scientists tell us that diseases of all sorts—at least the predisposition to them—are transmissible; that they run in families, and that the probability is greater that the children of diseased parents will fall heir to the particular maladies of the latter than that the children of unaffected parents will be troubled by them. It is true that in the case of appendicitis, recent acquisition as it is to the catalogue of bodily ills, we have no exact data in support of the belief that it is transmissible, yet reasoning from analogy we have every right to believe that it is so. A hereditary predisposition to many other forms of inflammation similar in all respects except that of the part affected has been fully demonstrated and the inference is certainly a logical one that appendicitis is no exception to the rule.

But under the conditions of nature, such a transmission of disastrous predispositions is taken care of through the early death of the individual with the consequent impossibility of passing them to the descendants. If death comes before the period of maturity is reached the lack of offspring means the total annihilation so far as the race is concerned, of disastrous consequence in that particular line of descent. If it comes early in maturity such annihilation is not absolute but only relative, the danger to the race increasing with the length of life as measured by the number of children. In any event nature demands death without offspring on the part of the individuals possessing racially disastrous predispositions. Yet that is what the prolongation of life through surgical intervention controverts. All danger of death from the particular diseased part, so far as the individual is concerned, is removed without lessening seemingly one whit its disastrous effects upon the race. A long life is assured so far as the particular disease is concerned and, all other things equal, a correspondingly large family with all the laws of heredity potent, so far as the probable transmission of the difficulty is concerned. To believe that the surgical removal of the diseased part does away with the probability of the transmittal of the disease would be to accept the theory of the transmission of mutilations. This, few thinking persons, familiar with the field of scientific thought, are willing to do. Generations of artificially misshapen heads among certain savage tribes, of the mutilated feet of the Chinese women without racial effect, to say nothing of the lack of results of century upon century of circumcision, are all in opposition to it. And the corollary is that the good offices of the surgeon—whom, by the way, we shall probably continue to patronize in spite of any disaster we may see impending future generations—are the surest means of making permanent his calling. That this is true in the case of appendicitis is more easily seen than for other surgically prevented diseases, for we can not doubt that nature, left to herself, would in time eliminate the vermiform appendix altogether with the consequently disastrous results to the surgeon's income. We need not, however, impute to him any sordid motives when we say that he is taking the surest means of preventing such a catastrophe.

Edwin G. Dexter.
The University of Illinois.

'THE TREE-DWELLERS.'

To the Editor of Science: Since the two articles which have appeared in recent numbers of Science regarding 'The Tree-dwellers' contain several statements not supported by facts, and since the criticisms made rest largely upon a hypothetical basis, it may not be out of place to call attention to the same through the columns of the paper in which the articles appeared. The articles referred to are a letter from Dr. E. C. Case, State Normal School, Milwaukee, Wis., published in Science, April 1, and an article by Dr. Theo Gill, entitled "'Horses' not Horses," appearing May 6.

At the outset I wish to acknowledge an indebtedness to Dr. Case, for it was his criticism which first called my attention to the possibility of making the startling interpretation which he makes of the illustration on page 67, which he refers to as a Jurassic dinosaur chasing an Eocene horse, and the illustration on page 62 which he refers to as 'a man in a tree watching a herd of the same horses (?) that were pursued by the Jurassic dinosaur!' Dr. Case continues, 'This makes

man contemporaneous with the dinosaur, although it is not so stated in the text.'

The attempt to avoid many words unfamiliar to children led to the use of the term 'horse' on pages 66 and 67 where 'mammal' or 'ancestor of the horse' would have been more exact. The lesson in question was intended merely to give some such general conception as Professor N. S. Shaler gives in his chapter on the horse in 'Domesticated Animals,' pages 58–9, where he states: "In the first stages of the Tertiary period, in the age when we began to trace the evolution of the suck-giving animals above the lowly grade in which the kangaroos and opossums belong, we find the ancestors of our mammalian series all characterized by rather weakly organized limbs fitted, as were those of their remote kindred, the marsupials, for tree-climbing, rather than for running over the surface of the ground. *The fact is that all the creatures of the great clan acquired their properties of body in arboreal life, and with such relatively small and light bodies as were fitted for tree-climbing.*"

In so far as the illustration on page 67 conveys the idea that the remote ancestors of the horse and other mammals once lived in proximity to dinosaurs and were preyed upon by these creatures, it is true to the facts. Its defects consist in the fact (1) that the form of the mammal in question resembles too closely that of the Eocene horse, and (2) the hind limbs of the dinosaur are not as long as the skeletons indicate.

Although the dinosaur in question lived in the Jurassic period, as Dr. Case states, carnivorous dinosaurs were abundant in the Cretaceous and did not become extinct until the end of that period. When this fact is taken into account, and when it is remembered that the most eminent paleontologists still expect to find in the Cretaceous rocks forms intermediate between the Jurassic mammals and the Eocene types, the reader can better appreciate the point of view of the author in presenting the lesson as it appears in the first edition. But the illustration is defective and it will not appear in the second edition. The two lessons on the wild horse, including the remote ancestors of the horse, have been revised, and although the ideas used are substantially the same, it is hoped that they are expressed in a form which will not offend the genuine student of science. It must be remembered, however, that the nature of the work precludes the use of technical terms.

The horses represented in the illustration on page 62 are intended for Pleistocene horses and are briefly described at the foot of page 70 and on page 71. It may be due to the stripes, which are hypothetical, and to his interpretation of the perspective of the picture, that have led Dr. Case to interpret the horses as Eocene forms. Although this picture is not incorrect, it will be replaced by one which can not be interpreted in such a way.

Had Dr. Case read the text more carefully he might still be in doubt regarding the time relations of the dinosaur and the ancestors of the horse on account of my use of the term 'horse' on pages 66 and 67. But he surely could not have failed to see that man's relation to these primitive forms is distinctly stated, even though technical terms are avoided. For instance, the first line of the text quoted by Dr. Case should make clear that the animal described in the following lines lived long before man appeared. Again, at the foot of page 70 and the top of page 71 the form of the horse which was contemporaneous with man of the mid-Pleistocene period is clearly stated. Had this not been sufficient, Dr. Case could have found two notes of warning against such an interpretation as he has made, on pages 146 and 154.

The real evidence, then, upon which the criticisms of Dr. Case thus far considered rest, is this: The defects pointed out in the illustration on page 67, and the use of the term 'horse' in a sense wide enough to include the remote ancestors of the horse. The evidence which he has neglected is *the text itself*.

In view of the well-established and readily available statements concerning the discoveries of Professor Cope in the United States, and Professor Boyd Dawkins in Europe, with reference to the hairy mammoth and the sabre-toothed *Felis* (*Machairodus*), it is difficult to understand how Dr. Case could venture the

criticism, 'This book is filled with just such mistakes throughout, notably a figure of a sabre-toothed tiger in fierce combat with a hairy mammoth.' Near the town of Hennessey, Oklahoma, Professor Cope obtained teeth and bones of the mammoth associated with the bones of a sabre-toothed cat as large as a lion, as though 'death had overtaken it while feeding upon the carcass of the mammoth' (*J. Acad. of Nat. Sci.*, Phil., IX., page 453.) It is doubtless unnecessary to state that the illustration will stand as an accurate portrayal of a combat which man of the mid-Pleistocene period undoubtedly witnessed many a time.

Since Dr. Gill's criticisms appear to be based upon the statements made in Dr. Case's letter and not upon an examination of the book at first hand, they need little attention. There are a few statements, however, which the reader may be interested in comparing with statements of other eminent scientists.

Dr. Gill states, 'But no ungulate in the line of the horse with five toes has been discovered.' Professor Cope writes ('Origin of the Fittest,' page 301): "*Phenacodus* is antecedent to all the horse series, the elephant series, the hog, the rhinoceros and all other series of hoofed animals. It has five toes on all of the feet."

Again Dr. Gill writes: 'Another pure assumption is that the primitive equoidean animals lived especially in the marshes.' Professor Huxley in his American Addresses, refers to the Eocene horses as 'the short-legged, splay-footed plodders of the Eocene marshes.' Professor Cope writes ('Origin of the Fittest,' page 374): "* * * the types with reduced digits are dwellers on dry land in both orders, and those that have more digits are inhabitants of swamps and mud. * * * Certain it is that the lengths of the bones of the feet of the ungulate orders have a direct relation to the dryness of the ground they inhabit, and the possibility of speed which their habitat permits them, or necessarily imposes on them." (See, also, Mr. Lucas's statement, *McClure's Magazine*, volume 15, page 517.)

Still again Dr. Gill writes, 'But there is no need of confining such animals to the marshes.' Had Dr. Gill read the next few pages of the text he would have been spared the trouble of making the remark.

Dr. Gill is certainly correct in stating, 'Every instructed zoologist would know that such a characteristic as five toes (or four) must necessarily be coordinate with innumerable modifications of other parts,' but one can scarcely be expected to present all of 'these innumerable modifications' to the child of seven years. In presenting a brief account of the changes that took place in the feet and in reserving the changes in the structure of the teeth for a later period, I find support in the statement of Professor Cope ('Origin of the Fittest,' page 269), where he states, "The primary forms of mammalia repose in great measure on the structure of the feet. Those of the teeth are also significant, but present a greater number of variations among animals otherwise nearly related."

While not a specialist in paleontology or in several of the sciences to which I find it necessary to go for materials, I have taken great pains to secure reliable data, and to consult with specialists concerning the same. Since Dr. Case's criticism was made, Dr. S. W. Williston, professor of paleontology of the University of Chicago, has kindly examined 'The Tree-dwellers' from the point of view of the paleontologist; and he has given me permission to state this fact in this letter and in the preface to the second edition of the book. In view of the fact that Dr. Case states that the book is filled with glaring errors, the reader may be interested in knowing that Professor Williston has authorized me to state that aside from the changes made in the lesson on the wild horse referred to above, the changes he suggests are few and unimportant.

It is too much to expect a series of books which represents such a radical departure from traditional text-books for children as this series does, to pass unchallenged. But this is not a matter to be regretted. That which causes one to review one's work, to weigh evidence more carefully, to eliminate errors, to reconstruct in the light of a higher truth, should be welcomed by all. A careful examination and criticism of the series is invited, with the assurance that the points which

are brought to the attention of the author will receive due consideration.

KATHARINE E. DOPP.
EXTENSION DIVISION,
THE UNIVERSITY OF CHICAGO.

SPECIAL ARTICLES.

MONT PELÉ FROM OCTOBER 20, 1903, TO MAY 20, 1904.

THE publication in the daily papers of the statement that Mt. Pelé had celebrated the second anniversary of the destruction of St. Pierre by a heavy eruption, has renewed popular interest in the volcano. A few days before the appearance of this item, the author received, from a correspondent in Dominica, information that Mt. Pelé had been in serious eruption on May 8 and had blown out the new central cone. Inquiry at the office of the American Trading Co. in this city elicited the statement that letters from their representative in Martinique, under date of May 11, made no mention of the volcano, which would hardly have been the case had there been a great eruption.

To-day copies of the *Journal Officiel de la Martinique* for May 10 to 20 have come to hand and the following quotation (translation) of the 'Bulletins concernant le volcan' will be of interest:

May 4 to 6, 1904.—Mountain almost constantly covered. Discharge of vapor moderate. A few rather heavy rumblings from time to time. Some shattering was produced at the top of the dome. The height has slightly diminished.

May 6 to 8, 1904.—Mountain constantly covered. Discharge of vapors very feeble Saturday morning, becoming rather abundant Saturday evening and Sunday (8th). Several discharges (flows) accompanied by rather heavy rumbling.

May 8 to 9, 1904.—Mountain remained constantly covered. Discharge of vapor rather abundant.

May 9 to 10, 1904.—The mountain which was covered in the morning, became clear after five o'clock in the afternoon. Moderate discharge of white vapors. Several rumblings. The summit of the dome has risen about five meters since April 26.

May 11 to 12, 1904.—Mountain covered during the day and free from clouds at night. Moderate discharge of white vapors. Frequent rumblings. Yesterday evening from 5:30 to 6 o'clock outbursts of rather thick red clouds to slight elevations succeeded one another almost without interruption from the southeast side. At 7:45 a rather bright luminous point appeared near the middle of the dome.

May 12 to 13, 1904.—Mountain clear in the afternoon. Rather abundant discharge of white vapors mixed with red vapors. Several rumblings, one of which was very heavy, yesterday at 10:25 P.M.

May 13 to 15, 1904.—Mountain almost constantly covered Saturday and uncovered yesterday. Several low outbursts of red cloud. Many rumblings. Moderate discharge of vapors. Yesterday morning at 9:50 a dust-flow of slight extent descended slowly as far as the base of the talus of débris.

May 17 to 18, 1904.—Mountain almost constantly covered. Some flows and rumblings Monday. Nothing noteworthy yesterday.

May 18 to 19, 1904.—Mountain constantly covered. Nothing to note.

(Signed) PERNEY.

Since October 19, 1903,* the history of Mont Pelé has not been characterized by any very startling events. The dome which has formed the summit of the mountain since the famous spine or obelisk was destroyed in August, 1903, has suffered many minor changes in altitude and form which have altered its appearance entirely from what it was at the beginning.

The history of the dome, as gathered from the *Journal Officiel,* is as follows:

October 21, 1903.—Loss of 5 m.

October 22.—Loss of 3 m.

October 25.—Slight modifications.

October 26.—Additional modifications.

October 29.—The dome has suffered certain changes; its height has been stationary for several days.

November 3.—The dome has suffered certain modifications of form without change in altitude.

November 5.—A considerable portion of the dome was blown off at 11:34 A.M.

November 8.—The dome rose 4 m. between the 6th and 8th.

November 10.—The dome seems to be destined to rapid disappearance on account of successive outbursts on the southwestern side.

* See Hovey, 'Mont Pelé from May to October, 1903,' SCIENCE, N. S., Volume XVIII., p. 633, November 13, 1903.