

At the same meeting Mr. George H. Becker of the U. S. Geol. Survey presented a similar mortar found under Table Mountain some years before by Mr. Neale, a mining engineer. Mr. Neale signed an affidavit detailing the particulars, and his remembrance of the situation was so minute that there could be no question of the undisturbed character of the deposits. Mr. Becker well remarks that Mr. Neale's judgment as mining-engineer concerning the undisturbed character of the deposit is the highest evidence that can possibly be obtained, for that is a point to which the miner's attention is constantly directed, on account of the danger attending the opening of any old excavation.

The third new evidence offered was that of Mr. Clarence King, who had just presented to the Smithsonian Institution a fragment of a pestle which he had taken with his own hands, in the vicinity of the two previous places mentioned, from the undisturbed gravel beds underlying Table Mountain. I need not say that Mr. Becker and Mr. King are two geologists of the very highest standing in the country, and that they both have unusual familiarity with the phenomena of that region, and they both, together with Professor Marsh, Professor Putnam, and W. H. Dall, express their unqualified belief in reference to the Calaveras skull that it was found in place in the gravel beneath this same stream of lava.

But I have already made my communication too long. I trust, however, upon your forbearance in publishing it, since the facts are too numerous to be compressed into less space of description, and a volume would be required to give all the evidence in detail. In my book upon "Man and the Glacial Period" I was called upon to discuss a very broad subject in a very small volume, and so could not enter into details. I endeavored, however, to limit myself to facts of which there was abundant proof, if they should ever be called in question. And I would repeat that I am glad of the revival of interest in the subject which will be created by the expression of such doubts as still remain in Dr. Brinton's mind. I have no question but full discussion will dispel the uncertainty that may exist.

G. FREDERICK WRIGHT.

Oberlin, Ohio, Nov. 1, 1892.

#### The Rattlesnake of the Bottom-Lands of Mississippi.

ON August 8, 1891, I received, in a box whose base was about two feet square and whose height was about one foot, a rattlesnake which had been sent by express from Greenville, Miss. The snake was of a stout build, fierce looking and ready to rattle and strike. Through this wooden box had been bored a number of auger holes to supply the serpent with air; these had so weakened the box as to cause a split that afforded some chance of escape.

I thought from its appearance the snake was about four feet long; but after death actual measurement showed four feet five inches in length and eight inches in circumference at the largest part of the body. I had made a longer box with glass top and with a sliding door; through this without much difficulty the snake was transferred from the old box.

The color was an alternation of black spots and light brown ground. The black spots were larger than those of the Mountain Rattler, while the brown was not so bright. This snake had only three rattles when I received it; a careful examination showed that some of the rings had been broken off. I afterwards learned that eight of them were broken off in the express car between Greenville and Winona on the Georgia Pacific road. If this information be correct, the snake had at that time eleven rattles.

When I was endeavoring to make the snake go out of the old box into the new, the glass of the latter was at the side. The snake showed evidence of great irritation and anger; it rattled almost incessantly. Some children were a few feet in front of the glass; at the instant of passing into the new box it struck at the children with all its force, striking against the glass and spattering against it some white, thick, frothy liquid. The snake evidently did not understand glass, not having lived before in a box or house provided with that article. Twice afterwards, when it had been angered, it struck at persons standing a little way in

front of the glass; after this it refused to strike, seeming to understand that the glass presented a barrier too great for its strength. The head of the snake trembled from the effects of the blow against the glass. A match struck and lighted in front of the glass seemed to irritate and anger it more than anything else.

I took the precaution to have in the cage a wooden saucer. In this I blew at various times water and sweet milk. I put into the box living frogs, rats, mice, young flying-squirrels, chickens, etc. I also offered to it frequently fresh butcher's meat; but it refused all food; it evidently had no appreciation whatever of any attention or effort to be kind. A young chicken was bitten by it and was dead in twenty seconds; it fell instantly on being struck by the serpent's tooth. Two toads at different times died in the box after remaining therein about six days each. Several times I poured clean water into the box and on the snake; this made it move restlessly; it pushed its nose tremulously against the glass, and, slid it along the glass as if trying to break the glass or find an opening for escape. It seemed to reject water as indignantly as it did food. When lying in the box it seemed to be the perfect expression of sullen disdain.

During October it shed its skin partially. The work of shedding began in the night but it was never perfectly done, parts of the old skin adhering to the sides of the body. During its confinement a new rattle was formed between the former rattles and the body proper, showing thereby that the terminal rattle of the rattlesnake is the oldest.

As time went on the snake became poorer, but the skin was so thick and scaly that the ribs were not visible, and when it was irritated the body was distended to its full former size, either by the drawing and rigidity of the muscles or by inflation. Without food, without water, confined in a box and subject to some considerable variations of temperature, it lived from August 8, 1891, to April 15, 1892, eight months and seven days. During the winter the room in which it was kept often grew cold, but I never allowed it to be cold enough for water to freeze. When in the cold, it coiled closely and seemed torpid; but, on my moving the box into a warm room, it would very slowly uncoil and stretch itself in its box almost straight.

I have heard many extravagant stories about the length of time a rattlesnake could live without food, but I was not prepared to believe that it could live as long as eight months and seven days, until the fact was demonstrated as I have narrated above. Mr. W. W. Stone, the Auditor of Mississippi, who sent this snake to me, informed me it was without food at least a week before I received it. In feats of fasting this animal excels Dr. Tanner and all other human aspirants for that kind of distinction so far as to make their boasts futile.

R. W. JONES.

University of Mississippi.

#### Preliminary Note on Sleep.

THAT there is a relative anæmia of the brain during sleep is well established, but the hypotheses advanced to account for this or any other of the sleep phenomena are unsatisfactory. In "Comparative Physiology and Psychology," 1884, I treated the subject briefly, and since then have been gradually accumulating and arranging data for a theory which I have finally adopted, and which appears to me to be fairly complete as enabling the major phenomena to be accounted for.

Briefly stated, where there is physiological waste there is, normally, repair, and the activities of the brain demonstrably are kept up by renewed nutrition derived from a blood supply adjusted to the ordinary needs. When there is cerebral anæmia, as in chlorosis, then there is increased desire to sleep, the brain does not receive the necessary quantity to compensate waste, and it rests, just as any commercial activity will cease with withdrawal of means to continue it. Those who are familiar with my nutrient reflex theory, mentioned in the book referred to (Professor C. K. Mills of the Pennsylvania University, and Professor C. L. Herrick of the Denison, Ohio, University, have written approvingly thereon), will understand that with cessation of sensory stimulation there will be less blood attracted to the brain and other nerve-centres, the heart-beats lessen in vigor and num-

ber, and, with the pulse-rate full, there is ordinarily less blood in the brain.

Now, it is evident that the anæmia of sleep is not caused by constricted blood-vessels, else there would be the facial pallor seen during an attack of epilepsy, or paroxysm of anger or fright; and with this quieting of the brain-processes by stimuli withdrawal, such as is afforded by darkness, silence, and absence of irritation generally, a further lessening of molecular interchange in the brain occurs; and, I claim that it is the molecular activity in the brain that attracts the blood there chemically and mechanically, and the sympathetic, or vaso-motor system has evolved to facilitate this regulation of demand and supply. Then, granting this, there will be, during sleep, a passive condition of the blood-vessels, and the blood supply will fall to a minimum.

An extension of these considerations will enable all that pertains to sleep to be accounted for, such as æstivation, hibernation, insomnia, dreams, and all derangements of sleep. I hope soon to be able to treat this subject more fully.

S. V. CLEVINGER.

Chicago, Oct. 15.

### Solid Glycerine.

IN response to the inquiry of Mr. C. C. Smith regarding the solidification of glycerine, I would say: A mixture of glycerine with water can be frozen at a sufficiently low temperature, and this temperature must be the lower proportionately as the percentage of glycerine is high. Thus, a ten per cent glycerine solution solidifies at  $-1^{\circ}\text{C}$ ., a twenty per cent solution at  $-2.5^{\circ}\text{C}$ ., a forty per cent solution at  $-17.5^{\circ}\text{C}$ .

Concentrated glycerine will not crystallize when cooled quickly, but at  $-40^{\circ}\text{C}$ . will solidify to a gum-like mass. If a concentrated solution be allowed to stand for some time at  $0^{\circ}\text{C}$ . crystals may form, but not always. The melting-point of these crystals, which are extremely hygroscopic, has been variously determined; and, indeed, their form of crystallization is much in dispute.

Two cases are reported of glycerine having become solidified and crystallized during transport in the cold of winter. The first case occurred in January, 1867, the crystals formed being described as small octohedral, melting at  $7.2^{\circ}\text{C}$ . In the second case, 1876, the crystals are described as belonging to the monoclinic system, and melting at  $15^{\circ}\text{C}$ .

According to Werner, commercial glycerine may be crystallized by bubbling chlorine-gas through it. A method discovered by Kraut in 1870, but to the best of my knowledge not yet made public, is used on a commercial scale in the works at Liesing, near Vienna. The concentrated glycerine is cooled to  $0^{\circ}\text{C}$ ., and maintained at that temperature for some time, when crystals of glycerine previously produced are introduced. This causes a crystallization of the entire mass, leaving, however, much of the impurity in the mother liquor. The mass is then placed in a centrifugal, and the crystals freed. These are described as monoclinic, melting at  $20^{\circ}\text{C}$ . to glycerine of  $30.5^{\circ}\text{B}$ . According to Von Lang, the crystals are orthorhombic.

CHARLES PLATT, A.C.

The Vandenberg Laboratory, Buffalo, Nov. 8.

### BOOK-REVIEWS.

*Crania Ethnica Americana. Sammlung Auserlesener Amerikanischer Schädeltypen.* Herausgegeben von RUDOLF VIRCHOW. Mit 26 Tafeln und 29 Text-Illustrationen. Large 4to. Berlin, A. Asher & Co., 1892. 36 marks.

SINCE the publication of Dr. Morton's "Crania Americana," now more than half a century ago, there has been no contribution to American craniology at all comparable to this work by the acknowledged master of that science in Germany. Future investigators will undoubtedly follow the lines and be guided by the principles here laid down or suggested. Let us briefly see what these are.

### CALENDAR OF SOCIETIES.

#### Biological Society, Washington.

Nov. 5.—C. Hart Merriam, The Fauna and Flora of Roan Mountain, N.C.; C. V. Riley, Pea and Bean Weavils; Vernon Bailey, The Influence of the Cross Timbers on the Fauna of Texas; Theobald Smith, On Certain Minute (Parasitic?) Bodies Within the Red Blood Corpuscles.

#### New Mexico Society for the Advancement of Science, Las Cruces, New Mexico.

Nov. 3.—J. P. Owen, Notes on the Mound Builders; C. H. Tyler Townsend, A Partial Comparison of the Insect Fauna of the Grand Cañon with that of the San Francisco Mountain, in Arizona; Arthur Goss, The Exhaustion and Renewal of Soils; C. T. Hagerty, Mathematical Computation of the Comparative Strength of Insects and the Higher Animals.

### Publications Received at Editor's Office.

BUBIER, E. T., 2nd. Questions and Answers About Electricity. New York, D. Van Nostrand Co. 16<sup>p</sup>. 100 p. Ill. 50 cts.  
CHURCH, ALFRED J. Stories from the Greek Comedians. New York, Macmillan & Co. 12<sup>p</sup>. 350 p. Ill. \$1.  
CROCKER, F. B. AND WHEELER, S. S. The Practical Management of Dynamo and Motors. New York, D. Van Nostrand Co. 12<sup>p</sup>. 100 p. Ill. \$1.  
FERREE, BARR. Comparative Architecture. New York, The Author. 8<sup>p</sup>. Paper. 15 p.  
GALTON, FRANCIS. Hereditary Genius. 2d ed. New York, Macmillan & Co. 8<sup>p</sup>. 411 p. \$2.50.  
HORN, ARTHUR H. Metal Coloring and Bronzing. New York, Macmillan & Co. 16<sup>p</sup>. 352 p. \$1.  
HUDSON, W. H. The Naturalist in La Plata. London, Chapman & Hall. 8<sup>p</sup>. 392 p. \$3.  
SLOANE, T. O'CONNOR. The Standard Electrical Dictionary. New York, Norman W. Henley & Co. 12<sup>p</sup>. 624 p. \$3.  
SPEAR, MARY A. Leaves and Flowers. Boston, D. C. Heath & Co. 12<sup>p</sup>. 103 p. 30 cts.  
UNIVERSITY OF PENNSYLVANIA. Contributions from the Botanical Laboratory. Phila., The University. 8<sup>p</sup>. Paper. 72 p. Ill.

### Exchanges.

[Free of charge to all, if of satisfactory character. Address N. D. C. Hodges, 874 Broadway, New York.]

For Sale or Exchange.—The undersigned has a lot of first-class duplicate bird's skins and sets of eggs, both rare and common, for sale or acceptable exchange. Also about two hundred second class skins and five hundred eggs, suitable for study specimens, at very low figures. The latter, for starting a collection, are as good as the best, embracing all classes and nearly all families. Also about forty species of fossils, principally Devonian. MORRIS GIBBS, M.D., Kalamazoo, Mich.

For Exchange.—"The Birds of Kansas."—Goss, for Gray's Anatomy, or Medical Dictionary. Must be in good condition. Address, J. H. SIMPSON, Buchtel College, Akron, Ohio.

For Sale or Exchange.—The subscriber would like to receive cash offers, or an offer in exchange for the earlier volumes of Poggendorf's Annalen and the later volumes of Silliman's Journal, upon the following list: Chenn—Manuel de Conchyliologie. 2 vols. Nearly 5,000 figures, some hand-colored. Paper. Paris, 1859. Edwards.—Butterflies of N. A. 2 vols. Plates hand-colored. Vol. I., half calf. Vol. II. in parts. Leyman, Agassiz, Hagen.—Ills. Cat. Mus. Comp. Zool. at Harvard. No. I. Ophiuridae. No. II. Acalephae. No. III., Astacidae. All bound in one volume. American Naturalist. Vols. I.—VII. Cloth. Silliman's Am. Jour. of Science and Arts. Third Series. Vols. I.—X. Cloth. Binney.—Terrestrial Mollusks of N. A. Colored plates. 4 vols. Stretch.—Zygaenidae and Bombycidae of N. A. Colored plates. Also a considerable library of monographs, reports, and scientific books, and a large number of duplicates of fossils, minerals and shells. E. A. STRONG, Ypsilanti, Mich., Sept., 1892.

### Reading Matter Notices.

Ripans Tabules: for torpid liver.

Ripans Tabules banish pain.

### Wants.

A POSITION is desired in the South, preferably the Gulf States, where I can teach the sciences. Can also instruct in other branches. Salary only nominal, as I am simply desirous of employment while spending the winter in the South. A private family preferred, but will accept regular school work if not too confining. MORRIS GIBBS, M.D. Kalamazoo, Mich.

WANTED.—By well-qualified and experienced science master and associate of the Royal School of Mines, London, aged 26 (at present in England), a mastership in technical college or university for any of the following subjects: Engineering sciences, geology and mineralogy, physics, chemistry and metallurgy, etc., etc. Can provide excellent references and credentials. Apply, J. G., 17 Sussex St., Rochdale, England.

METALLURGICAL CHEMIST will give instruction in the metallurgy and chemical analysis of iron and steel. Complete or special courses applying to the manufacture of pig irons and steels, as well as to their uses. Address "METALLURGIST," care SCIENCE.

A GRADUATE of the University of Pennsylvania and a practical mineralogist of twenty years' experience desires to give his services and a cabinet of 25,000 specimens, all named, with about the same number of duplicates, in minerals, crystals, rocks, gems, fossils, shells, archaeological and ethnological specimens and woods to any institution desiring a fine outfit for study. The owner will increase the cabinet to 50,000 specimens in two years and will act as curator. Correspondence solicited from any scientific institution. J. W. HORTER, M.D., Ph.D., San Francisco, Cal., General P. O. Delivery.

CHEMIST AND ENGINEER, graduate German Polytechnic, Organic and Analytical, desires a position in laboratory or chemical works. Address 213½ E. 7th Street, New York, care Levy.

## The American Geologist for 1892.

Edited by PROF. S. CALVIN, University of Iowa; DR. E. W. CLAYPOLE, Buchtel College; JOHN EYERMAN, Lafayette College; DR. PERSIFOR FRAZER, Penn. Hort. Soc.; PROF. F. W. CRAGIN, Colorado College; PROF. ROBT. T. HILL, U. S. Irrigation Survey; DR. ANDREW C. LAWSON, University of California; R. D. SALISBURY, University of Wisconsin; JOSEPH B. TYRRELL, Geol. Sur. of Canada; E. O. ULRICH, Minnesota Geological Survey; PROF. I. C. WHITE, University of West Virginia; PROF. N. H. WINCHELL, University of Minnesota. Now in its IXth volume. \$3.50 per year. Sample copies, 20 cents. Address

THE GEOLOGICAL PUBLISHING CO., Minneapolis, Minn.