

tunity of adding to their returns, and will not once more allow the foreigner to develop a system originally devised in this country.

In the discussion on the paper, several steel makers, who had seen Mr. Darby's plant in operation, spoke as to the excellent way in which the furnace worked when using gas which had been treated for the extraction of the ammonia.

Prof. Roberts-Austen next gave a brief address on the diffusion of carbon in iron, he not having prepared a paper in the usual way. The subject has recently been described by the same author in the Bakerian Lecture of the Royal Society and will shortly be treated in these columns; it is therefore unnecessary for us to go into the matter on the present occasion.

The remainder of the sitting was almost wholly occupied by the reading and discussion of M. Osmond's and Mr. Howe's papers, the paper of M. de Benneville being taken as read. It would be impossible at the end of a report of this nature to deal with the highly controversial matters which form the subject of these two papers; and indeed, without the introduction of the micro-sections supplied by Mr. Howe, the matter would not be intelligible. The allotropic theory of the hardening of steel, which has already caused so much discussion, did not appear to be carried very much further on Thursday last, or, at any rate, the majority of those present at the meeting did not seem to see their way much further towards the end of the problem. M. Osmond welcomes Mr. Howe as a friend and ally. He looks on the latter's carbo-allotropic theory as not antagonistic to his own. The discussion was confined principally to Prof. Arnold and Mr. Hadfield, who are the chief opponents of the school represented principally by M. Osmond and Prof. Roberts-Austen, now, we suppose, with Mr. Howe as an ally.

The summer meeting of the Institute is this year of an unusually ambitious nature, and will be held in September in Bilbao, a steamer having been chartered for the conveyance of members to that port. The vessel is the Orient liner *Ormus*, which will also serve as a floating hotel for members during the meeting.

A REMARKABLE DUST-STORM.

THE American journal *Electricity* for February 19 contains an account of an unusual kind of storm which occurred in January of this year. The details were communicated by L. H. Korty, telegraph superintendent of the Union Pacific System, of Omaha, Neb. It was on the telegraph lines of this system between Weber and Peterson, Utah, that considerable difficulty was experienced in working, owing, as it is stated, to the peculiar character of the storm in question. The description is as follows:—

"On the afternoon of January 16, a very peculiar rain-storm occurred in Eastern Utah and Western Wyoming, along the Union Pacific Railway, extending from Ogden, Utah, to Evanston, Wyoming, a distance of 75 miles. The rain consisted of salt water or brine. The clothing of persons exposed to the shower had, when dry, the appearance of having been sprinkled with whitewash. The windows in the stores and residences at Evanston were so encrusted with salt deposit as to make it impossible to look out. Dr. C. T. Gamble, of Almy, Wyo., a gentleman of undoubted trustworthiness, states that the storm deposited in Almy alone 27 tons of salt. 'This assertion may appear fabulous,' says the doctor, 'but nevertheless is true, as it has been proved by carefully estimating the quantity on a given surface in different parts of the camp. The area of Almy is something over nine miles, and three tons to the mile would make 27 tons of the sodium deposited. The salt if collected and sacked would make ten ordinary wagon-loads. Those who doubt the above statements, go to figuring.'

"The salt-storm lasted about two hours. After it had ceased raining, the sun came out, and as fast as things dried they turned a whitish colour, and it was found that everything was covered with a thick coating of salt. Cars, buildings, trees, telegraph poles, insulators and wires all looked ghastly in their white coats. Through Weber Cañon the salt storm turned into snow later. A peculiar effect of the salt deposit on the telegraph poles, arms and insulators through Weber Cañon was noticed in operating the wires. During the day, when the sun came out, the wires worked clear and without interruption, while at night, when it turned cold, the wires were rendered unserviceable, which was attributed to the fact that the snow, having melted,

some during the daytime and again freezing at night, created a moisture in conjunction with the salt deposit underneath, so as to entirely destroy the insulation of the wires. After several unsuccessful attempts to remove the cause of the trouble, an engine with a pump and long hose was sent over the line, and the deposit thoroughly washed off the poles and fixtures for a distance of 40 miles. The wires of the Rio Grande Western Railroad between Ogden and Salt Lake City were slightly affected in the same way, as were also those of the Southern Pacific for a short distance west of Ogden."

It has been suggested, as an explanation of the facts, that the salt was raised in vapour over Great Salt Lake, and was carried by the wind and deposited over the country for many miles to the eastward. This, of course, could not have happened, as salt could not be raised in vapour. It seems likely, however, that the white residue may have had the appearance of salt, but was not actually salt. Would not a more reasonable explanation be that fine white dust in the region about the lake may have been carried into the upper regions by the wind, and after traversing some miles brought to earth again owing to the condensation of the vapour surrounding them?

SCIENCE IN THE MAGAZINES.

THIS month's magazines contain numerous articles on scientific topics or with scientific bearings. Röntgen photography naturally forms the theme of several contributions. The *Quarterly Review* contains a short descriptive account of methods employed, results obtained, and theories propounded, and even blossoms into illustrations reproduced from radiographs taken by Mr. A. A. C. Swinton. The *Century Magazine* has "a Symposium on the Röntgen Rays," the writers being T. C. Martin, R. W. Wood, Elihu Thomson, Sylvanus P. Thompson, J. C. McLennan, W. J. Morton, and Thomas A. Edison. The result of this composite article is vain repetition of experimental conditions, and a confusion of tongues; Prof. Thompson referring to pictures obtained by Röntgen rays as "sciographs," while other writers describe them as "shadowgraphs," and all the illustrations are designated "cathodographs."

Dr. St. George Mivart writes on "Life from the Lost Atlantis" in the *Fortnightly*, his paper being concerned chiefly in pointing out the significance of the discovery of *Cynolestes obscurus*, a still-existing survivor of Ameghino's Epanorthidæ, and the representative of a new family of recent marsupials, described by Mr. Oldfield Thomas before the Zoological Society on December 17, 1895.

"This little, apparently insignificant, mouse-like creature," to quote the author, "turns out to be an animal of extreme interest, for it affords strong evidence that what we now know as South America and Australia must have been connected, and the Atlantic at least bridged by dry land, if even an Antarctic continent may not have existed, of which South America and Australia are divergent and diverse outgrowths."

Mr. G. E. Boxall puts forward, in the *Contemporary*, the view that the vast sedimentary plains of Australia, which thirty years ago were so "rotten" that no stock could be kept upon them, have been trampled into compactness by large herds of cattle and sheep. He gives reasons for believing the dry plains of Western Australia to be similar to those described by Oxley and others as once existing in the delta of the Murray, where about one hundred millions of sheep are now pastured, besides large herds of cattle and horses; and therefore he thinks that the present sandy plains will sooner or later be consolidated and rendered secure for stock. He concludes:

"The plains of Australia are, from the accounts given of them by explorers in all parts of the continent, singularly alike, and if the plains of Northern and Western Australia can be consolidated by the trampling of stock, as I believe those of the eastern districts have been, the time is not far distant when the word 'desert' may be wiped off the map of Australia, and the true character of its vast plains become more generally understood and appreciated."

Psychologists will be interested in a paper by Mr. Havelock Ellis, in the same review, on "The Colour-Sense in Literature." Mr. Ellis has examined the works of a series of imaginative writers, usually poets, dating from the dawn of literature to the present time, and has noted the main colour-words that occur, and has also noted how these words are used. His paper

contains the numerical results arrived at, together with certain observations suggested by them. The tables given lend support to the following interpretation:—

"The predominance of green or blue—the colours of vegetation, the sky, and the sea—means that the poet is predominantly a poet of nature. If red and its synonyms are supreme, we may assume an absorbing interest in man and woman, for they are the colours of blood and of love, the two main pivots of human affairs, at all events in poetry. And where there is a predominance of black, white, and, I think I would add, yellow—the colours that are rare in the world, and the colour of golden impossibilities—there we shall find that the poet is singing with, as it were, closed eyes, intent on his own inner vision. . . . Although I cannot claim to have put this numerical test of colour-vision into a final shape, there can be little doubt that it possesses at least two uses in the precise study of literature. It is, first, an instrument for investigating a writer's personal psychology, by defining the nature of his æsthetic colour-vision. When we have ascertained a writer's colour-formula and his colours of predilection, we can tell at a glance, simply and reliably, something about his view of the world which pages of description could only tell us with uncertainty. In the second place, it enables us to take a definite step in the attainment of a scientific æsthetic, by furnishing a means of comparative study. By its help we can trace the colours of the world as mirrored in literature from age to age, from country to country, and in finer shades among the writers of a single group."

Another article in the *Contemporary* is of scientific interest: it is on "The Proposed Gigantic Model of the Earth," by Dr. A. R. Wallace. It may be remembered by our readers that M. Elisée Reclus has drawn up a scheme for constructing a terrestrial globe on a scale of one-hundred-thousandth the actual size, that is, 418 feet in diameter. Another globe would be required as a cover for the actual earth-model, so that the expense of such a duplex structure would be enormous. Dr. Wallace gives a qualified support to M. Reclus' proposal; for he thinks only one globe should be constructed, showing all the great geographical features of the earth on its outer surface, while on the inner surface would be formed that strictly accurate model which M. Reclus considers would justify the expense of such a great work.

Miss Mary Kingsley contributes to the *National* an interesting account of her ascent of "The Throne of Thunder," or the Peak of Cameroons, the highest point on the western side of the African continent. Twenty-seven white men have reached the peak, and Miss Kingsley describes the twenty-eighth ascent, the second successful one from the south-east face. In the same review Mr. A. G. Boscawen, M.P., gives his impressions of Japan, and concludes his remarks with a few words about British commercial interests in the Far East. It is satisfactory to note his remarks on the advantages to be gained by the appointment of commercial and technical advisers to foreign Legations. He says:—

"And now I would suggest what I have suggested elsewhere, that the Government ought to give a helping hand by appointing a commercial *attaché* to the Legation at Tôkyô, who I feel sure would prove most useful at the present moment, when the Japanese are friendly to us, and are certainly inclined to buy from us if we will only take the trouble to adapt our manufactures to their markets. Such an official, by keeping us constantly informed at home of what articles the Japanese require, would prevent a large portion of our trade from going to foreigners, especially to the Germans and Americans, who have for years taken far more trouble than we have to secure the goodwill of the Japanese."

A passing mention must suffice for the remaining articles of scientific interest in the magazines and reviews received. Sir Robert Ball writes on "The Scenery of the Moon," in the *Strand Magazine*, his description being illustrated by reproductions from lunar photographs. Miss Agnes Giberne treats the well-worn theme of "The Far Distance of our Universe," in *Chambers's Journal*, which also contains popular articles on the electric supply of London, jumping beans, and house-flies. Some suggestive points in connection with the evolution of language will be found in the article entitled "The Genesis of Expression," by M. L. Johnson, in the *Westminster Review*. A well-illustrated paper on "The Evolution of the Trotting Horse," contributed by Mr. Hamilton Bushey to *Scribner*, is not without interest to scientific readers. Under the title "Through Scientific Doubt to Faith," the *Quarterly Review*

traces the mental history of Romanes, as evidenced by his own works, and in the lately published "Life and Letters," written and edited by his wife. The article is a complacent statement from the religious side. The Viscount Harberton writes on "Muzzling and the Prevention of Rabies" in the *Humanitarian*. Mr. P. C. Knapp brings forward evidence, in the *Century*, against the view that nervous disorders are increasing, and shows that, without more evidence in its favour, the belief in the greater nervousness of Americans is an error. Finally, the *Geographical Journal* contains Mr. St. George Littledale's account of "A Journey across Tibet, from North to South, and West to Ladak," and Mr. Edward A. FitzGerald's paper on "The First Crossing of the Southern Alps of New Zealand." Attention may profitably be drawn to the maps which illustrate Mr. Littledale's journey, and to a new map of the Upper Kuyuni River, British Guiana, from a recent survey.

THE METRIC SYSTEM IN THE UNITED STATES.

STRENUOUS efforts are being made by the American Metrological Society to secure the adoption of the Bill making the use of the metric system obligatory in the United States after a specified date. Letters have been sent to all who are interested in the question, soliciting their help and influence, and petitions are being numerous signed and sent in to Representatives. The Committee on Coinage, Weights and Measures, of the House, recently reported unanimously in favour of the Bill, and the introduction and conclusion of their interesting report are reprinted in *Science*, from which source the subjoined summary has been made.

For more than a generation after the construction of the constitution, the American people lived with no legal standard by which could be determined even the amount of metal which went into the coin that came from their mints. Gallatin procured from France a platinum kilogram and meter in 1821, and from England a troy pound in 1827, and in 1828 the latter was recognised as the standard for mint purposes by the following Act:

"For the purpose of securing due conformity in weight of the coins of the United States to the provisions of this title, the brass troy pound weight procured by the Minister of the United States at London in the year eighteen hundred and twenty-seven for the use of the mint and now in custody of the mint at Philadelphia, shall be the standard troy pound of the mint of the United States, conformably to which the coinage thereof shall be regulated."

Meantime both the people and the Government were using such weights and measures as were nearest at hand, derived in the main from the English ancestry, but made by themselves without any authoritative standard for comparison, and as a consequence differing materially from each other. In 1830 the Senate directed the Secretary of the Treasury to have a comparison made of the standards of weight and measure used at the principal custom houses of the United States, and report the same to the Senate. This was done, and large discrepancies and errors were found to exist. These discrepancies were nullifying and violating the provision of the Constitution which prescribes that "all duties, imposts and excises shall be uniform throughout the United States." Varying scales and varying measures inevitably produced varying rates of duty. The Treasury Department, therefore, in the exercise of its executive power and as a necessary incident and means to the execution of the law and the observance of the Constitution, adopted for the use of that Department the Troughton scale, then in the possession and use of the Coast Survey, as the unit of length, and the troy pound of the mint as the unit of weight. From the latter the avoirdupois pound was to be derived, assuming that there were 7000 grains in the pound avoirdupois to 5760 in the pound troy. For measures of capacity the wine gallon of 231 cubic inches, and the Winchester bushel of 2150.42 cubic inches, were adopted. This gave to the Treasury Department the basis of a system of weights and measures to be used in its operations, and in order to promote the general adoption and use of the same throughout the country, Congress, in June 1836, adopted the following joint resolution:

"That the Secretary of the Treasury be, and he hereby is,