

can do better than others, let it be tragedy writing or standing on our heads. In children this love of admiration or notoriety, instead of being judiciously cloaked, is ingenuously explicitly manifested. So, not impossibly, once discovered, this initial potentiality might have been developed.

In the elementary school in which the writer himself graduated, after every show or circus we always tried, as boys will, to emulate the somersaulting, walking on the hands, and the various bodily contortions which won our admiration in our favourite demi-god. Far and away the most successful of us—we numbered eighty or ninety—were invariably a barber's three sons. This barber, though he was then for a score of years hard and fast at his trade, had been in early life for many years a circus rider. We were all then very young, between seven and twelve. We and they were then unaware of this circumstance. Even if aware of it they could not have been in any way impelled by it except as an instinct.

This case is adduced as supporting the former instance and its deduction. In picking up facts out of books—the sole idea of education in our neighbourhood—the barber's boys were not quite so good as the average of us, but to double somersaulting they took like ducks to water.

As correlative to the saying that it takes three generations to make a gentleman, you will find among tradesfolk the statement that it requires an equal number of generations to turn out a first-rate craftsman. I met this opinion first in a pottery district. I came across it since among people of the same class in three countries, and in many distinct districts of one of them. Now if this opinion be sustainable—and personally I think so—then increasing potentiality from generation to generation, or, what it amounts to, the inheritance of acquired powers, is a fairly legitimate inference.

The transmission of like fundamental potentiality, indeed, should scarcely be questioned. The transmission of acquired potentialities, or of capacities enlarged and increased by use, is a further matter; but countless instances such as those given above could, I am convinced, be adduced in support of it. It would be hard to resist their accumulated force. It is anyway *a priori* what is to be expected, and the principle is so important that on its truth depends the perfectibility, at least, of man. To explain the transmission of this fresh inheritance remains, I think, the sole problem for men of science. Its solution, so far as I have observed, is hardly yet within sight.

The Stauhaun, Drogheda.

J. M.

The Mnemic Theory of Heredity.

FIFTEEN years ago NATURE allowed me to direct attention to certain variations in the arrangement of hair on the animal body, and this was followed by several other communications elsewhere on the same subject. The conclusion from these observed facts, which were very numerous, though intrinsically unimportant, was that only by the doctrine that acquired characters can be transmitted were they to be explained. No biologist has ever challenged this conclusion, except by criticising some detail in the observations, or by saying, in effect, "Let us change the subject!" But this large body of small facts remains on record, and the smaller the individual facts are shown to be the stronger is the evidence that they are removed from the province of Selection.

If it were not for the statement, made on the high authority of Prof. Dendy, as to the "rapidly accumulating evidence" in favour of the doctrine that acquired characters can be transmitted, I would not have ventured to bring up this vexed question. But the evidence of these facts is entirely in agreement with the mnemic theory of heredity, as it seems to me; and in view of the attitude of Dr. Beard, and many other biologists, towards the doctrine of the possibility of the transmission of acquired characters, it seems necessary to bring forward facts, and more facts, however small they appear to be. After all, "things are what they are," and theories very soon after they become orthodox have a way of breaking down.

WALTER KIDD.

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Distaste of Birds for Butterflies.

IN view of the recent discussions in NATURE regarding the distaste of birds for butterflies (December 21, 1911), it will doubtless be of interest to know of the results of an investigation into the relation of birds to an outbreak of butterflies (*Eugonia californica*) in northern California during the summer of 1911.

The fact that in the examination of some 40,000 stomachs by the U.S. Biological Survey there have been but few instances where birds have been found to feed on butterflies makes the results of the investigation carried on by the California Fish and Game Commission with respect to the recent outbreak of still greater interest.

During the early part of the summer the snow brush (*Ceanothus* sp.) was entirely defoliated by the work of the larvæ of *Eugonia californica* in many places in the mountain districts of the northern part of California. During the latter part of July and the first weeks of August the great army of caterpillars had transformed into butterflies. These insects were so numerous that the ground was often blackened by them, and great swarms of them filled the air from morning until evening.

Field observation showed the Brewer blackbird (*Euphagus cyanocephalus*) to be the most efficient destroyer of the butterflies, certain individuals being observed to eat an average of five butterflies a minute. Two other birds, the western kingbird (*Tyrannus verticalis*) and the western meadowlark (*Sturnella neglecta*), were seen to feed on the insects.

Stomach examination revealed the fact that two other birds, the blue-fronted jay (*Cyanocitta stelleri frontalis*) and the Say phoebe (*Sayornis sayus*), fed on the butterflies to some extent. Sixty-one stomachs in all were examined, representing twenty-one different species. Forty-five species of birds were noted in the locality where the investigation was carried on.

The most important fact brought out by the work was that birds will turn to food which is abundant and readily accessible, even though it be a little-relished type of food.

H. C. BRYANT.

East Hall, University of California, Berkeley,
Cal., January 27.

Thomas Young and Göttingen.

THOMAS YOUNG, more particularly famous as the founder of the wave theory of light, and whom Helmholtz described as one of the most clear-seeing men who had ever lived, matriculated at Göttingen University on October 29, 1795, and took the doctor degree there in medicine on April 30, 1796.

This fact is little known, even among Young's admirers. Indeed, it had escaped the knowledge of the Göttingen authorities. With the view of perpetuating Young's memory at Göttingen, the present writer brought the matter before the notice of Dr. E. Riecke (professor of experimental physics at Göttingen University). Prof. Riecke placed the matter in the hands of the Pro-Rektor, Geh. Rat. Prof. Dr. W. Voigt, who instituted inquiries as to the place of Young's abode.

It transpired that Young had lived in the building which later became the Physikalisches Institut, and is now the Institut für Angewandte Mechanik und Mathematik. It is a pleasing coincidence that in this same building Gauss and Weber did their work on the first electromagnetic telegraph.

Shortly before Christmas, as a result of Prof. Voigt's representations to the Magistrat of the town, a neat little tablet to the memory of Thomas Young was affixed. This tablet is in appropriate proximity to that in memory of Gauss and Weber.

To Prof. Voigt grateful acknowledgment is due for the enthusiastic and warm-hearted manner in which he has superintended the erection of this little memorial to one of the greatest of all physicists.

H. S. ROWELL.

Glazed Frost.

REFERRING to the letters of Mr. Charles Harding and Prof. Meldola on the phenomenon of freezing rain, I remember the occasion referred to; it was on January 11, 1868, when trees were covered with ice by rain which