

these inscriptions which I show will give an idea of some of these unknown signs. They are three in number, and fair examples of hundreds to be seen in the localities referred to. One was copied by Barth at a place southwest of Fezzan; the second by Captain Bernard, near Laghouat; the third by Captain Boucher, near Figuig. While each presents letters identical with some in the Touareg alphabet, or in the Numidian mortuary inscriptions, the majority of the letters belong to neither class.

It is the opinion of some careful students, therefore, and it seems evident, that for a portion of the ancient Libyan alphabet we must look elsewhere than to a Semitic source. The question is a new one; but there can scarcely be more than one answer to it. We must look directly to Egypt, whence the Semitic alphabets themselves must finally trace their origin. Nor does such an answer present the least historic difficulty. Earlier than the twelfth century, B.C., there were direct and much-travelled caravan routes from the heart of the Berber country into Egypt. "I have not the slightest doubt," writes Barth, "that the Imoshagh (Touaregs) are represented in the ancient sculptures of Egypt as the Tamhu and the Mashawash." We are well aware that thousands of Berber soldiers were enlisted in the Egyptian armies in the Ramesside epoch. The high culture they possessed is attested by the catalogue of spoils in the inscription of Merenptah. Unquestionably they became familiar with the various methods of writing in vogue in Egypt at that period.

In his latest work, Mr. Flinders Petrie maintains that the letters of the Phœnician alphabet were derived directly from Egypt; it is quite likely that one or more of the earliest Berber alphabets were also derived directly from the same venerable seat of culture, adopting, in part, signs identical, in part, diverse from the multiform Phœnician alphabets of the earliest epochs. Inter-course with the Semitic traders and colonists led to a greater or less unification of the methods of writing, as has occurred in so many other instances; so that the Libyan alphabet of the third century, B.C., was easily enough mistaken for a daughter, instead of a sister, of that in use by the Carthaginians. But they never reached a complete identity, and as the farther we go back, the greater seems the diversity, the theory of an independent origin appears to be alone that which will satisfy the facts in the case; and this theory has in itself a high historic probability.

The principal works to be consulted, copies of all of which from my own library I lay before you, are the following:—

Faidherbe, "Collection Complète des Inscriptions Numidiques."

Hanoteau, "Essai de Grammaire Kabyle."

Hanoteau, "Essai de Grammaire de la Langue Tamachek."

Halévy, "Essai d'Épigraphie Libyque."

Bissuel, "Les Touaregs de l'Ouest."

Basset, "Notes de Lexicographie Berbère."

Rinn, "Les Origines Berbères."

Numerous articles on the rupestrian inscriptions are scattered through the *Revue d'Ethnographie, L'Anthropologie*, etc. As the subject is one, I believe, entirely new to American Orientalists, and as it may possibly prove of considerable significance in the history of the development of Mediterranean civilization, this brief presentation of it will, I trust, lead to further researches.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

The editor will be glad to publish any queries consonant with the character of the journal.

The Trinomial Question in Nomenclature.

I WOULD like to say just a word in relation to the article by Mr. C. Michener of San Francisco, which appeared in the Oct. 28 number of *Science*.

Whatever may be the views of others on this point, I maintain that there is an ethical side in nomenclature. My article was written largely from that point of view, the matter of "convenience" is of secondary importance.

When an author names and gives a recognizable description of a species, the latter becomes in a certain measure his individual property. (I feel safe in saying that this view is held by many others beside myself.) A later author who attempts to claim this species violates a law of ethics.

Mr. Michener's whole article hinges on this one point: Is there an ethical side in nomenclature? I leave my critics to answer this question. If there is, then the question arises: Shall justice be sacrificed to convenience?

Considering the matter of convenience, there is no point gained, in pursuing the course supported in the above article, which is important enough to warrant this violation of rights. Of the two evils, inconvenience and injustice, we should choose the lesser. We should put up with the inconvenience, which is at best slight. Taking the example cited: If H. and A. have described five species by the name of *malachroides*, then look each one up. It is safe to say that the necessity for doing this will not occur once in ten times. Again, let him who desires to find the characters of *H. malachroides*, H. and A., look at some later work, Greene's for instance, or any other. He will probably find, with little trouble, the genus *Hesperalcea*. If it is contained in some recent paper and he cannot find it, he is not conversant with the literature on the subject; and the sooner he becomes conversant, the better for his work.

The amount of truth which a name conveys depends entirely upon our understanding of what it represents. It is accepted by the majority of the scientific public (I refer especially to zoölogists) that the third term of the trinomial represents the founder of the species. If it were understood to represent the reviser who placed the species in its present generic position, of course Mr. Michener's argument would be valid. I know that the view here opposed is the one more generally held among botanists. But I believe it is growing in disapprobation. The opposite view is almost universally adopted by zoölogists, and is, I believe, the rational and just one.

C. H. TYLER TOWNSEND.

Agricultural College, Las Cruces, N. M., Nov. 5.

Notes on the Fauna of the Dry Regions.

IN *Science* for Dec. 23, 1892, my friend, Mr. A. Stephens, records an instance of a captive pocket-mouse (*Perognathus*) living for over two years without water or any food from which any amount of moisture could have been obtained; and, from the fact of water having been offered, it is plain that its abstinence was entirely voluntary.

That many birds and mammals inhabiting the desert regions of the southwest live for many months without any other moisture than that obtained from the food they eat, is well known to those who have studied zoölogy in these regions. And the study of the various sources from which the fauna of the arid plains of New Mexico and Arizona draws its supply of moisture offers a very inviting field.

In the low deserts of these territories rain seldom falls after March or before September. Often nine or ten months pass by without rain in sufficient quantities to form pools or streams where water could be obtained by the birds or mammals of these sandy wastes.

During the summer of 1886 I made my headquarters at a mining camp near the southwestern corner of New Mexico, in the midst of the dry regions. Water could only be obtained from a small spring ten miles west of camp, and no rain fell after my arrival, on Feb. 28, until some time about the last of August.

Birds and mammals were quite plentiful about my camp, many of the former nesting and raising broods of young, which reached maturity and, in some cases, migrated before they made the acquaintance of a drop of water.

In the case of the insectivorous species some moisture was obtained from their food, which was more or less juicy. But the sparrows and seed-eating species must have thought it a "long time between drinks," as their food was of the driest possible kind.

During the fall, after the various species of cacti had ripened their fruits, I frequently found them torn open by mocking-birds

and other species, but whether for the seeds or soft, juicy pulp I could not determine, possibly for both.

Many of the small mammals and rabbits were given to gnawing the inside from the various species of globular cacti, which furnished a large quantity of pulpy material, with plenty of moisture. Several large specimens of these cacti were found that were mere shells. The mice, having entered from below, and without disturbing the position or appearance of the plant, had carried away all but the thorns and woody exterior.

Deer and antelope were rather common on the plains below camp, and, as they were seen daily and some individuals recognized by certain peculiarities, it was plain that if they left the region in search of water, it was not often or for any length of time, but more probably that they drew a large part of their moisture from their food. The different species of cacti and agave were frequently found with large pieces bitten out of them by these animals. The latter plant especially seemed to supply them with a large part of the necessary moisture.

The Indians and Mexicans living in the arid portions of the peninsula of Lower California told me that the rabbits and quail of those regions did not breed during dry seasons, the latter remaining in flocks throughout the spring and summer. This statement was verified by my own observations in the spring of 1887. No young quail or rabbits were seen, though the adults were everywhere abundant.

This habit may extend to other species in this region, as young birds seemed to me to be remarkably rare during the dry season mentioned.

Whether this habit arises from the fear that suitable food for the young may be wanting or that water in larger quantities than is to be obtained would be necessary for their early existence, I am unable to say.

Off the west coast of the peninsula, between 28° and 29° north latitude, are two islands — Cerros and Guadalupe — both of which are inhabited by large herds of wild goats, the descendants of domestic animals placed there by the whalers for the benefit of shipwrecked sailors; there are also quite a number of deer on Cerros.

On both of these islands water is found in small quantities. But during dry seasons this becomes so scarce that the large herds of Guadalupe especially suffer considerably. The sealers of that coast told me, however, that during seasons of little rain the goats drank sea-water and managed to exist until better times. This story was looked upon as a sailor's yarn, without foundation, until endorsed, in part at least, by my brother, who returned from a trip along the coast of the peninsula in June, 1892.

Goats were found on Natividad Island, a small island south of Cerros, which is known to contain no fresh water. As they were out of fresh meat, a few were shot for use on board the schooner, and a kid about one-third grown was captured and taken on board as a pet. Fresh water was offered it, supposing it would be a very acceptable variation to its fare of dry weeds; but, strange to say, after the first sip, it shook its head in disgust, and turned away. Sea-water, however, was accepted and regularly drunk. Gradually it formed a liking for fresh water, and at the end of a month would not pay any attention to salt water. That goats are rather scarce on Natividad would indicate that they did not thrive on sea-water; yet those that were killed by my brother were fat and in every way in good condition.

The story that prairie-dogs have in each colony one or more burrows reaching to water has been widely spread and is probably not without foundation; but that such is the case wherever prairie-dogs are found is by no means true. I witnessed the sinking of a well in southwestern New Mexico, in the midst of a very large colony of these rodents, the supposition being that, where "dogs" were so abundant, water could not be far from the surface. After a depth of over two hundred feet had been reached, the work was given up and the bottom reported as the dryest spot in New Mexico. In sinking to this depth, several strata of tough, slaty clay were cut that would have undoubtedly proved an impassable barrier to any burrowing rodent, had it even penetrated to that depth.

Prairie-dogs are undoubtedly fond of water when it can be

obtained. I have frequently, in Colorado, found their colonies near streams, to which well-beaten trails led, and where large numbers were seen drinking daily. But where water is not to be obtained, they seem to be able to subsist upon what moisture they can get from the dry, scanty vegetation of the arid regions in which they live.

A. W. ANTHONY.

Denver, Colo., Feb. 7.

Bad-Air Indicator.

PERMIT me to suggest, through your columns, something desirable to be invented if it be within the limits of science to produce it, namely, an automatic and reliable indicator of bad air. I do not in the least know whether such a thing can be made, and must admit that the only chemist to whom I have proposed the matter sees no way to construct it, but it is possible that some one might see his way clear to it. My idea is to have a plain circular disc, which might be made ornamental, which should be one or two feet in diameter, which should be placed on the walls of a room or hall, and the surface of which should be pure white when the air of the room is reasonably pure, but which should become discolored by the presence of bad air, and the color of which should deepen or darken in proportion as the impurity in the air increased. It seems to me that such an indicator, plainly making its announcement before the eyes of all, would be valuable. It may be said that our sensations are sufficient indicators of the presence of foul air, but this, I think, is not so, and the vitiation of the air in many a hall is so gradual and insidious that the great number of people may, without knowing it, be gradually forced to breath air which is most poisonous, and nearly every particle of which — to state the matter plainly — has been previously many times breathed into and out of other people's lungs. Cannot some substance or surface be so chemically prepared as to give this, the above-mentioned, indication? Is not here a good chance for the chemist and inventor?

C. H. AMES.

Boston, Mass, Feb. 10.

On Chelydra serpentina.

THE snapping tortoise is not one that appeals to many as an animal of which to make an attractive pet. His appearance and his manner of receiving advances are decidedly against improvement of a reputation that contains little of the good. There is a widespread opinion that he is quite intractable, utterly savage and ferocious, and without redeeming traits. My own ideas on the subject, however, have been greatly modified by the behavior of a seventeen-inch specimen kept in a tank in a corner of one of the rooms in this museum, where he furnished a good deal of entertainment for visitors, during the summer and autumn of last year. The sulkiness brought with him gradually vanished until he began to take food from long forceps; later he would accept meat from the fingers; and still later would come out of the tank for something to eat. Eventually he gained confidence enough to traverse a forty-foot room for a sparrow, a mouse, or a snake that might be offered. He seized the food held out for him in his jaws, turning his head to one side, if necessary, to do so with advantage, then he turned himself about and, high on his legs, like a little elephant, with the hinder inch or two of his tail bearing on the floor, marched gravely back to his miniature pond. Sometimes the fur or feathers of prey stood up or covered his eyes so as to prevent seeing distinctly. No matter, the jaws never loosened their grip and their owner blundered along banging against anything in the way till from one side or the other he at last managed to get into the water. Wherever food was given him, his only place to eat it was under the surface in his tank. Firmly held between the jaws whatever he wished to eat was torn in pieces by the claws of his fore feet, or, if too tough for tearing, it was at least reduced to such shape as admitted of swallowing entire. After a time "Snap," as he was named, became rather too familiar, coming out of his retreat at all times, whether called or not, whenever one entered the room. If a student came in and took a seat at a table, Snap was pretty sure to plant himself under the chair or at the feet of the newcomer to remain for an hour, more or less, as pleased him. Pushed aside,