

Fluctuations in Rainfall.

A correspondent, in a recent communication to Nature, pointed out that the statistics of rainfall which have been collected in various parts of England for many years past show that there is a regular recurrence of cold and wet periods every thirty-five or thirty-six years, measuring from the centers of each period. The correspondent adds: "Curiously enough, other observations show the same rule to apply to many distant parts of the world as well. On the assumption that these fluctuations may be depended upon, the center of the next wet period should occur in the second decade of the coming century, but in the immediate future we should have a preponderance of dry years for some years yet to follow."

The subject being called to the attention of Prof. Draper, who has charge of the meteorological observatory in the Central Park Arsenal, he said he believed the statement made by Nature's correspondent to be at least approximately correct, and hazarded the guess that the correspondent is Mr. Symmons, who has charge of the British rain records, and receives results from 2,500 rain gages in the British Isles.

Prof. Draper produced records of the rainfall in New York from 1836 to 1886, and a chart which he had prepared from them. This chart shows a well-defined wave, beginning in 1836 far below the mean rainfall and rising slowly (with one violent fluctuation) year by year until it crept above the mean line. It continued to rise for a number of years, and then began to fall, going again below the mean line and remaining there more than ten years. The violent fluctuation spoken of was one from a total rainfall in 1836 of 27.57 inches—the lowest recorded—to one of 65.51 inches in 1837, the highest recorded.

Prof. Draper also has like charts of the rainfall at Washington, Philadelphia, and Providence, R. I., extending through a long period of years, which show results differing only in degree from those obtained in New York, and lead to the conclusion that the fluctuations vary with localities. He said that he had examined the French records for two hundred years and found only three decided fluctuations in that time.

The reason for these fluctuations in the rainfall, Prof. Draper said, is not known to man.

The Temperatures of Animals.

A number of interesting observations on the temperatures of animals in relation to the temperature of the air or water in which they live are described by Mr. Alexander Sutherland in the latest volume published by the Royal Society of Victoria. It is well known that the temperature of the human body in health is 97° or 98° Fah., and this is the same within a degree both in winter and summer. The average body temperature of what are known as warm-blooded animals is a little higher than this, being 100° Fah., and except in constitutional disturbances, this does not vary more than three or four degrees at any time of the year. No mammal, indeed, seems in good health to be warmer than 104°; scarcely any descend lower than 98°. The warm-blooded animals are thus animals whose temperatures, whether the weather be hot or cold, are practically uniform. On the other hand, cold-blooded animals have no proper temperature of their own; they are warm in warm weather and cold in cold weather. A fish, a snake, a frog, or an insect, when at rest, is rarely more than two or three degrees warmer than the air or water in which it is living. Mr. Sutherland placed some lizards in cold water, which was then gradually heated, and he found that in all cases the lizards became warmer as the water was warmed and cooler as the water was cooled—in other words, they depended upon external circumstances for their heat. But this is not absolutely true, for when angry, cold-blooded animals, like human beings, become hotter than usual, even a fish rising several degrees above the temperature of the water when it is exasperated. Under normal conditions, however, fishes and reptiles have practically the same temperature as the medium in which they live; when it is warm, they become warm and active, and when it is cold they lose their bodily activity and become torpid. The animals which are active in all weathers are those which are self-supporting as regards heat, and whose body temperatures vary very slightly. An interesting point brought out by Mr. Sutherland's observations of the temperatures of Australian animals is that the mammals which are classed lowest from considerations of body structure are not only of the lowest temperature, but also of the greatest range of

variability, being most affected by the temperature of the air or water surrounding them.

THE MIRACULOUS WINEGLASSES.

BY W. B. CAULK.

As a rule, magicians are very generous fellows, always ready to give their audiences something, such as coins and handkerchiefs, but just when one thinks

**THE MIRACULOUS WINEGLASS.**

they have the gift safely in their grasp, it mysteriously vanishes. However, there are a few exceptions to this rule, one of whom is a very popular English performer.

This magician goes among the audience and borrows a gentleman's handkerchief, and immediately produces from it a glass filled with sherry. This he offers to the ladies, then, shaking the handkerchief, he produces a second glass full of port for the gentlemen, next one of ginger beer for the younger members, and one of milk for the very young, but there being present one or two teetotalers, he next produces a glass of water, and lastly a glass of stout for himself. All of these are pronounced by the audience to be excellent.

**THE GLASS COVERED WITH RUBBER.**

The glasses are of the small stem wineglass pattern. On both sides of the magician's coat, inside, of course, are large pockets, and in each pocket is placed in a prearranged form three of the glasses. To prevent a possible spilling of their contents (and, as each glass is filled to the brim, this would be very difficult), there is fastened over the mouth of each glass a thin soft rubber cap or cover, as shown in the small engraving.

To produce the glass, the performer spreads the borrowed handkerchief, which should be a large one,

**THE MIRACULOUS WINEGLASS.**

over his breast in such a manner that one hand is concealed under it, and with this hand he reaches in the pocket and brings forth the proper glass, removing the rubber cover and leaving it in the pocket. This move is repeated until all the glasses have been produced. After producing three of the glasses with say the left hand, he must spread the handkerchief so as to cover the right hand, leaving the left one free

to manipulate the handkerchief, as it would be most awkward to try and produce the glasses from both sides of the coat with the same hand.

This trick is a most effective one, as the spectators cannot understand how it would be possible for the performer to conceal a glass filled to the brim, as these are, about his person.

After distributing the glasses, and offering an apology for his inability to treat all present, he pretends to overhear a remark that his audience is not satisfied, and that many think they have been slighted. He states that he will endeavor to comply with the demands of his thirsty audience, and retires to fetch a bottle. Off the stage he removes his coat and places under his right arm a rubber bag filled with wine. To the bag is attached a rubber pipe with a small metal point, which pipe he holds next to his right arm and replaces his coat, leaving the metal end just within the cuff.

The bottle has a small hole in the side, near the bottom, of such a size as to fit the metal point on the rubber pipe. In rinsing the bottle the performer keeps one finger over the hole, thus preventing the audience discovering that the bottle differs from an ordinary one. In rinsing the bottle the outside has become wet, and in drying it with a cloth the performer places the metal point on the rubber pipe in the hole in the side of the bottle, thus making connections with the bag of wine. By holding the bottle well down toward the neck, and close to his wrist, he can venture among the audience without fear of detection.

By pressing the right arm against his side the bag is compressed, forcing the wine through the pipe into the bottle.

The glasses are of special make and of very thick glass, making quite a bulky appearance, but of very limited capacity. An assistant carries a tray containing one hundred of the glasses.

Material from Space.

Recent researches have gone far to render possible the assertion of Nordenskjöld and others that a large portion of the earth's constituents may be of cosmic origin—that, in other words, in the course of ages the distant stars and other heavenly bodies may have contributed of their substance to thicken the crust of our world. For example, at various times and in various places there has been collected from the snow a black powder containing metallic iron, and in some instances cobalt and nickel, while on the "inland" ice which covers Greenland a peculiar mineral powder, named kryokonite, mixed with grains of metallic iron, has been detected.

This dust consists of small, angular, double refracting crystal fragments, without any mixture of particles of glass, and is, therefore, very different from the glass dust that is commonly ejected from volcanoes. From these and similar data Nordenskjöld ventures on the assertion that not improbably, if this dust falls in an equal amount all over the globe—and though the snow enables it to be detected more easily than on earth, there is no reason for supposing that it does not—something like half a million tons drop from the celestial spaces in the course of a year. The shooting stars must discharge an immense quantity of those luminous particles. For hours at a time we see them falling; and when we remember that this has been going on during unnumbered geological ages, it is not impossible to regard it as an important factor in the history of our planet.

In brief, it may be found that "a considerable quantity of the constituents of our sedimentary strata, especially of those that have been deposited in the open sea far from land, are of cosmic origin, and will throw an unexpected light on the origin of the fire hearths of the volcanoes and afford a simple explanation of the remarkable resemblance which unmistakably exists between plutonic rocks and meteoric stones, namely, by showing that the principal material of the plutonic and volcanic rocks is of cosmic origin, and that the phenomena of heat which occur in these layers depend on chemical changes to which the cosmic sediment, after being covered by thick terrestrial formations, is subjected."

Without quite homologating this idea, it is certain that meteoric or native iron is and has from the remotest ages been falling on the earth's surface from the immeasurably distant regions outside of our atmosphere.—Our Earth and its Story.

THERE were in 1801 only twenty-one towns in Europe with a population of over a hundred thousand.

Aborigines of the West Indies.

BY F. L. OSWALD, M.D.

The chronicle of the Spanish-American colonies during the first fifty years of the conquest has been justly called the darkest page in the history of the human race, but the portentous fact of the almost total extinction of the West Indian aborigines has led many historians to overrate the inhumanity of their taskmasters.

Many thousands of the helpless natives, it is true, were burnt, flogged to death, and torn by bloodhounds or shot down like wild beasts on the mere suspicion of a revolt; but many thousands also perished by suicide or succumbed to hardships that would hardly have affected the good humor of a Senegambian or Yucateco. At the end of the sixteenth century, when the plantations of the Spanish Antilles had mostly been stocked with imported slaves, the governors of Cuba and San Domingo made an effort to collect the scattered native refugees on government estancias, resembling the agricultural agencies of our Indian reservations; but the result of the experiment disappointed its managers, and the aborigines died on their own terms, the government having granted their request to let them choose their overseers and limit their obligation of community labor to three days per week.

The truth seems to be that the Lucayans, or natives of the West Indian archipelago, were a feeble race, and owed their independent existence only to the favor of wholly exceptional circumstances. The climatic advantages and productiveness of their island homes rivaled those of the Mediterranean coast lands in the golden age of the Juventus Mundi, and the historian Valverde sums up his description of the paradise regions of southern San Domingo with the remark that three hours of daily labor sufficed to support a family of colonists, whose list of necessities included many articles unknown to the primitive Indians. The wilderness of their virgin woods had no terrors for the natives of the Antilles. There were no panthers in the coast swamps and no bears in the caverns of the Sierras; the fauna of the four larger and eight to nine hundred smaller islands included neither wolves nor wildcats, foxes, badgers, jackals or hyenas—the only mischievous mammal being a rodent about the size of a half-grown groundhog. There were, in fact, no predatory beasts whatever, and against men of prey the sea protected the unwarlike natives, as it had for ages protected the aborigines of Otaheiti and the harmless yam eaters of the Loo-Choo archipelago, where "swords were unknown and quarrels were settled by hands, rarely clenched."

Human brains do not develop under such circumstances, and the Spanish colonists did not hesitate to palliate their atrocities with the plea that their victims were a gente sin razon—creatures in the form but without the intellectual faculties of human beings.

Still, the Lucayans were probably the earliest settlers, if not the autochthones of the American Polynesia, and the few survivors of their race are by far the most interesting ethnological relics of the western hemisphere.

Highland valleys are the archeological curiosity shops of nature, and the largest settlement of primitive Lucayans is found in the uplands of the Cachos Mountains, on the border of Haiti and Dominica, and about twenty miles southwest of San Rafael. Thirty years ago, when Frederick Gerstaecker visited that part of San Domingo, the total number of full-breed Indians was estimated at two hundred ("forty families"), with some fifty or sixty half-breeds, the latter a most villainous-looking set of mongrels, and morally much inferior to the stolid but honest representatives of the original island race. And if the exigencies of the present campaign should involve an expedition to the interior of the province of Santiago de Cuba, our countrymen can study the habits of a similar tribe in the Sierra de Valcarras, between Las Tunas and Bayamo.

Some fifteen miles due south of Arroyo del Obispo ("Bishop's Brook") the country becomes mountainous and too rocky for agriculture in the civilized sense of the word, and for a stretch of two leagues the old overland road to Bayamo is bordered only by cliffs and sierra pines. But a few miles further south the valley widens, and here, at an altitude of some five thousand feet above the coast plain, a small pueblo of Lucayans has solved the problem of survival, having been tolerated, and now rather enjoying the good will of their Caucasian neighbors, like our North Carolina Cherokees near the headwaters of the Hiawasee, or the aborigines of southern Europe in the Basque valleys of the Spanish Pyrenees.

The entire Indiada, or Redskin Roost, comprises some thirty English square miles, and few of the twenty-odd families ever stray more than a day's journey from their mountain refuge. They are poor, ten bushels per acre being about the maximum yield of their scattered maize fields, but their staying powers were developed by a process of artificial selection—those of their ancestors who ventured to visit their kinsmen in the coast lands having been snatched by the slave hunters, while those who stuck to their sierra survived and contrived to perpetuate their species.

For the first two hundred years after the discovery

of the new world, that part of Cuba was visited only by prospecting miners. At the beginning of the eighteenth century villages sprang up, and coffee plantations spread along the valley of the Rio Valcarras; but by that time the planters had learned the superior value of imported peons and did not think it worth while to trouble themselves about the few Indios who lived in strict retirement in the fastnesses of a distant sierra.

The latter day creoles seem rather inclined to make pets of the poor highlanders. Their prejudice against the gente sin razon may not have diminished, but pure breed Lucayans have become extremely scarce, and the Valcarras specimens were tolerated, or even protected, as the Czar protects the small herd of urus cattle that roam the woodlands of Byalistock. They are now safe from slave-kidnappers and heretic hunters; but their survival to the end of the twentieth century is as problematic as that of our Seminoles in the uncongenial climate of the far West. Before the arrival of the Spaniards the native Cubans rather avoided the highland regions of the sierras, and their natural increase was very slow, though their sexual precocity was as remarkable as that of the Brazilian coast-dwellers. Girls of twelve years began to take an interest in the moonshine poetry of their male contemporaries, and two years after had, perhaps, subsided into the prosaic facts of nursery management; but prose and poetry soon yielded to the passion for smoking tobacco, and the eastern Antilles might have encouraged the missionary labors of the Russian Skopzis, who expect their converts to discontinue their matrimonial enterprise after the birth of the third child.

Edmond About remarks that no effort of friendly persuasion will induce Spanish Jews to engage in religious controversies. The terror of the Auto-da-Fé still trembles in their nerves, and it is almost equally difficult to get a Valcarras Indian to discuss the domestic economy of his little pueblo. To be ignored and left alone has come to seem a condition of existence to the descendants of a cruelly persecuted race. Still, it is known that they have organized a sort of oligarchy, and refer their occasional disputes to a committee of patriarchs, who make it a point of honor to recognize no higher court of appeal and would compromise litigation at the expense of their own scant resources rather than invoke the tribunals of the dread invaders. "No son Christianos"—they are no Christians, whatever they may call themselves, is the verdict of their Caucasian neighbors, though the canny highlanders avoid the consequences of that suspicion by rather overpaying their quota of tithes at the next village church and sending delegates to the processions of certain festivals.

For the rest, they give the valley dwellers a wide berth, and only in years of exceptional scarcity are apt to appear at a cross-road store with a cargo of charcoal or a few bundles of splint baskets. Besides corn, they raise sweet potatoes, melons, and frijoles, a sort of dark brown beans, and keep a few goats and pigs, but no cows or chickens, because, your guide will explain, the ownership of black cattle would be apt to involve an undesired imputation of prosperity, while deliverance from rooster shrieks appears preferable to eggs, even if poultry had a chance of survival against the myriads of hutia rats that infest the rocks of the sierra.

In primeval Cuba a frugal diet was Hobson's choice, and at a lower level of the terrace lands the descendants of the horticultural natives would probably prefer to season their food with vegetable fats (nut oil) and, under present circumstances, avoid a direct violation of the Mosaic interdiction by feeding their dogs with pork and contenting themselves with a modicum of bacon fat.

In Jamaica and Porto Rico the aboriginal races were entirely exterminated within a hundred years after the arrival of the first colonists; and on only two of the medium sized islands of the neighboring archipelago a few Lucayans have contrived to elude the long continued raids of the slave hunters. A dozen families, scattered in a settlement of Mestizos, are subsisting on yams and marine products on the west coast of Inagua, some fifty miles north of San Domingo, and about as many a hundred miles further east, on Gran Cayo, at the southeastern extremity of the Bahama group.

Perhaps only a small minority of those islanders can be classed with the full-breed Lucayans, but their habits are supposed to be almost identical with those of their ancestors in the lowlands of the Antilles, and, judging from their characteristics, the West Indian natives seem to have been about the most unemotional tribe of the human race. They are taciturn, wear a breech-clout and an expression of chronic melancholy, and walk about as in a dream, listless and languid, averse to exertion even in their hours of recreation. Their papooses, like other young mammals, are frisky enough to indulge in an occasional game of romps or catch ball, but their elders never join in such frivolities, and sit in the shade, smoking in silence, till the boom of the evening tide summons them to a stroll along the beach.

Yet, perhaps, that economy of muscular exertion was likewise a condition of survival. No orthodox Mussul-

man abstains more strictly from animal food during the four weeks of the Rhamadan season than the natives of Inagua abstain from work during the four hours following the noon of a tropical summer day. They hang in their hammocks day-dreaming with half open eyes, often to the prejudice of their field crops, but not of their digestive prosperity. In spite of summer heat and stagnant atmosphere, their noonday meal is sure to be completely assimilated, and to that rigid observance of a long siesta they probably owe their total immunity from climatic disorders.

They work about two hours in the cool of the morning, then adjourn to the shade, to dandle their youngsters or engage in household chores of the pastime variety, till the clatter of wooden plates heralds the noonday meal. Then comes the long afternoon intermezzo. There is probably a little kitchen garden behind the cabin, and between cornchuck cigarettes the paterfamilias chews red pepper with an instinctive appreciation of its prophylactic value, and toward sunset beats Father Kneipp at his own tricks by sauntering barefoot through the surf of the summer sea.

England on the American Navy.

Although the achievements of our navy in the brief ninety days of the war speak for themselves and stamp the quality of our ships and men as second to none, it would be mere affectation to say that we are insensible to the instant recognition which our brilliant success has received at the hands of the English people. This recognition has been too instant, unanimous and altogether spontaneous for us to doubt for a moment that it represents the national sentiment.

It is well known that the ideas of the English people are reflected with great fidelity in their leading journals, and the following comments on the Santiago engagement will be of special interest. The Saturday Review remarked:

"It is impossible not to feel a certain pride in these achievements of men of our own race. Every Englishman, too, will remember that it was the possession of this same quality—the fine marksmanship which the Americans display—which gave us victories both on land and sea; and something peculiar and noble happened in this fight which showed in a far higher way the kinship between the two peoples:

"'Don't cheer,' shouted Captain Philip, 'the poor devils are dying!' It seems to us that this expression of tender, sympathetic humanity is just as fine as the 'Kiss me, Hardy,' of the dying Nelson."

In the course of a lengthy review of the fight, The Spectator said:

"The whole performance of Admiral Sampson's fleet was in accordance with the best traditions of the Anglo-Saxon navies, and every Englishman has read of their doings with a flush of pride. There was the same old, hard pounding as the Elizabethan seadogs used, the same curious mixture of steadiness, daring, coolness, and reckless dash. The moral aspect of what was almost the first and of what may be the last fleet action between the Spanish and English races is very much alike. In both cases it was the man behind the gun who, in the last resort, won the battle.

"The battle shows that the American navy is a most efficient fighting machine. We did not need to be told that here. We knew it already. They, however, did not know it on the Continent, though they apparently know it now. For ourselves we have little doubt that the American fleet could face even that of France without any great risk of disaster, in spite of the fact that, by the rules, the French fleet is ten times stronger. We believe this could be done if it were needful; but it won't be, as America won't be attacked by France without our taking a hand in the game. Sampson, Dewey, and the officers they have the happiness to command are able to destroy French ships of vastly superior power, just as we did a hundred years ago.

"As for the German and American navies, there can, of course, be no comparison. The Germans are fine sailors and brave men, but a naval struggle between the United States and Germany would be very short and very complete."

The Speaker remarks: "The greatest credit is due to the American navy for the manner in which this operation has been carried out. Like the exploit of Dewey, the sea fight at Santiago has proved that the British sailor has in his American kinsman a worthy ally and rival. So far as her fleet is concerned, America need not fear comparison with any country in the world."

It will be seen that the English people, who follow all naval operations and development with a feverish interest, have been quick to recognize that the secret of our success lies in our excellent gunnery. The estimate of our ability to face the French fleet, "ten times stronger" than our own, makes too much both of our own prowess and the numerical superiority of the French. Their fleet is not ten times nor even three times as strong as our own. If it be taken as three times as strong in ships and material, we agree with The Spectator that the personal element would probably, as in the last century, more than offset the difference.