

times et Croyances superstitieuses des Cambodgiens," in *Cochinchine Française; Excursions et Reconnaissances*, No. 16, p. 142, Saigon, 1883).

So far the practice of augury from combat of shell-fish appears to be a peculiarity of the peoples in the Far East. Is there any instance of the same method described in other parts of the world? KUMAGUSU MINAKATA.

May 3.

Luminous Phenomena Observed on Mountains.

On Easter Monday, 19th ult., I was ascending Braeriach by its well-known northern ridge, and, shortly after I had crossed the "snow-line," I witnessed a phenomenon of great beauty, the explanation of which I cannot give. The edge of my plaid, of my gloved hands, of my knickerbockers, &c., was bordered by a two-inch band of brilliant violet light, at the moment of beginning any movement. The light was not visible around anything at rest, nor did it persist; but only showed at the moment when rest was changed for movement.

My attention was directed to this for a very short time only, for heavy snow began to drive in my face, and I had to watch where I was going, as the immediate surroundings included dangerous ground.

After my return, I found an account of a somewhat similar appearance in the *Cairngorm Club Journal*, vol. i. p. 159. I copy the account as there given by Dr. John Gordon, of Aberdeen:—

"Half-way across the snow-slope, while the sun was somewhat obscured, but was still sending a considerable intensity of light, we observed a strange phenomenon. On the side of our body next the snow-slope there was a nimbus of violet light, which clung to clothes, naked fingers, and the shaft of the ice-axe. So plentiful did it appear in the palm of the hand that it looked at times like a pool of violet ink, and one thought it could be pitched away. On shaking the hand, however, the nimbus clung, and was not to be removed. Occasionally the colour varied, taking on shades of brownish-yellow and blue, but violet was the most marked colour. At another time, in much the same condition of light and snow surroundings, one of the party, who was very proud of the beauty of the silver case of his compass, was disgusted to find that it had a distinctly yellow, pinchbeck look. This light refraction or polarisation (?) was not so evident to some of the party, but the writer has observed it before in similar circumstances and atmospheric conditions."

I may add that, in my own case, no direct sunlight reached me, as I was in the lower part of a dense cloud or mist. Some of your readers may offer an explanation of this remarkable and beautiful appearance. C. G. CASH.

Edinburgh Academy, May 3.

The Utility of Specific Characters.

UNDER the above heading, in your issue of April 1, Mr. J. T. Gulick has an interesting communication, in which he asks whether it is possible to explain right-handedness, the dextral or sinistral coil of snail-shells, and similar features, as having any utility to the species of which they are certainly characteristic. Can it be due to natural selection that one snail is dextral, while another is sinistral?

It is a curious fact, I think first pointed out by Mr. Call, that in the American freshwater shells of the genus *Campeloma*, sinistral shells are more numerous among the young than among the adults. Thus, for example, Mr. H. A. Pilsbry (*Nautilus*, February 1897, p. 118), states that Miss Jennie E. Letson examined a lot of *Campeloma decisum* for him, with the result that, "out of 681 specimens, mainly adult, but including those from one-fourth grown up, none were sinistral. Out of 410 shells of the uterine young, 3 were sinistral, slightly over 0.73

two antagonist clans to support—Minamoto or Taira—doubting the accuracy of an oracle given by his patron-god to induce him to serve under the White Banner [*i.e.* the Minamoto clan], caused seven white cocks to combat with seven red ones before the shrine of the same deity. And the result was that the red ones [which represented the Red Banner of the Taira clan] were all defeated by white ones, which impelled him to make up his mind to serve the Minamoto clan" ("Heike Monogatari," tome xi).

Of allied modes of divination about the decision of a war, I may instance the New Zealander's practice with sticks, and a Gothic king's experiment with swine (see Lubbock, "Origin of Civilisation," 5th ed., p. 245; and Mary Howitt's Appendix to Ennemoser's "History of Magic," ed. Bohn, vol. ii. p. 458).

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per cent." He adds: "Probably all who have collected *Campelomas* have noticed the greater proportion of sinistral examples among the young shells. This doubtless indicates that the reversed condition is an unfavourable one for maturation."

So here, at any rate, we have some direct evidence as to selection. I think it will strike any one, that while left-handedness might be as good for the race as right-handedness, *there is a distinct advantage in uniformity*, and that consideration alone may perhaps suffice to explain Mr. Gulick's difficulty. Among plants it may seem less obvious, but where seedlings are crowded, uniformity may save space, just as a number of objects of the same shape can usually be packed into less space than those of diverse shapes. More plants can grow in a window-box where all bend to the light, than would be possible if half of them bent one way and half another.

There also occurs to me a theoretical consideration, perhaps of doubtful value. When a germ has diverse potentialities, so that it is left to germinal or environmental selection to decide which course it shall take in development, there must, apparently, be a certain waste of germinal energy. Any disadvantage thus arising is ordinarily much more than counterbalanced by the gain due to the adaptability of the organism, or in social species to the power of specialisation of the individual for social purposes. But it may be that when no such advantage is found, there exists a small disadvantage in deviations, potential or actual, from a common standard.

What we really need, in discussing these matters, is the observation of actual facts. The facts above related as to *Campeloma* are worth more than any amount of theoretical considerations. T. D. A. COCKERELL.

Mesilla, New Mexico, U.S.A., April 21.

The Motion of an Iron or Steel Ball in a Magnetic Field.

IN NATURE, April 29, a method, reprinted from the *Physical Review*, is given for illustrating the motion of a particle under the action of a force varying inversely as the square of the distance. I think it ought to be pointed out that the force on a small iron or steel ball, due to a single magnetic pole, is not inversely as the square of the distance. It may be shown without difficulty that if the strength of the pole be μ , the susceptibility of the iron or steel to magnetisation κ , and v the volume of the ball supposed exceedingly small, then the force towards the pole is

$$-\frac{1}{2} \cdot v \cdot \frac{\kappa}{1 + \frac{4}{3}\pi\kappa} \cdot \frac{d(\frac{\mu^2}{r^2})}{dr}$$

$$= \frac{2\kappa v}{1 + \frac{4}{3}\pi\kappa} \cdot \frac{\mu^2}{r^5}$$

Thus, assuming that κ is constant during the motion of the ball, which, of course, it is not, the force is inversely as the fifth power of the distance, and the curves given can not be regarded as even approximate representations of planetary orbits, but rather as rough representations of orbits described about a centre of force whose law is the inverse fifth (see "Tait and Steele," p. 151). ALEX. ANDERSON.

Queen's College, Galway, May 3.

THE NEW SOUTH AFRICAN MUSEUM.

THE new South African Museum is situated at the upper end of the Municipal Gardens, about a quarter of a mile distant from the old building, which will now be entirely occupied by the public library.

The new building consists of two floors, of which the upper one contains the principal exhibition rooms; the large room, measuring 63 feet by 41½ feet, is devoted to the birds, reptiles, and fishes of South Africa; and there also is the cast of the skeleton of the restored triassic reptile, *Pariasaurus bairii*, Seeley. It is also hoped that at some future time other casts and originals of some of these remarkable extinct forms may be exhibited, among which we may perhaps find the progenitors of our modern mammals. The corresponding room is devoted to the general collection of vertebrates. A small room contains the anthropological collection, both South African and general.

The remaining room is entirely devoted to the South African mammals, among which are an excellent series of antelopes, chiefly obtained for the Museum by Mr. Selous; and the white rhinoceros, which was shot in Mashonaland about two years ago by Mr. Eyre, and was presented to the Museum by the Right Hon. C. T. Rhodes.

The three rooms first mentioned are lighted by windows, and the cases placed at right angles, much in the same fashion as in the larger galleries of the Natural History Museum at South Kensington. The South African mammal room is lighted from above, and the cases extend all round the walls, together with four very large free standing cases arranged in the middle of the room. All the cases are made entirely of iron and plate-glass, on what is generally known as the Dresden system. This was found necessary in consequence of the great difficulty which has hitherto been met with owing to the warping of all woodwork in South Africa, which entirely prevents

rooms are fitted with desk-cases, with underlying drawers, also entirely constructed of iron and glass.

The small rooms, together with those underneath the South African mammal room, are the offices, the library, and study-collections in cabinets and preserved in spirit. Apart from the main building is a large taxidermist shop and store room.

Great interest was shown in the recent formal opening of the Museum by the Prime Minister, Sir J. Gordon Sprigg. A long report of the ceremony appeared in the *Cape Times*, and is here abridged.

The Hon. J. X. Merriman, addressing Sir Gordon Sprigg, and those present, said it had fallen to his lot as the senior trustee to ask him to open the Museum. The occasion marked a very important stage in the history of the Museum, and he could wish it had fallen to some one more scientific than himself to sound the praises of the institution. But, in another way, it was fit that he should say a few words, as he was perhaps the only one in the assembly, except Sir Richard Southey, who



The New Museum at Capetown.

wooden cases from being secure from the attacks of insect pests.

On the ground floor, on either side of the entrance hall are two rooms; of these, the larger one on the left contains the invertebrate collections; the smaller, the antiquities. Amongst these latter, there are a certain number of pieces of glass and china of considerable artistic merit, brought to the Cape by the Dutch settlers in the early days; and also one of the so-called post-office stones on which, before any settlement existed, the captains of passing ships used to engrave the dates of their arrival and departure, and notices requesting subsequently-arriving captains to search near by for letters. Similar stones are still occasionally found in the centre of Cape Town, when excavations are made.

The corresponding rooms on the right of the entrance contain the geological collections; the general collection in the larger room, the South African in the smaller. In the latter a special feature will be the exhibition of specimens relating to the gold and diamond industry. These

recalled the Museum in its infancy. When a boy, in the year 1855, he was always interested in going to the Museum. It was due to two gentlemen who had now passed away, Mr. E. L. Layard and Mr. Charles Fairbridge, that the Museum was first founded. It was then put in the old Slave Lodge; and it was mainly owing to their exertions, and to the interest taken in it by Sir George Grey, that the new Museum and Library was built, and that the Museum migrated there, where it remained for a great many years. At first Mr. Layard was the curator; and amongst the trustees who deserved mention were Sir Richard Southey, who only vacated his office on being appointed Governor of Griqualand West, and Sir Thomas Maclear, the Astronomer Royal, who was now dead. The room was found to be totally inadequate to the size of the collection, and after some negotiations with the Government a grant was obtained, and the result they saw in the building they were now going to open to-day.

He thought it would be fitting that he should say a few words as to some of the aims and objects in arranging the Museum in that building. The prevailing idea, he was afraid, was that a museum was a collection of all sorts, and oddments and curiosities; and the name, like the honourable name of professor, had been a good deal brought down; for instance, they had Barnum's

Museum—and he was afraid people were inclined to imagine the Museum to cope with that magnificent receptacle for the bearded woman and the two-headed calf. The aim, however, of this Museum was that it should really be, in a sort of way, the home of research in South Africa; that whatever scientific research there was in South Africa should find its home within the walls of the South African Museum, and that the collections should be so arranged as to illustrate the different branches of scientific research in that country. The Museum was under the general direction of Mr. Sclater, who had thrown himself into his work with a zeal and efficiency which left nothing to be desired. He had taken upon himself the management of the special branch—that of mammalia—the largest animals of South Africa. These were a vanishing class, owing to the rapidity of progress; for the spirit of civilisation was rapidly destroying all these interesting animals, which made South Africa at one time famous throughout the world.

It was sixty years ago since the great naturalist, Darwin, drew a remarkable picture of the mammalia of South Africa. He drew attention to the fact that the mammalia of South Africa were the largest and most numerous in the whole world; and he compared them with the mammalia of Brazil, and showed in what an extraordinary proportion the weight of our animals exceeded that of the South American animals. Now they had got rid of their mammalia here, and were importing frozen meat; and this could hardly be said to be improving nature. Before the mammalia were extinct, it was very desirable that a collection of them should be formed, and they would see a beginning had been made in this direction. Another branch the assistant curator, Mr. Peringuey, had taken under his charge, viz. the important division of entomology, or the study of insects. Some people, little thinking of the important part insects played in the world, smiled, but it was an insect that cost France more than the Franco-Prussian war; it was an insect that formed their most acute political differences in this country. When he ran through the important part that insect-life played, he sometimes wondered how it was possible for man to exist on the face of the earth at the same time. They also had another gentleman working in the same direction as Mr. Peringuey, viz. Mr. Lounsbury, the able entomologist. They wished, however, to make the Museum the home of insect life—though not of live insects.

Dr. Corstorphine was in charge of the geological section of the Museum, which up to the present time had been neglected. Dr. Corstorphine was making good progress, and in connection with that the Geological Commission had its home in the South African Museum. Dr. Purcell, a South African, had set a fine example. After studying in the science schools of Europe, he came out here to spend his life; he was in charge of the invertebrate section; and finally there was Mr. Gilchrist, who had come out as an expert upon fisheries, and who was in charge of the marine section. So that all the branches were fairly well organised, and the scheme, they would admit, was a good one if it could be carried out. For the organisation the greatest thanks were due to his two fellow trustees, whose zeal and energy deserved all praise. On the Board of Trustees he represented the Philistine element, so he could lay no claim to credit for the scheme of scientific research.

Only one thing seemed to be lacking, and that was a very common thing indeed—that was, that they needed funds; they were crippled for want of money. Some of the gentlemen he had mentioned were working simply for the love of science, whilst others were working on a pittance which some of them would not think well to give to their upper clerks. They lamented in this country that they had not some of those liberal men who in America had identified themselves with scientific institutions. Parliament had been liberal enough in these matters, and it afforded him great pleasure in this connection to say that to Sir Gordon Sprigg they had a right to be thankful, because he had always acted to them, he would not say with liberality, because that was not the word to use in connection with public funds, but with a just appreciation which had not always been met with amongst his predecessors. Not only as head of the Government, but as a personality he called upon the Premier to formally open the institution in which they now found themselves.

Sir Gordon Sprigg said he remembered the South African Museum in the year 1858, in which year he first went to that country. From that time to the present, from a public, not from a scientific point of view, he had taken a very great interest in the institution, and it afforded him very great pleasure indeed

to declare the Museum open to the public. Those who had had an opportunity of visiting the Natural History Museum at South Kensington would see that the trustees had endeavoured to follow out in every possible way the design of that great institution. After the very interesting speech delivered by Mr. Merriman, which explained the objects of the institution and the designs of the trustees who had brought it to its present condition—something like approaching to perfection—he would not weary them with any further words, but would simply declare the Museum open for the public. At the same time the trustees recognised the fact that they had never appealed to him in vain for funds, and so long as he held his present position they never would appeal to him in vain. From time to time, so long as he held the position he now held, it would always afford him great pleasure to submit to Parliament any proposals submitted to him for consideration.

Dr. Gill said he had been requested by his fellow-trustees to say a word about one who was one of his dearest friends, who worked hard under great difficulties before a liberal—or should he say a wise—Sir Gordon Sprigg arose. He was the one who really bore the burden and the heat of the day, one who under great discouragement persevered in creating the nucleus of the Museum they were now about to see—and that man was Roland Trimen, F.R.S. On an occasion like the present it would be a great mistake if they were to omit the name of one who had done so much for natural history in South Africa. Mr. Trimen laid the foundation of that museum; they all owed him a great debt of gratitude, and they ought to remember it on that day.

THE SCIENCE OF ART.

PERHAPS the learned Dr. Bastian, of Berlin, has appreciated more than any one else that the psychological aspect of anthropology requires far more attention than has yet been devoted to it; the present writer would venture to assert that it is the department of anthropology that most urgently requires students. No doubt the subject is difficult, but the reward will be great. Experimental and observational psychology have received but scant attention in this country, and the psychology of the lower races has been totally ignored by us.

Of late years several anthropologists have studied the origin and modifications of the decorative designs of savage peoples; but only a very few of these have recognised that the tracing out of the history of a pattern or a design is of minor importance compared with the psychological processes that induced the original selection of the motive, and that operated in its subsequent elaboration or simplification. The scientific study of decorative art is a branch of psychology.

The editor of our contemporary *Mind* also appreciates this fact, and so Prof. G. F. Stout has printed a paper on "Evolution and Psychology in Art," by Dr. Colley March, in the October number of that journal. Dr. March accepts the definition of art as given in Dr. Murray's great dictionary: "Art is the application of *skill* to implements of utility, to subjects of taste, such as poetry and dancing, and to works of imitation and design, such as painting, sculpture and architecture." For the sake of convenience, Dr. March divides art into: (1) Artifice, of purely utilitarian intention. (2) Artistic treatment, or the shaping or arrangement of the details, parts, colours or outlines of implements or structures, whether utilitarian or not, so as to "please the eye." (3) Ornament: works of utility are necessary; man is compelled to make things. We understand why, in the making, they should be artistically treated, for the eye has always been accustomed to see outlines that represent the most functionally useful, and utility is always pleasing. It is not quite so obvious why they should become the subject of Ornament. Ornament is a decoration applied to an object which could exist quite well without it. Several examples of every-day objects are given, which show that Ornament sprang from structural handicraft, and became