

## SCIENCE:

PUBLISHED BY N. D. C. HODGES, 874 BROADWAY, NEW YORK.

SUBSCRIPTIONS TO ANY PART OF THE WORLD, \$3.50 A YEAR.

To any contributor, on request in advance, one hundred copies of the issue containing his article will be sent without charge. More copies will be supplied at about cost, also if ordered in advance. Reprints are not supplied, as for obvious reasons we desire to circulate as many copies of *Science* as possible. Authors are, however, at perfect liberty to have their articles reprinted elsewhere. For illustrations drawings in black and white suitable for photo-engraving should be supplied by the contributor. Rejected manuscripts will be returned to the authors only when the requisite amount of postage accompanies the manuscript. Whatever is intended for insertion must be authenticated by the name and address of the writer; not necessarily for publication but as a guaranty of good faith. We do not hold ourselves responsible for any view or opinions expressed in the communications of our correspondents.

Attention is called to the "Wants" column. It is invaluable to those who use it in soliciting information or seeking new positions. The name and address of applicants should be given in full, so that answers will go direct to them. The "Exchange" column is likewise open.

## CALIFORNIA PICTOGRAPHS AND HIEROGLYPHICS.

BY MRS. THEODORE H. HITTALL, SAN FRANCISCO, CAL.

THE study and investigation of the works of the earliest inhabitants of a country is now a science in itself, and is receiving more and more attention in all parts of the world.

Too little has heretofore been done in California, Alaska, Nevada, and Arizona to investigate, gather up, and preserve the relics and works of the prehistoric races which inhabited these western territories, and as there is now but little left, that little should without delay be carefully sought out and put in such shape as to remain a permanent possession. Of much, on account of our own carelessness we have been despoiled, and much that yet remains has been more or less defaced and injured.

Government, as well as scientific societies, should look to the preservation of what remains of the structures, tools, utensils, and weapons of the aborigines, and by all means endeavor to gather together and preserve by photographs the cipher writings which are yet to be found and which, year after year, by the corroding hand of time and the more destructive hand of ruthless vandalism, are becoming more and more defaced and ruined.

The cipher writings yet to be found from Alaska to Arizona, if carefully gathered and studied, might enable us to learn many very important facts concerning the customs of the redskins and their early history.

In the Sierra Nevada Mountains, near the so-called Summit Soda Springs, about fourteen miles south of Donner Lake and at an elevation of about 6,000 feet above the level of the ocean, the attention of tourists is attracted by numerous inscriptions incised in the rocks.

The most prominent, and the most inviting of attention of these, are those cut in the granite rocks, about a hundred feet high, which stand nearly isolated on the right and on the left of the headwaters of the North Fork of the American River.

The stream there is almost a little torrent and dashes over the rocks in cascades and from there it plunges into and through a mountain gorge towards the lower level far below.

To a person standing near the fountain-head of the river, on the rocks against which it chafes and which it is gradually but surely wearing away, and who takes note and truly appreciates the grandeur of the scenery, there comes a feeling of awe and reverence. It elevates the soul and calls forth a spirit akin to religious worship.

It was here in this sublime region that an unknown people left pictographs on the rocks pertaining doubtless to their history and religion. The seasons of centuries since then have come and gone; the snows of uncounted winters have covered them; succeeding springs and summers unnumbered have decked the mountains with yearly verdure, and the river has been rushing on and on and cutting its bed deeper and deeper. All this we know; but we know nothing of those who wrote these ciphers on the monumental rocks. They have long since passed away.

Only with the help of science and long study and comparison,

can we hope to gain an inkling of the meaning these ciphers were intended to convey, and add, perhaps, some important facts to the ancient history of California—a subject now so full of interest and becoming daily of more and more interest to the world.

According to the Report of the Bureau of Ethnology at Washington, pictographs of the North American Indians are found at Santa Barbara and San Diego in California, and in Nevada, Arizona, Oregon, Idaho, and Utah.

In Nevada great numbers of incised characters of various kinds are found on the rocks flanking Walker River. These are waving lines, rings, and what appear to be vegetable, animal, and human forms. Among the copies of pictographs obtained in various portions of the Northwestern States and Territories by Mr. Gilbert, one kind is referred to as being on a block of basalt at Reville, Nevada, and is mentioned as Shinuma or Mosquis.

This suggestion is based upon the general resemblance to drawings found in Arizona, and known to have been made by Mosquis Indians.

In Oregon, numerous boulders and rock escarpments at and near the Dalles of the Columbia River are covered with incised or pecked pictographs. Human figures occur; but other forms predominate. From Lieut. J. H. Simpson's Topographical Bureau Report we take the following: "At the Rio de Zuni, in 1849, we met Mr. Lewis, who had been a trader among the Navajas, and according to his statement had seen inscriptions on a rock on his travels to and fro. He offered to guide us. He led us to a low mound. We went up and found inscriptions of interest, if not of value; and of them some dating so far back as 1606. The rock is since mentioned as Inscription Rock." The following letter, addressed to Lieut. J. H. Simpson, was written by Danatiana Vigil, Secretary of the Province of Santa Fé, on October 19, 1849.

"Sir:—The engravings which are sculptured on the rock of Fish Spring, near the Pueblo of Zuni, copies of which you have taken, were made in the epoch to which they refer. I have an indistinct idea of their existence; but, although I have passed the place some three times, I never availed myself of the opportunity to observe them. The other signs or characters noticed are traditional remembrances, by means of which the Indians transmit historical accounts of all their remarkable successes. To discover these sets by themselves is very difficult. Some of the Indians make trifling indications, which divulge, with a great deal of reserve, something of their history, to persons in whom they have entire confidence. The people who inhabited this country before its discovery by the Spaniards were superstitious and worshipped the sun."

Mr. G. K. Gilbert discovered etchings at Oakley Springs, Eastern Arizona, in 1878, relative to which he remarks that an Orabi chief explained them to him and said that the Mosquis make excursions to a locality on the Colorado Chiquito to get salt. On their return they stop at Oakley Springs and each Indian makes a picture on the rock. Each Indian draws his crest or totem, the symbol of his genus. He draws it once, and once only on a visit.

From Alaska to Arizona many inscriptions on rocks are found. Of some of them photographs have been taken. But so far as we know none are as extensive or of such variety and of so ancient a date as those situated near the source of the American River.

These pictographs seemingly resemble and are written in much the same way as the Chinese ciphers where each figure is a word and has a full meaning, and seemingly they should be read from right to left.

Max Müller says, in writing of the American aborigines: "Though the Indians never arrived at the perfection of the Egyptian hieroglyphics, they had a number of symbolic emblems, which were perfectly understood by all their tribes. For instance, power over man is symbolized by a line drawn in the figure from the mouth to the heart. Power, in general, by a head with two horns. A figure with a plant as head and two wings, denotes a doctor skilled in medicine. A tree with human legs, a herbalist. Night is represented by a finely crossed or barred sun, or a circle with human legs. Rain is figured by a

dot or semicircle filled with water and placed on the head. The heavens with three disks of the sun is understood to mean three days' journey; and landing after a voyage is represented by a tortoise. But there is no evidence to show that the Indians of the north ever advanced beyond the rude attempts which we have thus described."

Lord Kingsborough's publication of "The Mexican Hieroglyphics" shows a higher developed intellect among that people and cannot be placed in the same category with those of the aboriginal Indians of the United States. They are colored, written on paper, and are in many respects equal to the hieroglyphic inscriptions of Egypt.

These most interesting books with their colored picture-writings, copies of which are in the possession of our California Academy of Sciences, are worthy of the cost expended on them and the attention given them by scientific men. They give an idea of the true condition of the inhabitants of Mexico before the landing of Cortez. Max Müller says:—

"One of the most important helps towards the deciphering of the hieroglyphics is to be found in certain American books, which, soon after the conquest of Mexico, were written down by natives who had learned the art of alphabetic writing from their conquerors, the Spaniards. Ixtlilxochitl, descended from the royal family of Tezeuca, and employed as interpreter by the Spanish Government, wrote the history of his own country from the earliest time to the arrival of Cortez. In writing this history he followed the hieroglyphic paintings as they had been explained to him by the old chroniclers. Some of these very paintings which formed the text-book of the Mexican historian, have been recovered by M. Aubin, and as they helped the historian in writing his history, that history now helps the scholar in deciphering their meaning.

It is with the study of works like that of Ixtlilxochitl that American philology ought to begin. They are to the student of American antiquities what Manetho is to the student of Egyptian hieroglyphics or Berosus to the decipherer of the cuneiform inscriptions.

A small part of the hieroglyphics found at the source of the American River, which I have thus described, have been photographed by Mr. Jackson, principal of the Sacramento Art School.

But, for the sake of science, it would be well, it seems to me, to have the whole of the rock-inscriptions photographed and preserved for ethnological and scientific research.

#### INVOLUNTARY RECOLLECTION.

BY JAS. W. DONALDSON, ELLENVILLE, ULSTER COUNTY, N.Y.

IF one will but organize himself into a society for "psychical research" and, cultivating a habit of introspection, observe carefully even his own mental processes, he will find much to interest and confound him.

And perhaps no other operations of his mind will furnish him with more occasion for thought and investigation or prove more interesting and suggestive than some of the vagaries of *involuntary* recollection.

There are few persons indeed of ordinary intelligence to whom this at times strangely spontaneous habit of memory is not a familiar, recognized experience, exciting more or less their wonder and speculation.

For example, we can all recall occasions when, though however earnestly engaged with other thoughts, we have all at once awakened to the discovery that we were at the same time unconsciously humming a snatch from some old song, or mentally repeating a fragment of prose or verse learned in our childhood, which we had supposed was long since buried so deep down under the *débris* of years as to be beyond the hope of resurrection; yet there it was, as fresh and vivid as ever, having, with a dash of its old-time irrepressibility and abandon, burst in upon our consciousness again without so much as asking "by your leave."

We may remember, too, that it has often happened that these unexpected visitants were of a character to cause us much dis-

comfort and humiliation, for we have found by sad experience that we may not easily "pluck from memory a rooted sorrow," nor "raze out the hidden troubles of the brain;" and, worse than all, that the "damned spot" will never "out," however frantic and agonizing may be our entreaty. Indeed, it is impressed upon us that, if there be any of our memories which are more perverse and persistent than others, it is the erratic, or disreputable ones, which we have thoughtlessly garnered and forced into unnatural companionship with our graver and better impressions. These will return again and again in spite of us, and it seems, as if with malicious intent, that they often delight in choosing opportunities when it is most to our embarrassment and mortification.

Perhaps we are at a funeral, and have become touched and subdued by the saddening ceremonies, or at church, earnestly engaged with its impressive services, when, all at once, without warning, one of these irreverent sprites of memory, with cap and bells and many a comic antic, breaks in upon our serious mood, and, wantonly disregarding the sanctities of the occasion, makes mouths at its solemnities. Or it may be that sometime when in the midst of a scene of innocent mirth and jollity the ghost of an unavailing remorse, or the shadow of an event in our life full of shame and agony, may suddenly appear to sadden and sober us and dissipate our enjoyment.

The writer recalls an incident in his own experience illustrating the sometimes strange unexpectedness of this phase of recollection.

Many years ago he was moved to memorize certain quaint and amusing verses found in a newspaper. On a March day long after, as he was riding out of Albany, and in a comfortable and complacent mood listlessly gazing out of the car window upon the bedraggled and cast-off garments of a rough and dissipated winter, suddenly these verses, committed over thirty years before, broke in upon his thoughts and began to reel themselves off with the startling abruptness and unmanageable spontaneity of a wayward alarm-clock.

Perhaps it was more than twenty years since they had last occurred to him. He tried in vain to discover what in all that dreary, forbidding landscape, or in the nature of his thoughts, had set this jangling waif of memory agoing, but could not in any way account for it; nothing in his mind seeming to bear the remotest relation to it. Apparently, as if obedient to some unexplained law of periodicity, this disreputable tramp of the brain had, in its vagabond wanderings, rounded its period, and, with an impudent smirk and an affected wail of distress, there it was again, begging, "for Christ's sake," a dole of recognition at the open door of an unwilling and repelling consciousness.

Possibly, if we accept the later, and what seems the more reasonable, conception of consciousness, that is, that it is not all of memory, but merely one of its phases or conditions, and a dependent, unstable one at that, we can the better account for some of these freaks of spontaneous recollection.

It is evident that a normal brain has more or less control over that which shall cross the threshold of consciousness, for we know many persons have the faculty of so absorbing themselves with any certain line of thought as to be seemingly quite oblivious for the time to everything else not pertinent to it.

But, while it may appear that they are generally successful in thus holding the door against a besieging host of interloping and disturbing recollections, yet even they, too, sometimes fail to make the exclusion completely effectual.

Indeed, because of the very intensity of their thinking and their unusual turmoil of brain, they are likely to arouse and quicken other associations having certain constituent elements in common with those entering into the texture of their main thought, and these, too, may sneak into cognition along with the invited guests in spite of their every precaution.

Again, with the majority of persons, "mind wandering" is more or less a besetting infirmity. The spring which holds the door of their consciousness either has a congenital weakness or has become more and more impotent because of disease or approaching senility, and is therefore capable of offering little resistance to any strays of memory which may seek to enter. In fact, so degenerate do some minds become, that consciousness,