LETTERS TO THE EDITOR.

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Hair on the Digits of Man.

THE distribution of hair on the dorsal surfaces of the digits in man, anthropoid apes and monkeys, is referred to by Romanes in "Darwin and after Darwin," but its significance seems to be overlooked. I would venture to suggest that these facts bear a Lamarckian, and only a Lamarckian, interpretation. It is clear that if acquired characters can be inherited through use, habit or environment, the loss of certain characters through habit and the like may also be inherited, and the development of characters on the one hand and the decay of characters on the other will be sufficient to prove that Weismann's great rule is not absolute. Use-inheritance and disuse-inheritance ought both to be capable of proof. It may be difficult, or impossible, to *prove* the greater cases, such as the long cervical vertebræ of the giraffe and the great horns of the elk, and indeed most of the instances brought forward by Herbert Spencer, Eimer and Cunningham. These may lie open to a selectionist interpretation. But it becomes well-nigh impossible to carry such an interpretation into the trifling biological characters to which I would briefly refer.

In man, hair is entirely wanting on the ungual phalanges of his hand and foot, very rare on the middle phalanges of either foot or hand, and always present more or less on the first row of phalanges in both foot and hand. On the middle phalanges, where it occasionally occurs, it is best looked for in early childhood, when the hair is more strongly developed than in infancy, and when it has not yet disappeared through secondary causes. I have just examined the case of a child of four and a half years old with marked hair on the middle phalanges of the four digits on the hand, and on the second, third and fourth digits of the foot, and with *none* on the fifth digit, except on the first phalanx. It is worthy of remark here that many of the facts of hair-direction, being somewhat fugitive in character, are best studied in the human subject in childhood.

Assuming that man is the child of the monkey, it follows that his ancestors possessed at one time hair on all the phalanges of both foot and hand, as is the case in all the existing monkeys of the Old World and New World that I have been able to examine; though a Chacma baboon at the London Zoological Gardens shows abundant hair on all the phalanges of the foot, and on the middle and ungual phalanges of the hand either no hair or the small amount that is present very much worn down. In the few anthropoid apes that I have been able to examine, the chimpanzee resembles the human subject in this character, and the young orang at the Zoological Gardens possesses hair like that of the lower monkeys, *i.e.* on all the phalanges of foot and hand, though on the two terminal phalanges of the hand the hair is worn down and quite bristly, even though the animal is still young.

Broadly speaking, these facts are congenital and must be acquired, either through heredity, variation and selection, or as the result of habit, such as that of friction, acting through numerous ancestors in a similar direction. We need only bear in mind how much greater is the exposure to friction, in the movements of the hand of man, of the ungual and middle phalanges than that of the first phalanx to see that the conclusion as to the Lamarckian view here put forward is difficult to resist.

This very small point seems to be more worth considering than its intrinsic importance would warrant, in consequence of the way in which a disputed biological doctrine, such as that of Weismann, is being exploited in a somewhat serious matter. It is enough to quote W. K. Brooks, of America, and Prof. J. Arthur Thomson, of Aberdeen, in support of the statement that Weismann's doctrine is "not proven." I refer to the long and somewhat heated discussion which has taken place recently in the columns of the *Lancet* on the subject of "Legislation against National Intemperance." The greater vigour of assertion and multitude of words, if not greater logic, rests with the advocates of the view that alcoholism is a selective influence of value in the evolution of man and ought not to be interfered with by legislation. The reasons for this startling contention are numerous, but their justification rests ultimately on the doctrine of Weismann carried to the bitter end, viz. that acquired characters are not inherited. I submit that if it can be shown that no other than a Lamarckian interpretation of certain small phenomena is possible, something may be done towards making a breach in a somewhat dangerous citadel. WALTER KIDD.

July.

Pseudoscopic Vision without a Pseudoscope: A New Optical Illusion.

A METHOD of securing an illusion of binocular vision wholly without instrumental aid occurred to me recently, which is interesting in connection with the study of pseudoscopic vision. It is fully as startling as any of the results obtained with the lenticular pseudoscope, which I showed at the Royal Institution in February, 1900, and which I shall speak of presently, and, requiring the aid of no optical instrument, is much more impressive.

A lead pencil is held point-up an inch or two in front of a wire window screen, with a sky background. If the eyes are converged upon the pencil point, the wire gauze becomes somewhat blurred, and of course doubled. Inasmuch, however, as the gauze has a regularly recurring pattern, the two images can be united, and with a little effort the eyes can be accommodated for distinct vision of the combined images of the mesh. To accommodate for a greater distance than the point upon which the eyes are converged requires practice, but the trick is very much easier in this case than in the case of viewing stereoscopic pictures without a stereoscope.

As soon as accommodation is secured, the mesh becomes perfectly sharp and appears to lie nearly in the plane of the pencil point, which still appears single and perfectly sharp. If now the pencil is moved away from the eyes which are to be kept fixed on the screen, it *passes through the mesh and becomes doubled*, the distance between the images increasing until the point brings up against the screen. If now the pencil be removed it will be found that the sharp images of the combined images of the gauze persists, even though the eyes be moved nearer to, or farther away from, the screen. Bring the eyes up to within six or eight inches of the plane in which the mesh appears to lie and attempt to touch it with the finger. *It is not there:* the finger falls upon empty space, the screen being in reality a couple of inches further off. This is by all means the most startling illusion that I have ever seen, for we apparently see something occupying a perfectly definite position in space before our eyes, and yet if we attempt to put our finger on it we find that there is nothing there.

It is best to begin by holding the pencil an inch or less in front of the screen. As the eyes become accustomed to the unusual accommodation, the distance can be increased. I have succeeded in bringing up the apparent plane of the mesh, five or six inches, but this requires as great a control over the eyes as is necessary in viewing stereoscopic pictures without an instrument.

The pseudoscope, which I have alluded to above, I have described in *Science* (about November, 1899), but inasmuch as the description of it which I sent to NATURE, the editor informs me, was never received, a brief account of it may not be out of place. Two lenses of about three inches focus are mounted in front of a pair of stereoscope lenses in such a way that the real inverted images formed by them in space can be combined by the stereoscope. The lenses should be mounted in slide tubes attached to the frame of the stereoscope, so that proper focussing can be accomplished. This instrument has been named the lenticular pseudoscope by the psychologists, and gives results far superior to those obtained by the Wheatstone and other forms of mirror pseudoscopes. Viewed through the instrument, a hollow bowl appears as a beautifully convex dome, and if a marble be dropped into it we witness the astounding phenomenon of a ball rolling up hill, crossing the top, descending part way down the other side and then returning to the summit, in defiance of the law of gravitation.

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Markings on Jupiter.

THERE is a large, dark spot on the southern side of the S. equatorial belt (and nearly in same latitude as the red spot) which on July 24 was preceded by a number of small black dots 5° to 10° apart, according to the observations of Dr. Kibbler, of Stamford Hill, who appears to have been the first, or one of the