

Science Notes.

By means of the apparatus employed for collecting air at great heights in the ascent of the Aerophile on February 18, 1897, the following analysis of the air collected was made: In 100 vols. of air deprived of carbonic acid and taken at the height of 15,500 meters, there was found oxygen, 20.79 vols.; nitrogen, 78.27 vols.; argon, 0.94 vols. The ratio of argon to the total of nitrogen plus argon equals 0.01185.

Chemists understand that the laboratory at Cornell has the investigation of the "rare earths" quite to itself in America. Yet it is doubtful if it is anywhere known what a mass of these costly elements has been accumulated at that institution. A recent inventory disclosed that of didymium, which sells for \$7 an ounce, Cornell has 300 ounces; of cerium, quoted at \$6 an ounce, 400 ounces; of lanthanum, worth \$35 an ounce, 30 ounces; and considerable quantities of yet rarer "rare earths" which cannot be obtained upon the market at all. Prof. Dennis, of Cornell, has made a life study of these elements, and has notably added to scientific knowledge in this field.

Prof. Harris, of Cornell University, is having built a naphtha launch which he will use in a summer course in the study of the fossil rocks of New York State and elsewhere. Science teachers in the schools of the State may take this course with no more expense than would attend a summer residence at Ithaca. Two trips will be taken this year, one down to Chesapeake Bay and its tributaries, and later in the summer a trip from Troy to Ithaca, in the course of which a complete view of the successive formations of the State will be had, beginning with the lowest paleozoic formations and coming steadily upward, collecting, sketching, and photographing each terrane. The launch is built so as to be of very light draught, for running up into shallow creeks. This will furnish an ideal way of passing the summer for those who wish to visit all parts of New York State at slight expense, live in the open air, and learn something.

The second volume of the Annales of the Meteorological Observatory of Mont Blanc contains papers on a greater variety of subjects than might be inferred from its title. The director, M. Joseph Vallot, contributes a record of observations made simultaneously at three stations—Mont Blanc, Grands Mulets, and Chamonix—during 1890, 1891, and 1892, and also, in a separate paper, describes the difficulties of making scientific observations at great altitudes. There are several memoirs on actinometry and one on the geological constitution of Mont Blanc. Of special interest to engineers is the description of the application of photography to the survey of the Mont Blanc group, and the account of the progress of the map of this region. The volume contains some interesting illustrations, and the views of the "Cuisine de l'Observatoire," and of the cozy "Chambre du Directeur," seem to show that home comforts are not entirely wanting even on the summit of the Alps. A third volume is announced to appear shortly, and a fourth is in preparation.

The Lowell Observatory, which was transferred from Flagstaff, Ariz., to Mexico early in December last for the purpose of observing the opposition of Mars and for the measurements of southern double stars, has been dismantled and shipped back to its original location, after three months' remarkable service. Dr. Lee, who was in charge of the observatory in the southern heavens, announces that since January 1 more than three hundred thousand double and triple stars had been measured. More than half were new, having never been reported by any astronomer. The report will be the largest and most important addition to the southern stellar astronomy since the observations of Sir John Herschel. Full reports of the work are to be forwarded soon to the Royal Astronomical Society at London. Among his discoveries are many brilliant stars, and perhaps fifty difficult stars separated by less than one second of an arc. In addition to these discoveries, his corroborative points of argument as to the formation of heavenly bodies will be exceptionally interesting.

Another Arctic expedition is being planned by Robert E. Peary, C.E., U.S.N., according to the representations made to induce the navy department to rescind the late order detailing Mr. Peary to duty at the Mare Island yard, California. Mr. Peary's plan, as now given out, is to purchase and load a ship with concentrated provisions; to proceed to Whale Sound and with the assistance of Eskimos land the stores at Sheard Osborne Fjord, or further north, if possible. The ship is then to be sent home, and as soon as the fjords freeze over sufficiently to permit sledge travel, the supplies would be advanced and cached in a line toward the pole. He would expect, in the following spring, to find his small party and the bulk of the provisions at the northern terminus of the North Greenland archipelago, probably near the eighty-fifth parallel, with a line of food caches extending to the starting point. From this point, and as the weather permitted, he would make a dash for the pole, with two of the best Eskimos, picked dogs, and the lightest possible equipment. No definite time of departure is fixed, as all the preliminary arrangements are not yet completed.

But Mr. Peary expects to visit Greenland this summer, and there organize a force of Eskimos for the intended expedition and otherwise make preparations. He will also endeavor to bring back the one hundred ton meteorite found by him in Greenland.

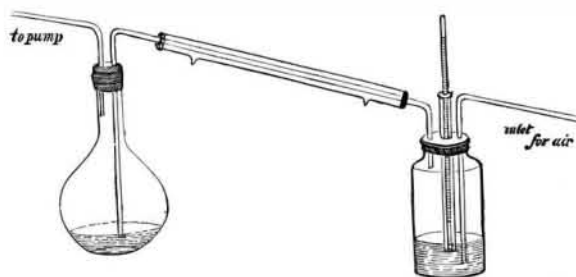
A SIMPLE METHOD FOR OBTAINING A LOW TEMPERATURE.*

BY C. EDWARD SAGE, F.C.S.

Having frequent necessity to observe the behavior of oils and fatty acids at a low temperature, I have been led to construct a simple piece of apparatus, which enables one to reduce the temperature of a sample in a very short space of time.

I venture to bring it before your notice, because I believe its use to be capable of extension to many purposes, and a short description will suffice to explain its construction.

A 6 ounce, wide mouthed flask or bottle is fitted with a good cork, which is to be pierced with three holes, one of which is to be large enough to admit a test tube, the other two are for the admission of two glass tubes. The inlet tube passes to the bottom of the flask, and the exit one passes only a short distance through the cork. The flask is partially filled with ether, and the sample to be examined is placed in the test tube together with a thermometer. Air is now forced into the flask by the inlet tube and made to bubble through the ether, whereby it exposes a large surface for evaporation, and, as this takes place very rapidly, the latent heat absorbed soon reduces the temperature of the sample. Instead of forcing air through the inlet tube, the exit may be attached to a Sprengel pump and the air sucked through. To prevent the waste of ether as far as possible, it is preferable to attach the exit tube to a condenser through which water is running, and to wash the air sucked through by means of cold water in a wash bottle; this water will, on subsequent warming,



yield a small quantity of ether, but the larger proportion is kept back by the condenser.

I have had several of these freezing bottles in use during the past summer, and found no difficulty in maintaining a temperature of -4° to -5° C. for a long period, even during the hottest weather, and if the test tubes were filled with water, it was converted into ice in a few minutes, with the expenditure of very little ether.

Opening of the Tennessee Exposition.

The Tennessee Centennial Exposition was opened at noon, May 1, with appropriate ceremonies, in the presence of many thousands of people. The weather was bright and clear and the parade was a great success, the public buildings and business houses and residences being handsomely decorated. The opening ceremonies were simple but impressive, and made a fitting tribute to one of the most memorable events in Tennessee's history. The ceremonies were opened with prayer by the Rt. Rev. T. H. Gailor, Coadjutor Bishop of Tennessee.

After "America" had been played, Major J. W. Thomas, president of the Tennessee Exposition Company, made an appropriate address, in which he reviewed the history of the undertaking and the hopes they had for the future. Addresses then followed by Gen. Taylor and Major E. C. Lewis. President Thomas then telegraphed to President McKinley that the Exposition was ready for him to open. President McKinley touched the button which started the machinery, and as the band played "Hail Columbia" the Tennessee Centennial Exposition was opened to the world.

GEN. HERMAN HAUPT, the well known civil engineer, recently celebrated his eightieth birthday at his home in Philadelphia. He is a graduate of West Point. He was the chief engineer of the Pennsylvania Railroad during its construction, and constructed the famous Hoosac Tunnel line in Massachusetts. During the rebellion President Lincoln placed him in charge of the military railroad bureau, rewarding him with several commissions. The first pipe line for transporting oil across the State of Pennsylvania was constructed by him, and he was instrumental in locating the Piedmont Air Line in the South and the Northern Pacific Railroad in the West. The application of compressed air to traffic has been largely developed by him, and he has been a prolific writer on scientific subjects.

* Read before the Chemists' Assistants' Association (London) and taken from the Pharmaceutical Journal.

Correspondence.

The Water Moccasin.

To the Editor of the SCIENTIFIC AMERICAN:

In the SCIENTIFIC AMERICAN of March 27 is an article on "Snakes," from the pen of Mr. L. P. Gratacap, in which he speaks of a visit to the American Museum of Natural History, and says he was shown specimens of the water moccasin, whose bite is almost as venomous as that of the rattlesnake. He further states that Mr. R. L. Dittmars, who showed him the snakes, had been engaged in collecting samples of their venom to be sent to the laboratory of Heidelberg for analysis.

Now, with all due deference to the opinion of Mr. Gratacap and Mr. Dittmars, I would state most positively that the water moccasin, which lives in the alluvial districts of Mississippi and Louisiana, and, in fact, throughout the Mississippi Valley, is not a venomous snake, as it possesses neither fangs nor poison sacs.

I have for some time past had a standing reward of one hundred dollars offered to any one who will bring me a poisonous water moccasin, and, although the number of all other kinds of snakes in this section of country put together would not equal that of the water moccasin, yet no one has claimed the reward, from the very simple fact that there is no such snake as a poisonous water moccasin in the Mississippi Valley.

What is known in the South as the dry land or cotton mouth moccasin is a very poisonous snake, and its bite is about as venomous as that of the rattlesnake. It is, however, not a water snake, although it is often found on the banks of small streams and rivulets in search of prey. The shape of its head, body and tail, as well as its color, ought to enable even a careless observer to distinguish it from the water moccasin.

I have been prompted to write the above article from the fact that Mr. Gratacap's essay was published in the SCIENTIFIC AMERICAN, and I fear many thoughtless persons will quote it as having been indorsed by that standard authority.

F. W. COLEMAN, M.D.

Rodney, Miss.

To the Editor of the SCIENTIFIC AMERICAN:

In reference to Dr. Coleman's interesting protest as to my statements in your journal, I beg to say that the statement is correct, and that only the limitations of popular terminology would have led to any expression of dissent from your correspondent.

The snake I designated is commonly known as water moccasin, though also called cotton mouth, and when the necessities of intelligible conversation intervene, it is among collectors in this city and elsewhere alluded to by the former title, viz., water moccasin. To be, however, incontrovertible, the scientific name of *Ancistrodon piscivorus* Lacépède will establish its identity. Holbrook calls it "water moccasin."

Now in reference to its habits. Holbrook observes, "It is found about damp, swampy places, or in water—far from which it is never observed. In summer numbers of these serpents are seen resting on the low branches of such trees as overhang the water, into which they plunge on the slightest alarm." As to their affinity for water, no one who has kept them in confinement can entertain any doubt.

Of course the poisonous character of *Ancistrodon piscivorus*, L., is as well known to Dr. Coleman as to all ophidian students. If the customary uses of language in Dr. Coleman's vicinity limit "cotton mouth" as the common name of this snake, certainly a wider habit of speech has very convincingly named it "water moccasin."

One word in conclusion. In nature the food of this snake is "such fish as he can overtake, and few exceed his velocity in swimming."—Holbrook.

I trust Dr. Coleman will exonerate me from any serious misstatements, such as he charges. I do not think I could have been misunderstood by herpetologists generally. Thanking you for the opportunity of this reply, I am, yours faithfully,

L. P. GRATACAP.

New York City.

Novel Patent to Curb the Use of Tobacco.

A time lock for tobacco boxes, recently patented by Grant W. Smith, of O'Neill, Nebraska, is designed to control the supply of chewing or smoking tobacco carried by the user of the weed, and enable one who so desires to limit himself in its use. The tobacco box, according to this improvement, has one compartment for the tobacco and another in which is a clock gearing with time indicating and time controlling notched dial adapted to engage or release a latch hook by which the lid of the compartment containing the tobacco is closed. The victim of the tobacco habit may regulate the mechanism so that he can have access to the tobacco in the box at stated times only, and thus, in the words of the inventor, "control his appetite therefor and resist inclination to its inordinate use;" so that, "by gradually increasing the length of time between such acts of indulgence, the habit of tobacco chewing and smoking may be greatly restricted, and cured in course of time, as its effect on the system is gradually diminished."