

Correspondence.

The April Stars.

To the Editor of the SCIENTIFIC AMERICAN:

A correspondent calls attention to a singular, and to me unaccountable, slip of the pen in my article on "The April Sky," in the SCIENTIFIC AMERICAN for April 11. As printed, the statement reads that Spica, the chief star in Virgo, is to be seen shining between Arcturus and Vega. In fact, it is Arcturus which is between, although not exactly in a line with, Vega and Spica. When Arcturus is on the meridian at midnight in the latter part of the month, Vega is about half way up the northeastern slope of the sky, while Spica is in the southwestern quarter, about three-quarters of an hour past the meridian.

GARRETT P. SERVISS.

Science Notes.

Prof. Daniel Giraude Elliott, of the Field Columbian Museum, of Chicago, has left London for Aden on a scientific expedition into Somaliland and Gallaland. He is accompanied by Carl Akeley, taxidermist, of Chicago, and by Mr. Dodson, of the Natural History Museum, London, who went with Dr. Donaldson Smith on his recent expedition to Lake Rudolph. The object of Prof. Elliott's journey is to collect specimens for the Field Columbian Museum, of Chicago. Mammals chiefly will be collected, but almost everything pertaining to zoology—birds, reptiles, and fish—will be brought back.

The granite monument marking the Mexican boundary line, at Tia Juana, in San Diego County, Cal., was upset by a flood shortly after it was erected by the International Boundary Commission. The shaft fell into quicksand and efforts to recover it were unsuccessful. It has been necessary to buy a new site for another monument.

In the Minnesota Botanical Studies for 1895 (the organ of the Geological and Natural History Survey of Minnesota), Mr. Roy W. Squires has an interesting note on the result of a series of experiments on the temperature of a trunk of *Acer negundo* between January and June. He states that as a general result the temperature of the tree is lower than that of the air in the morning and at noon, while it is higher in the evening. The mean temperature of the tree, as compared with that of the air, was 1.31° C. higher in January, nearly the same in February, nearly 1° lower in March, 0.85° higher in April, and 1.13° lower in May.

The Æolian harp has been put to a scientific use. Prof. Carl Barus has shown that the sound made by the wind whistling across a fine wire varied with the velocity of the wind. He showed that the velocity of the wind could be computed from the pitch of the note observed in the case of a given diameter of wire and for a given temperature of the air. With the aid of special microphonic attachments, the sounds could be conveyed through a distance so as to be isolated from the other noises at the place of exposure. By the use of a number of wires the direction of the wind could be determined.

In 1886 Hoffman determined the presence of the bacilli of tuberculosis on the bodies of flies collected in the room occupied by a consumptive. Six years later, a physician of Switzerland, Dr. A. Coppen-Jones, proved that infection can be, and actually is, carried not only by the bodies of flies, but also by their feet. Flies which have been infected with the bacilli were permitted to walk across the surface of sterilized potatoes. In two days' time numerous colonies of the bacillus prodigiosus made their appearance.

Spain has seen the necessity for reafforesting her mountains. In order to foster tree planting, the little king recently went to a village a few miles from Madrid and planted a sapling, after which two thousand Madrid school children each planted a tree. Medals were distributed among them with the inscription: "First Arbor Day instituted in the reign of Alfonso XIII, 1896." A similar festival is to be held yearly in different places.

At the observatory of the Pic du Midi, the zodiacal light is always visible on clear moonless nights, and E. Marchand has, says Knowledge, during the last three years, made careful observations upon it. It is not confined to a fusiform region in the neighborhood of the sun, but continues that region right across the sky as a faintly luminous track, always dimmer than the Milky Way at its dimmest. The cosmic matter surrounding the sun extends far beyond the earth's orbit in a very much flattened ellipsoid, but is especially condensed in the neighborhood of the sun, and forms there the more brightly luminous fusiform zodiacal light as usually seen in the morning or evening.

The results of the Plankton expeditionary investigations, as stated, prove that ocean germ life, capable of reproduction, exists everywhere, except at the greatest ocean depths, being more prolific in the Canary, Florida, and Labrador waters than in the north or south equatorial currents. According to this account, bacterial life has been found at depths of 1,300 to 3,500 feet, and, curiously enough, the major portion is of those species requiring oxygen for their existence, a

great number of which are also phosphorescent. M. Delebecque is quoted as having found that, in lakes, the quantity of magnesia is constant at all depths and in all seasons, the supply being derived from the abrasion of the beds of rivers draining into inland lakes; during the summer season micro-organisms are met with in abundance at great depths, whereas they are present only in small numbers at or near the surface. The researches by M. Boutan are also mentioned, the fact transpiring that photographs of animal and vegetable life were obtained by him at considerable depths, the great value of these photographs consisting in the fact that living organisms found in deep waters cannot be brought to the surface for examination without a complete change taking place in their characteristics.

AN IMPROVED SEWER INLET.

A catch basin or sewer inlet that is very strongly constructed, that it may not be injured by a heavy vehicle passing over it, and the cover of which may not readily be removed by children, is shown in the accompanying illustration. It has been patented by George A. Ensign, and is being introduced by the Defiance Machine Works, Defiance, Ohio. A substantially conical collar surrounds the bottom opening, that it may be coupled in any approved manner with a sewer pipe, and a horizontal flange is made integral with or attached to the rear portion of the casing to facilitate firmly anchoring it in place. The front open portion of the casing has a depression adapted to receive the lower web of a grating, there being in each end of the grating a vertical groove in which fits a vertical flange on the inner face of the casing. At the rear of the casing, near the top, is a step and flange adapted to engage a rearwardly



CORNER INLET.



STRAIGHT-CURB INLET.

ENSIGN'S SEWER INLET.

extending tongue on the under face] of the cover, lips at each side of the cover similarly engaging projections of the casing.

Stokehold Temperatures in Ships.

The following is an extract from the official report of the Surgeon-General, United States Navy, referring to the state of things which frequently exists. On the cruiser *Cincinnati*, for instance, he remarks: "Temperatures are recorded from 90° to 170° Fah. Tentative efforts made in November to improve the system, particularly the blowers in fire rooms, have not succeeded in ameliorating the heat now common in those places. I have myself recorded fire room temperatures as high as 168° Fah. In the engine room lower platform the average is about 102°; on the upper platform it frequently reaches 135°. By the present system of forced ventilation for the engine department very little air above the rail is taken. Air is mainly taken through the spardeck hatches; also in part from the after-berth deck, and from beneath the deck near the large engine room hatch. Blowers in the condenser room force air to the engine room proper, and those above the upper platform of the engine room pass the air to the fire rooms. When under way a wind sail sends an additional supply of fresh outside air to the condenser room. The supply gotten above the upper platform in the engine room, in addition to its warmth, is also somewhat contaminated by contact with metal and oily surfaces. The blowers in the forward fire rooms do not properly function at present, and are said to be useless. Their supply is through broad louvres under the pilot house. The six fire room ventilators extending well above deck houses are 20 in. in diameter, and it is through them the fire rooms get their main supply of fresh air. The condenser room blowers ventilate the main engine room. Unless these excessive heat conditions in the fire rooms, contiguous passages, and intricate coal bunkers are remedied, it cannot be expected that the men will long endure continuous labor there. It is physically impossible for the class of men enlisted for this purpose

in our navy to undergo the strain of these unfortunate conditions. Though the ship has had as yet no severe or continuous steaming, the firemen constantly apply for relief from symptoms of heat irritation, such as muscular cramps, disordered heart action, nausea, head pains, and weakness."

The Influence of Tea, Coffee and Cocoa on Digestion.

Dr. James W. Fraser, in a recent number of the *Journal of Anatomy and Physiology*, has recorded the results of an interesting series of experiments on the action of our common beverages on stomachic and intestinal digestion. The experiments, says the *Lancet*, have been most carefully arranged from a physiological standpoint, and give us some valuable hints on the digestion of the chief alimentary principles, but they have no bearing, it should be mentioned, on individual variations of human digestion, or on the influence of the various glands in preparing the gastric or intestinal juices. They are, however, of much value in showing how standard preparations of the peptic and pancreatic ferments are modified in action when our ordinary daily beverages are allowed their free action on the digestion of various articles of food. The digestive processes were carefully investigated, and absorption was imitated by a proper dialyzing arrangement. An artificial peptic juice, and afterward an artificial pancreatic juice, were employed, and the amount of nitrogenous matter dialyzed was most carefully estimated. The food stuffs experimented on were raw and cooked serum and egg albumens, raw and cooked myosin, syntonin, alkali albumen, casein, gluten, starch and oleine. The results obtained from an exhaustive series of experiments and analyses show that all the three typical infused beverages—tea, coffee and cocoa—retard the digestion and absorption of all the nitrogenized proximate principles of dietetic substances when peptic and pancreatic digestion are taken together, and that they uniformly retard peptic digestion, although tea may assist the diffusion of peptones from the stomach. Pancreatic digestion is also uniformly retarded, and diffusion thereafter is but rarely assisted, so that neither of them compares advantageously with water as a standard beverage for experimental investigations. A summary of dietetic advice is added to Dr. Fraser's observations, which will, in the main, agree with that which is now given by our best authorities in cases of dyspepsia; and we are glad that experimental inquiries afford so strong a basis of support to empirical clinical observations:

"1. That it is better not to eat most albuminoid food stuffs at the same time as infused beverages are taken, for it has been shown that their digestion will in most cases be retarded, though there are possibly exceptions. Absorption may be rendered more rapid, but there is a loss of nutritive substance. On the other hand, the digestion of starchy food appears to be assisted by tea or coffee; and gluten, the albuminoid of flour, has been seen to be the principle least retarded in digestion by tea, and it only comes third with cocoa, while coffee has apparently a much greater retarding action on it. From this it appears that bread is the natural accompaniment of tea and cocoa when used as the beverages at a meal. Perhaps the action of coffee is the reason why, in this country, it is usually drunk alone or at breakfast, a meal which consists much of meat, and of meats (eggs and salt meats) which are not much retarded in digestion by coffee. 2. That eggs are the best form of animal food to be taken along with infused beverages, and that apparently they are best lightly boiled if tea, hard boiled if coffee or cocoa, is the beverage. 3. That the casein of the milk and cream taken with the beverages is probably absorbed in a large degree from the stomach. 4. That the butter used with bread undergoes digestion more slowly in presence of tea, but more quickly in presence of coffee or cocoa; that is, if the fats of butter are influenced in a similar way to oleine. 5. That the use of coffee or cocoa as excipients for cod liver oil, etc., appears not only to depend on their pronounced tastes, but also on their action in assisting the digestion of fats."

Tenacity of Life in Insects.

Mr. J. C. Warburg writes to the *Entomologist*: "When I was still new to collecting in South France, I discovered one day, to my great joy, a large female of *Saturnia pyri* hidden away in some bushes. The specimen was the first I had ever caught, and I decided, on account of its large body, to stuff it (a quite unnecessary operation; I have kept dozens since unstuffed). The moth was first apparently killed by being forced into a cyanide bottle, where it was left about an hour. The abdomen was then emptied and the cavity filled with cotton-wool soaked in a saturated solution of mercuric chloride. The insect, pinned and set, was discovered next day attempting to fly away from the setting board."

SOME Syrian tobacco has so small a percentage of nicotine that this alkaloid can hardly be detected.