance. All are in their winter (or ? first) coats, which are of a dun colour, with the front of the legs dark brown or black, the mane and tail being also black. The mane is at present upright, but exhibits a slight tendency to fall over, which may increase with age; and there does not seem, at least in most cases, to be a distinct forelock. Most of the colts show no dorsal stripe, although in one or two there is a short one on the rump. There is no trace of a shoulder-stripe, or of dark barrings on the legs. Both fore and hind legs have callosities. So far as I can recollect, the underparts are lighter than the back. In young animals the true form of the hoofs is not fully developed, but I think the hoofs of these colts are of the relatively large size characteristic of the horse and the Asiatic wild ass.

The Woburn colts render it quite certain that *Equus przewalskii* is a true species and not a hybrid. It is equally clear that it is perfectly distinct from the kiang and all other races of the Asiatic wild ass.

The only other animal with which Przewalski's horse could be identical is the tarpan, or wild (or feral) horse of the Kirghiz steppe, which, as I am informed, is now extinct. Tarpan are, however, described by Pallas as