tween the footprints of the two sides, so that the series can be compared with the others on the same plate.

These tracks show that the animal had five toes in the fore feet and four behind. The hind feet show a distinct impression of a sole. There is no imprint of a tail, even where the mud appears to have been deep.

Baropus lentus, gen. et sp. nov.

The most abundant of the large footprints are represented by several series, which are remarkably uniform in stride and in width between the right and left rows. One of these series is represented on Plate I., figure 5, and this is typical of the others. The animal that made these footprints evidently had four functional toes in front and the same number behind. On the inner side of each foot, however, there was a projection, which, in the hind feet, was quite prominent and characteristic, but can hardly be interpreted as the imprint of the first digit. Nearly all these footprints show a distinct impression of a sole. This is usually faint in the tracks of the forefeet, but strongly marked in those behind.

It is hardly necessary at this time to attempt a detailed comparison of the footprints above described with those already on record, but the writer hopes to do this later. The present specimens all have well marked characters, and, being from a single horizon and locality, have a value of their own as throwing light on the land vertebrate life during the deposition of the true Coal Measures. If, in themselves, they add but little to what is already known, they at least offer encouragement to investigators in an interesting field not yet systematically explored. The publications of Logan, Lyell, King, Lea, Dawson, and others, have already made known discoveries of importance in this country, and others have been recorded in the Old World.

So far as at present known, land vertebrate life began in the carboniferous age, no footprints or other remains of this kind having been detected below the subcarboniferous. That such remains will eventually be found in the Devonian, there can be no reasonable doubt, and perhaps even in the Silurian, if the land surfaces then existing can be explored.—*American Journal of Science*.

ASSYRIAN SCULPTURE AT THE BRITISH MUSEUM.

By GEORGE CLINCH.

IN the midst of the multitudinous diversity of the treasures which enrich the cabinets of the British Museum—the rare editions of books, the unique specimens of antiquity, and the beautiful and justly admired examples of Old World art—one is naturally apt to lose sight of some, at least, of the exhibits which are there arranged for public inspection. It is impossible to ramble through the public galleries without some feeling of bewilderment in the contemplation of so vast a number of objects of importance which have acquired a world-wide fame.

The Assyrian sculptures, for instance, embracing works of the greatest interest on account of their remote antiquity, their value as art monuments of an ancient and powerful people, and the wonderful circumstances which have attended their origin and history, have never yet been adequately appreciated by the average visitor to the British Museum. This is all the more remarkable in view of the fact that they are of inestimable value on account of the light they throw upon the pages of Biblical and secular history. The colossal sculptures, surrounded by an atmosphere of mystic symbolism, can hardly fail to attract the attention of all beholders. Their gaunt, grim proportions stand out in such a manner as to command the attention of passers-by. But the less imposing slabs of stone, carved with battle scenes and various other illustrations of ancient life, although less remarkable as to size and less impressive in the subjects they portray, are by no means less interesting from an historical standpoint.

So much attention is bestowed nowadays upon the work of men in past ages that it is not necessary to dwell upon the great importance of the study of ancient Assyrian art as a prelude to that of Phenicia and Greece. Sculpture of Assyrian date, or rather that which was executed during the period of Assyria's greatness, presents us with two very remarkable characteristics. In the first place, there do not appear to have been any good examples of sculpture in the round, and, in the second, there was a wonderful richness of design and of exquisitely finished work in the form of bass-reliefs. But this was more the result of the requirements of the architect and the striving for a certain desired end than any clear indication of the narrowness of Assyrian art. It may be partly accounted for by the fact that the large buildings of Nineveh, in which we behold the blending of the temple with the royal palace, were constructed largely of brick, and this work was covered by sculptured slabs of stone and colossal statues. This style of building was, doubtless, to some extent an adaptation of a Babylonian model, although carving was employed to a much larger extent in Assyrian than in other architecture. Indeed, it may be safely asserted that in no buildings of any age or country have carved figures borne so large a share in structural art in the palaces and other public buildings as in those of the buried Nineveh. Here, around the walls of the state apartments, were portrayed in bass-relief or colossal statuary, in a manner displaying a high state of artistic development, the doings of the rulers and great men of old. Pictures of the chase, warlike operations, public functions, and religious ceremonies served to illustrate and perpetuate the exploits, the triumphs, and the national history of the once mighty Assyrian empire.

The preservation of these valuable art relics may be said to be chiefly due to the circumstance of their being carved upon thin slabs of stone. Had large blocks been employed, it is doubtful if they would ever have been brought to European museums, where their historical value can be justly appreciated. It is doubtful, too, in that case, whether they would have escaped destruction by violence or the ravages of time. But it fortunately happened that when the ancient buildings were destroyed these precious relics were safely buried among the debris, and some of them are to this day

almost as fresh and perfect as when they were finished by the sculptors of ancient Nineveh.

A vast amount of pains and skill must have been employed in the construction and ornamentation of the apartments of the sovereign. The royal presence was guarded by colossal forms representing human-headed and winged animals. In these curious compositions it would seem that every feature was intended to typify some attribute of strength, intelligence or other quality. "What more sublime images," inquires Layard, "could have been borrowed from nature by men who sought, unaided by the light of revealed religion, to embody their conception of the wisdom and power of the Supreme Being? They could find no better type of intellect and knowledge than the head of the man, of strength than the body of the lion, of ubiquity than the wings of the bird. These winged, human-headed lions were not idle creations, the offsprings of mere fancy; their meaning was written upon them. They awed and instructed races which flourished three thousand years ago."

The art of sculpture in ancient Assyria appears to have gone through three phases, and its first period may be considered to have begun with the age of Assur-natsir-pal, a monarch who lived between 883 and 858 B. C. Although mainly restricted to carvings in bass-relief, its most striking characteristics were boldness and vigor. It rarely had any background, and perspective would appear to have been almost entirely unknown.

The second period, extending from the foundation of the second Assyrian empire to the reign of Esarhaddon, displays a want of vigor, which, however, is to some extent compensated for by care and accuracy. The best period of Assyrian sculpture is that of Assur-bani-pal, or Sardanapalus, as he has sometimes been called. The delineation of animals was at this time most admirably true to nature, vegetable forms had lost much of their stiffness, and there were several examples of successful foreshortening; but, curiously enough, the Assyrian artist was rarely, if ever, successful in human portraiture. Speaking generally, there was a return to the freedom of the first period, but without its accompanying rudeness and want of skill.

On many accounts the obelisk of Shalmaneser II. (858-823 B. C.) may be considered to claim a foremost place in the collection. It records, by inscriptions and pictorial illustrations, the tribute brought to the Assyrian king by five people. The king, Shalmaneser II., is twice depicted, and near him, in both instances are the winged circle or globe, the token of the Supreme Deity, and one of the heavenly bodies, the sun or a star.

There are five panels of sculptured figures on each of the four sides of the monument, and above and below them is an inscription 210 lines in length. The animals depicted comprise the elephant, rhinoceros, two-humped camel, wild bull, lion, stag, and various kinds of monkeys. The most important fact about this monument, however, is the valuable confirmation it gives to Biblical history. In the second panel from the top on one side we have a representation of the offering of the tribute of Jehu, King of Israel. The prostrate figure before the Assyrian monarch is supposed to be either King Jehu himself or his ambassador. The inscription relates that Shalmaneser received from Jehu, in the form of tribute, "silver, gold, pitchers of gold, lead scepters for the king's hand and staves."

Another important Biblical monument is the bass-relief representing the siege of Lachish by Sennacherib, as described in 2 Chron. xxxii. The story of the subsequent destruction of the hosts of this King of Assyria is told in the Second Book of Kings, in the prophecies of Isaiah, and in the elegant verses of Byron:

"— the Angel of Death spread his wings on the blast,
And breathed in the face of the foe as he passed;
And the eyes of the sleepers were dead, and chill,
And their hearts but once heaved, and forever grew still."

"The Lion Hunt" is one of the choicest and best preserved examples of the sculpture of the days of Assur-bani-pal. It represents the king, clad in richly ornamented robes, riding on horseback, in the act of slaying a lion. From the knowledge of art displayed in the treatment and composition, the correct and effective delineation of the men and animals, the spirit of the grouping, and its extraordinary preservation, this is probably among the finest specimens of Assyrian art in existence. The curious disposition of the forelegs of the lion indicates the artist's struggle for realism rather than ignorance of anatomy.

As this interesting composition depicts the king engaged in hunting, so the famous "Garden Scene" gives us a vivid picture of what may be called his domestic life in the precincts of his palace. He is represented as reclining upon an elaborately wrought couch, resting, apparently, after a warlike or hunting expedition, and surrounded by numerous evidences of luxury and pleasure. The king is sheltered from the sun's heat by an arbor of vines, and his discarded bow, arrows, and spear are placed behind him. His queen is seated in a chair of state opposite, and both are represented as holding drinking cups near the mouth as if about to drink. There is some reason to think that this may be a picture of a festival after a military expedition, from the fact that a man's head, exhibiting a strongly marked Hebrew profile, is hanging from one of the trees in the garden. Some authorities consider this to be the head of Teumman, King of Elam, and, if so, this scene probably represents the banquet in honor of Assur-bani-pal's victory over his enemy.

The figure of the queen is of the highest interest for two reasons. Not merely is this the only known ancient example of an Assyrian lady of high rank represented in a bass-relief, but it is of particular value from the fact that the details of the costume and personal ornaments have been so carefully delineated as to give a good idea of the fashions of domestic life during what may be properly described as the golden age of the Assyrian empire.

Numerous attendants are shown around the king and queen. Some bring dishes of viands and fruit, others are in the act of dispersing flies by means of what are known as "fly flappers," and others are playing upon musical instruments. These and many other points suggest, in an appropriate and artistic manner, the luxury and wealth of the court of Assur-bani-pal.

The trees in this garden scene, although treated in a somewhat formal and conventional manner, show considerable variety of foliage, and were probably intended to typify the range and extent and vegetable wealth of the immense empire which at that time was under Assyrian sway.

Assur-bani-pal was in every sense a great king. His tastes were of a liberal and refined character. He was not merely a warrior and a sportsman, but he was also a great patron of literature and the arts. He built the most magnificent of all the Assyrian palaces, and collected within its walls the finest sculpture which could be produced by native artists. He had a mind in advance of his time. While other kings had been content to leave behind them records of their exploits inscribed on stone tablets and cylinders, he it was who founded the vast collection of clay tablets whereon were inscribed comparative vocabularies and other information of the most valuable kind, including the legends which relate to the creation and the deluge.

It is gratifying to find that popular interest in ancient Assyrian art is to a marked extent being revived. Not long ago some remarkably fine reduced reproductions of some of the more notable examples were exhibited at the Royal Institution of Great Britain, where they met with an appreciative reception. The fact that a lecture room has been opened at the British Museum is a step in the right direction, and another indication of the increasing popularity of this fascinating branch of study.—*The Graphic, London*.

HELEN KELLER.

By KATHARINE D. PARTRIDGE.

ONE of the most surprising and wonderful developments of modern science during the last few years has seemed to be the giving of speech to those who are, in the common parlance, deaf and dumb. The first step toward teaching these unfortunates to speak was the fact that science at last recognized that in nearly every case the organs of speech were perfect and that mechanically there was no reason why the dumb might not speak if they only knew how or if some method of instruction could be devised by which they could be taught to properly use the organs. Recognizing this fact, careful study and a scientific analysis of language has enabled experienced teachers of to-day to actually give intelligent speech to the deaf. When Laura Bridgman, who was both blind and deaf, was taught to understand fingering in the manual alphabet, reading, and writing an intelligible hand, it was rightly considered one of the triumphs of this scientific age, but in our own day a step further has been accomplished. In Helen Keller we find a child whose sight and hearing were lost at so early an age as to make her quite as unfortunate as one born without either sense. Her attainments, not only in the way of reading the manual alphabet and writing, but in actual speech, and in the still more miraculous art of being able to read from the lips the speech of others by the sense of touch, has made her the wonder of the age. Most of our readers are doubtless familiar with the fact that this child talks and talks very fluently. Her instruction began when she was seven years of age, and was conducted by means of the finger spelling, the child feeling in her own palm the motions of the teacher's hand. About three years ago, Helen, having become much interested in the story of a little Norwegian girl, afflicted like herself, who had learned to communicate by word of mouth, spelled to her teacher the words, "I must speak." She was taken to Miss Sarah Fuller, of the Horace Mann School, in Boston, where deaf mutes are taught to articulate, and received from Miss Fuller eleven lessons on the elements of speech. The child familiarized herself with the relations of the parts used in speech—the tongue, lips, teeth and the hard and soft palate—by feeling with her fingers their position in Miss Fuller's mouth. Miss Fuller then pronounced the short sound of I as, for instance, in the word fill, placing Helen's unoccupied hand upon the larynx at the lowest point where the vibration could be felt. "When I ceased making the sounds," says Miss Fuller, "Helen's fingers flew to her own mouth and throat, and, after arranging her tongue and teeth she uttered the sound so nearly like that I had made, it seemed like an echo of it." She had at this time a very good command of language gained by means of the manual alphabet, and, as she at once applied what she learned in these lessons, she soon began to use speech intelligibly and freely, and now invariably employs it as the medium of communication unless her *vis-a-vis* happens to be a sign-taught deaf mute. Strangers have no difficulty either in making themselves understood, or in understanding her. She reads the lips by placing her fingers over the mouth and upon the throat of the speaker. Before proceeding further, I ought, perhaps, to state that, in the conversation recorded below, the manual alphabet was chiefly, though not solely, used in communication with her. Her replies were always in fluent and distinct speech.

She was asked by a prominent member of the association whose convention at Chicago in the summer had drawn together some two hundred persons interested in the teaching of speech to the deaf, which she would prefer to receive, her sight or her hearing. Her reply was, "Of course I should be happy to receive both, but that can never be and I do not expect it." Upon being pressed for a direct answer to the question she said, "My hearing, for then I should be able to enjoy the voices of my friends, and music; and," she added in her pretty way, "music is so very sweet." "What is your idea of sweetness in that connection?" Quick as thought she responded, "Why, just the same as yours!" The laugh was at the questioner's expense, but he persisted, "I should find it rather difficult to define my idea of sweetness," and she answered, "It is just the same with me." She afterward said that music was pleasant or unpleasant to her according to the difference in vibration. A few evenings later, I had the pleasure of hearing her render a selection upon the piano, and it was then and still is the greatest marvel to me that a child unable either to see the keys which she strikes or to hear the tones which result, can produce "a concord of sweet sounds."

When the report of the committee on necrology was presented, some one suggested, after the name of Phillips Brooks had been read, that no one could