

dred pounds, and a doe much less, and pointed out the differences between the color of the summer coats of this and the large white-tailed deer of Texas, *Odocoileus texensis*.

Barton W. Evermann spoke of 'Birds in the Dry Season,' stating that few realized how important to birds was a supply of water, nor the influence of drouth on the distribution of birds. During an unusually dry summer the California quails did not breed, but kept together in flocks as they did during the fall. The speaker gave a list of eighteen species of birds that were seen to resort to a single leaking water spigot and described the manner in which various species drank. In conclusion it was suggested that during dry seasons, or in arid regions, drinking places should be provided for the benefit of the birds.

F. A. LUCAS.

DISCUSSION AND CORRESPONDENCE.

METEOROLOGICAL OBSERVATIONS WITH KITES AT SEA.

TO THE EDITOR OF SCIENCE: On page 412 of SCIENCE I stated that meteorological observations were about to be attempted with kites flown from a transatlantic steamer. With the aid of my assistant, Mr. Sweetland, and through the courtesy of Captain McAuley, this was accomplished on board the Dominion steamship *Commonwealth*, which left Boston for Liverpool on August 28. During most of the voyage we were within an area of high barometric pressure that was drifting slowly southeastward and out of which light winds blew. Although these were insufficient to raise the kites, the ship's speed of 16 knots created a corresponding wind from an easterly direction that sufficed to lift the kites on five of the eight days occupied by the voyage to Queenstown. On one of the three unfavorable days, a following wind became too light on the ship for kite-flying, and on the two other days a fresh head wind, augmented by the forward motion of the ship, was so strong as to endanger the kites, but, had it been possible to alter the course of the vessel, a favorable resultant wind might have been produced every day. The maximum height attained was only about 2,000 feet, but with larger kites and longer wire this could have been greatly ex-

ceeded. Automatic records were obtained of barometric pressure, air temperature, relative humidity and wind velocity, which did not differ markedly from records obtained in somewhat analogous weather conditions over the land. The most striking feature was the rapid decrease of the temperature with increasing height in all but one of the flights. The fall of temperature was fastest in the first 300 feet, where it exceeded the adiabatic rate of 1° Fahrenheit in 183 feet, but in the last-mentioned flight the temperature rose 6° in 660 feet, and during the afternoon remained so much warmer than at sea-level. The relative humidity varied inversely with the temperature, the direction of the wind shifted aloft toward the right hand when facing it, and its velocity generally diminished with altitude. These are probably the first meteorological observations at a considerable height in mid-Atlantic, and have a special importance because they indicate that at sea high-level observations may be obtained with kites in all weather conditions, only excepting severe gales, provided the steamer from which the kites are flown can be so maneuvered as to bring the wind to a suitable velocity.

As the basis of an appeal for the exploration of the atmosphere at sea, the records described were exhibited to the Geographical Section of the British Association at its Glasgow meeting, and the appointment of a committee, with a grant of money to undertake observations with kites in Great Britain, together with the interest manifested there and on the continent of Europe, encourages the hope that my project will be realized. The equipping of the English Antarctic vessel *Discovery* with meteorological kites, as mentioned on page 779 of SCIENCE, and a similar installation on the German Antarctic ship *Gauss*, are unlikely, for various reasons, to have yielded much data on their voyages across the equator. Although the United States has taken no part in this international undertaking, an opportunity is now offered, without material expense, danger or hardship, to cooperate in a study of the general atmospheric circulation, which is one of the objects of polar exploration. Indeed, for a naval vessel not actually engaged otherwise, the sounding of the atmosphere in the tropics, whereby the relation of the upper air

currents to the winds useful for navigation may be ascertained, would seem to be as legitimate a task as sounding the depths of the oceans and determining the currents and temperatures prevailing there. But if our Navy Department will not authorize this, a private expedition should be organized to investigate the questions mentioned in my letter to *SCIENCE* on 'A New Field for Kites in Meteorology.' Since then, Professor Hildebrandson, of Upsala, who is an eminent authority on the circulation of the atmosphere, writes me that a meteorologist on a steamship provided with kites, and also with small balloons to ascertain the drift of the upper winds when there are no clouds, by making atmospheric soundings between the area of high barometric pressure in the North Atlantic and the constant southeast trades south of the equator, and in this way investigating the temperature and flow of the so-called anti-trades, could solve in three months one of the most important problems in meteorology. If any of your readers will furnish the steamer required, I stand ready to carry out these investigations.

A. LAWRENCE ROTCH.

BLUE HILL METEOROLOGICAL OBSERVATORY, HYDE PARK, MASS.,
November 18, 1901.

PERMANENT SKIN DECORATION.

IF Mr. H. Newell Wardle* had referred to Mr. H. Ling Roth's great compilation, 'The Natives of Sarawak and British North Borneo,' he would have found the Bornean process of tattooing described and the implements figured. From actual experience I can assure Mr. Wardle that in Sarawak, at all events, the pattern is gently printed on the skin from a wooden block and the pigment is driven into the skin by means of an ordinary tattooing needle which is hit by a slender iron rod. This is the typical Tahitian 'tatu.' Examples of the apparatus employed will be found in the splendid Furness-Hose collection in the Free Museum of Science and Art in Philadelphia.

A. C. HADDON.

LIFTING HOT STONES.

TO THE EDITOR OF *SCIENCE*: In the late number of *Nature* Professor S. P. Langley calls

* *SCIENCE*, Vol. XIV., p. 776.

attention to an old Tahitian priest who walked in bare feet over the heated stones of a pit prepared for cooking. Mr. Andrew Lang calls attention also to the fact that this was a ceremonial performance, preparatory to the cooking.

The United States National Museum is in receipt of a letter from Lieutenant Campbell E. Babcock, U. S. A., stationed at Vancouver Barracks, Washington State, enclosing a communication from Chief Peter Wildsho, of the Cœur d'Alene Indians in Idaho. Peter in his simple way is telling how fifty years ago his ancestors cooked their food in basket pots by means of hot stones. At the close of the description is the following in Peter's own words: "An amazing little story is connected with this basket for cooking food with hot stones. The medicine-man was considered a very powerful being by his tribe. He could take away the life of a man at his word or cure a sick or dying person. His power depended on the wild beasts that are fierce and powerful, and he carried constantly around his body some parts of the animal, such as a piece of the tail." This man to show his power stripped himself and painted his body. While he was singing and dancing, accompanied by all the Indians, he went to the basket containing cold water and sang, and, while all were watching him in awe, he slowly took the red-hot stones in both hands and dropped them into the basket of cold water. The water was heated and not a blister or burn was to be seen on his hands.

O. T. MASON.

THE HITTORF JUBILEE.

THE Academy of Sciences at Berlin has issued the following terse summary of the life-work of the venerable Hittorf:

HERRN JOHANN FRIEDRICH HITTORF* zum
Fünfzigjährigen Doctorjubiläum am XXI. October
MDCCCLXXXVI.

HOCHGEEHRTER HERR COLLEGE!

Indem die Königliche Akademie der Wissenschaften Ihnen zu der Jubelfeier Ihrer Promotion herzlichste Glückwünsche sendet, erinnert sie sich dankbar des hervorragenden Antheils Ihrer Arbeit an dem Fortschreiten Ihrer Wissenschaften, der Physik und der

* Usually known as Wilhelm Hittorf.