image, masthead touching masthead, and a small schooner under sail, some 8 or 10 miles away, exhibited an inverted image of its topsails. In the direction of Saltburn a tug-boat (paddle steamer) steaming within perhaps 2 miles of the coast was quite normal in appearance. The smoke rising from it drifting eastward appeared normal for a short time, but suddenly expanded on rising to about ten times its thickness, and then tailed off again at its topmost eastward corner to the normal thickness. A large steamship lying about half-way across the bay showed no signs of being affected by the "mirage."

These phenomena disappeared in about 20 minutes, and were followed by a haze which obscured the distance.

The weather had been very hot and sultry all day, with about 70° in the shade, and a gentle south-east by east breeze, and a perfectly clear sky.

Estimating the height of the Redcar houses at 50 feet and the distance at 7 miles, they would occupy 5' of arc; and taking the thickness of the air stratum producing the "mirage" at 35' of arc, the elongation of the buildings would be seven times their ordinary height.

Though I have been informed that "mirages" were visible on the previous hot days, the phenomenon is on the whole of rare occurrence here, and has never been witnessed by myself before.

CHAS. O. TRECHMANN.

Hartlepool, June 18.

P.S.—My point of view would be about 20 feet above sea-level.

A Suggestion for Anthropologists.

So far as the undersigned has seen, all reviewers of the "Précis d'Anthropologie," lately issued by Profs. Hovelacque and Hervé, of Paris, have noted with no little interest the attitude of the work towards the problem of the origin of man. Rejecting on the one hand the doctrine of the monogenesis of the human family in the way of a purely natural evolution out of lower forms of life, and on the other hand discrediting the polygenesis of men by special creation in different centres of distribution, these eminent anthropologists present, as the probable truth, a compromise hypothesis, which they call *transformisme polygénique*. According to this view, men were evolved from the lower animals, but in more than one original centre, and from more than one original pair. A French reviewer has well intimated the significance of this new teaching by observing that it marks a distinct schism in the ranks of the Darwinistic anthropologists, and inaugurates debates and investigations from which most important new light may be expected.

In this connexion it has occurred to me that if I were an anthropologist, and especially one of Darwinian principles, I should be exceedingly eager to institute investigations looking to the establishment or overthrow of a still different conception of the matter—one not yet studied with anything like the thoroughness which it deserves. I might call the hypothesis to which I allude the hypothesis of *transformisme bigénique*. Being neither its inventor nor a believer in it, I can the more freely call the attention of believers in transformism to its decided richness of promise. Indeed, if there is any middle ground of truth between the anthropology of Darwin and the anthropology of Agassiz, it can nowhere so hopefully be sought as precisely here. The hypothesis to which I refer is that according to which the human family consists of the descendants of two primitive human races—the one white and originating at the North Pole, the other dark and originating at the South Pole.

The only work in which I have ever found this view suggested is one published in Sweden about the year 1842, and two years later in an English translation, in London, under the following title: "The Theogony of the Hindus; with their Systems of Philosophy and Cosmogony. An Essay, by Count M. Björn-stjerna." I may be allowed to add that all I have published respecting the north polar origin of the race was already in its third edition before I had seen, or had any knowledge of, this work.

For the further satisfaction of those readers to whom the work may not be easily accessible, it may be stated that the idea is by no means elaborated and formally presented as a scientific solution of the problem of the origin of man. On the contrary, it is so transient and incidental a suggestion on the part of the Count that the substance of all he says is found in two sentences on page 177 of the English translation, as follows:—"As,

according to the nature of the thing [*i.e.* owing to the secular cooling of the earth], both the polar regions must have been prepared equally early for the reception of mankind, it is possible that the appearance of man took place at the same time in both regions; perhaps the white race in the countries about the North Pole, and the black race in those about the South Pole. A number of difficult problems might hence be solved." How singular it would be if this passing remark of a Swedish Count, writing upon the mythology of the Hindus, and more than a generation ago, should prove to be the watchword of the most advanced school of scientific anthropologists at the opening of the twentieth century.

WILLIAM F. WARREN.

Bad Gastein, Austria, June 20.

Snow in Central Germany.

IN a note in NATURE of May 12, p. 42, it was stated that the quantity of snow which fell in Central Germany from December 19 to 23, between 50° and 52° 5' N. latitude, and between 7° and 18° E. longitude, weighed no less than 10,000,000 tons. I think there is a mistake in the calculation. Supposing that the snow was equivalent only to a stratum of water of 5 centimetres in height, its weight would be not 10,000,000, but 10,000,000,000 tons.

OTTO KNOPF.

Berlin, June 21.

Meteor.

AT about 7.45 p.m. on June 19 a brilliant meteor was seen in broad daylight from this place. At a rough estimate it followed the meridian of Antares for about 30°, and disappeared near the meridian of that star.

H. KING.

Chithurst, Petersfield.

Medicine in McGill University.

IN a criticism of my "Outlines of Lectures on Physiology" which appeared in NATURE for May 12, you say:—"Pathology, or the application of physiology to disease, is hardly touched upon in this book. It is a most unfortunate omission unless both pathology and therapeutics are taught more systematically than with us." About three years ago "Institutes of Medicine" (then including physiology proper, histology, and pathology) was divided, and now these departments are each taught separately, and each is provided with its own laboratory. A systematic course of lectures and demonstrations in pathology is given, with instruction and practice in making autopsies (after Virchow). Therapeutics is taught from the physiological point of view, and also has its own laboratory. So that it only becomes necessary to make such reference to pathology, &c., in the lectures on physiology as suffices to indicate that the subject does bear on the study of disease, and thus interest the student in it from its bearing on his life-work.

It may be interesting to English readers to learn that very recently two of Montreal's citizens have given one million dollars to erect and endow a "Royal Victoria Hospital" in commemoration of the Queen's Jubilee. This hospital is to be located close to McGill University.

I make these statements simply in justice to the Medical Faculty.

T. WESLEY MILLS.

Physiological Laboratory, McGill University,

Montreal, May 28.

The University of Tokio.

IN vol. xxxv. of NATURE, p. 401, it was stated that the recent amalgamation of the Engineering College and the University of Tokio occasioned the "total elimination of Europeans from the teaching staff, their place being taken by Japanese." Justice to the new University requires the correction of this statement, which is not only misleading, but erroneous. It is true that two well-known foreign Professors vacated their posts—one immediately after the amalgamation, and the other within six months thereafter. Their place, however (for they taught the same subject), is soon to be filled by an engineer who is expected shortly from England. But giving full allowance to this temporary vacancy, any person who will take the trouble to compare the number of foreign Professors in the two establishments before the incorporation with the number

after will find that "the total elimination" amounts to "one." Since the publication of the Calendar, again, no fewer than six have been added to the list of European Professors in the University.

S. SEKIYA.

Imperial University, Tokio, April 22.

SCIENCE FOR ARTISTS.

ON many former occasions, furnished by the opening of the Royal Academy, the Grosvenor, and other exhibitions of pictures, we have made some remarks upon them from a specially scientific point of view, endeavouring in this way to note if any progress has been made in the treatment of natural phenomena by artists. This has also sometimes been accompanied by minute criticisms of certain pictures in which such phenomena have been admirably portrayed, or, on the other hand, travestied. Our remarks naturally have referred more to landscapes than to the other classes of pictures exhibited, first, because we have to deal chiefly with physical phenomena, and secondly, because, in representing the human form, artists have now for many years received such complete instruction that there is little chance of any gross error being committed. Why we think it worth while to write these articles at all is that, so far as we can find out, in no scheme of art instruction does the study of natural phenomena find any place, and one of our objects is to show that such instruction ought to be given to artists side by side with their anatomical work, in order to prevent them from making grotesque blunders which destroy all the artistic beauty of a picture, however well painted, in the eyes of the initiated. It happens very curiously that the various scientific points which are raised by the pictures exhibited vary from year to year. This alone would indicate the many points of contact between science and art, beyond those which we usually recognize. This year we think the questions raised by the pictures exhibited in the Royal Academy to which we now confine ourselves, for it really comes to that, are smaller in number than they have been for some time past, and are more restricted in scope. This arises, we believe, in a great measure from the very distinct improvement in the landscape pictures generally. The air has more atmosphere about it, the skies and clouds are truer in colour and form, the play of light upon water, the forms of waves, and many such points as these, to which reference might be made, have received better and more careful treatment. The most wonderful play of colour in Nature is brought before us at sunrise and sunset, and the only wonder is that artists do not pay more attention to the magnificent pictorial effects which are provided by these natural displays. This wonder, however, no doubt is greatly reduced when we come to consider the enormous difficulty of the problem. In the first place, there is no book, as far as we know, containing any statement in regard to sunset colours which will help an artist who wishes to paint them. Again, the play of colour in cloud and sky, in the objects illuminated by the fading and coloured light, varies incessantly; while, perhaps worst of all, the artist himself has to choose his colours from a palette which is illuminated by a light the colours of which are constantly changing as the sun gets lower and lower. In spite, however, of these enormous difficulties, artists have succeeded in producing sunset pictures of great beauty, nor are they absent in the present Academy Exhibition. No. 52, "Sunset after a Shower," is a case in point. Sunsets are not always so exactly alike as the painter of that picture paints them, as if pictures represented the different states of an etching, but the picture in question has many beauties about it; and, as all good pictures should do, it raises a question. In it we are supposed to be looking very nearly towards the place of sunset, and the sunset is a distinctly coloured one, as is evident by the colours on

the clouds, and the very carefully painted zone of the sky getting warmer and warmer as the horizon is approached. The light in fact is so warm that the blue has disappeared from it, and almost the green. Under these circumstances there is no green light, or very little of it, to be reflected from the leaves and trees, which are not green in themselves of course, but only have the capacity of reflecting green light. We venture to think, then, that the trees in this picture are too green, and certainly greener than they would be ever likely to appear when they were backed by a sunset sky. In No. 682, by the same artist, the greenery of the trees would have been more in place, because in that picture the sunset colours are much less warm, albeit they are beautifully true to Nature, being caused by a different meteorological condition. We do not see in this year's Academy any distinct attempt to give us that glorious contrast one sometimes sees at sunset between brilliantly illuminated clouds, running through all the composite colours which are possible between red and yellow, backed by a "daffodil sky," as Tennyson calls it, or even one approaching an olive green. The nearest approach to such a green sky as this last we find in No. 990, which the artist funnily styles "Beneath Blue Skies." Surely the sky in this picture is green, and not blue.

On a former occasion, some years ago now, we ventured to put together a few notes regarding the hints that artists might glean, if they chose, in two or three hours' reading from any elementary books on astronomy about the moon. We are sorry to say that the moons in this year's Academy show that such advice still holds good, for in most cases the moons are woefully wrong. Funnily enough, there is a difference between the moons now and the moons of ten years ago. They were then far too large, now as a rule they err in an opposite direction. It may perhaps be imagined that the artist has no available means of drawing the moon to anything like the correct scale. This really is not so. If the artist has made up his mind that his picture shall contain, say, some 60° in the horizontal scale, so that six such pictures would enable him to give a complete panorama of the landscape around him from the place he has chosen to paint from, we have—provided the 60° are properly estimated—a perfect method of drawing the moon to scale, for the reason that as the diameter of the moon is about half a degree, so the diameter shown should be 1/120 of the length of the picture. We are inclined to believe that a moon of this size would really look rather too small, although, of course, it would be scientifically correct, for the reason that we have been fed upon large moons in pictures all our lives, and it is a part of our artistic education at the present moment to expect to see a large moon on canvas, and there is something uncanny about a small one, even if it is perfectly correctly painted. This artistic treatment of the moon will of course lose all its objectionable characters as the years roll by, and we shall not expect to see one thing in a picture and another thing, which the picture is supposed to represent, in the heavens.

In pictures 118 and 231 the moons would have been truer to nature if they had been slightly larger; but the worst of it is that this is not the only defect about them. Thus, dealing with 118, it is obvious that the sun is setting to the right of the picture; the moon, therefore, cannot have been full. If the artist thought he was drawing a gibbous moon, then he should have shown the imperfect edge of it away from the sun, and not below it as he has done. The fault in No. 231 is that the warm tone of the picture generally, indicates that we are somewhere about the hour of sunset; the sun has evidently not yet set, the luminosity of the picture shows that. Now we cannot get a full moon as high as the artist has represented his until after the sun has set, for a very simple reason which is known to everybody. We should like also to suggest to another