

LETTERS TO THE EDITOR.

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Measurements of Crabs.

ON June 11 last, a paper by Mr. Herbert Thomson was communicated to the Royal Society, "On certain changes observed in the dimensions of parts of the carapace of *Carcinus maenas*" (*Proc. Roy. Soc.*, lx. No. 361). According to measurements recorded in this paper, the male crabs taken at Plymouth in the year 1895 were narrower in the frontal breadth, and longer in the right dentary margin than male crabs of the same size taken in 1893.

The author of the paper states that further measurements will be necessary in order to decide whether these results indicate a permanent change in the species at Plymouth, or a mere oscillation, such as may be constantly going on in the relative dimensions of parts in a species.

I venture to remark that species must be much more unstable than we have ever supposed hitherto, if either permanent changes or mere oscillations in their characters are to be detected in one locality in the course of a couple of years. There is one other possible explanation of the observed differences which has occurred to my mind, and is, I think, worth consideration on the part of those who are studying evolution by means of the micrometer. It appears from the paper that the measurements of the 1893 crabs and of the 1895 crabs were made, not in those years respectively, but both sets alike after the summer of 1895. The two sets of crabs were, in this case, not measured under identical conditions. If the 1893 set had been longer in spirit than those of 1895, perhaps this was the reason of the difference. Or there may have been some difference in the mode of preservation. At any rate, I think the comparison is not trustworthy unless the measurements had been made on fresh crabs immediately after they were collected—one set in 1893, the other set in 1895. It is doubtful whether measurements of spirit specimens are ever perfectly trustworthy as representing the true dimensions of animals.

The fact that a deficiency in one dimension was "compensated," as the author himself expresses it, by an excess in the other, suggests the question whether the specimen of one lot or the other had not undergone an artificial change of shape. It seems to me that that question must be disposed of before we admit that a permanent or temporary change in the specific dimensions of parts in the crab has been demonstrated.

J. T. CUNNINGHAM.

Some Effects of the X-Rays on the Hands.

AT the request of the editor of NATURE, I append the following description, compiled from notes, of the effect of repeated exposure of the hands to the X-rays. The result, though perhaps interesting from a medical and scientific point of view, has been most unpleasant and inconvenient to myself—the patient—and although my theories may be incorrect, and my conclusions easy to demolish, there is no mistaking the fact that the X-rays are quite capable of inflicting such injury upon the hands as to render them almost useless for a time, and to leave in doubt their ultimate condition when entirely freed from frequent daily exposure to their influence.

Now for facts. I commenced demonstrating early in May with a coil capable of giving an 8" spark, and have been engaged in the work for several hours per day until the present time. For the first two or three weeks no inconvenience or discomfort were felt, but there shortly appeared on my right-hand fingers numerous little blisters of a dark colour under the skin. These gradually became very irritating, the skin itself very red and apparently much inflamed. The irritation increased, and the application of *aqua-plumbi*, as recommended in a Berlin telegram to the *Standard*, had only a passing effect in allaying it. So badly did my hand smart, that I was constantly obliged to bathe it in the coldest water I could get, and I really believe I should have been obliged to resign my appointment had not a well-known medical man, who happened to attend one of the demonstrations, advised me to use a much-advertised ointment. I did so, with the remarkable result that the irritation left me immediately, and by using it regularly since

then, I have at least avoided one of the disagreeable consequences of too much X-rays. In the meantime, however, the skin on the fingers had become very dry and hard, yellow like parchment, and quite insensible to touch, and I was not at all surprised to find, a day or two afterwards, that it began to peel off. When this particularly unpleasant operation had been accomplished, I considered I was quite acclimatised to the rays, but soon found out my mistake. The same symptoms again appeared, the newly-formed skin going the same way as in the former case. But there was a further discomfort to follow. About the middle of July the tips of my fingers began to swell considerably, and appeared as if they would burst. The tension of the skin was very great, and, to crown all, I noticed for the first time that my nails were beginning to be affected. This was the commencement of a long period of really serious discomfort and pain, which was only partly relieved when, from under the nails, there appeared a somewhat copious and unpleasant-smelling colourless discharge, which continued more or less until the old nails were thrown off. With this discharge the swelling in the finger-tips decreased, but as the new and old nails began to separate in the middle, the pain was renewed, and I was unable to bear the slightest pressure upon them. The old nails turned quite black and very hard, and the state of my hands may be imagined when I say that I had to keep the fingers in bandages for more than six weeks. It was only in the middle of August that my left hand became affected by the rays, as until then I had principally used my right hand in the manipulation of the fluorescent screen. I naturally expected to again undergo the same experience, with all its discomforts. I had lost the skin of my right hand for the third time, and there seemed to be no probability of that being the last. Several doctors had seen my hands, and taken much interest in their condition, but no one could suggest a remedy.

At last it occurred to me that all the trouble was being caused by the rays burning out the natural oil of the skin, and that if I could in some way supply the deficiency, it might assist in preventing further ill effects. For that purpose I got some lanoline, the oil obtained, so I am informed, from sheep's wool. This I daily rubbed into my hands, and then encased them in a pair of ordinary kid gloves. These gloves, in the course of time, became saturated with the ointment, and there is no doubt that, although in themselves they were quite transparent to the X-rays, and therefore no shield in themselves, the fatty matter did, in a great degree, prevent the drying up of the skin in the manner I have described. I do not mean to say that it is an absolute preventive, but it goes a long way towards that desirable end, because since I first used the lanoline, now some weeks since, my hands have not again peeled, although at the present moment (October 17) there are a few slight symptoms of it.

My view of the effect of the X-rays is that, in regard to this matter, it is exactly similar to acute sunburn. The symptoms and effect are the same, only that, in the case of the X-rays, you have it in a far more concentrated form—in fact the very essence of it. But whatever may be the cause, the effect is unquestionable. In my case I have had three new sets of skin on the right hand, and one on the left; four of my finger-nails have disappeared on the right, two on the left, and three more are on the point of leaving. For at least six weeks I was unable to use my right-hand fingers in any way whatever, and it is only since the nails came off that I have been able to hold a pen. Of course it will be a month or two before my hands resume their natural condition, and it is yet, as I said before, a moot point as to what the end will be.

I could say much more on this subject, but already I fear I have trespassed too much on the editor's space. I have written this with the object of placing upon record "the strange case of an X-rays operator," in the hope that it may add something to what is known of the new and mysterious power, and lead others, more experienced in scientific and medical knowledge than myself, to devise an effectual preventive against such results as I have described. Many important questions are opened up by this remarkable effect of the rays upon the skin and nails, and it may be that in the near future they may be utilised in cases of skin and other diseases. Who knows? S. J. R.

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Habits of Chameleons.

I HAVE just read Mr. Ridsdale's letter about the Chameleon, and write to say that I have one here which has lived in England since May 23, 1891, when it was brought from the Cape by my