

MYTHOLOGY AND AMERICAN MYTHS.

MR. JEREMIAH CURTIN, of the Bureau of Ethnology, read a paper on this subject before the Anthropological Society of Washington recently. "Mythology," he said, "is sometimes called the science of myths; but no man, I think, who knows the present condition of mythology would venture to call it a science. To begin with, there is no agreement as to the origin or meaning of a myth among any considerable number of men occupied either in explaining or studying mythology. The masters disagree, and the disciples are at swords' points. How can you have a science when you are not agreed as to the nature of its subject-matter? The question, 'What is the origin and nature of the story to which the name "myth" is given?' is answered in a variety of ways, — proof positive either that the true answer has not been given, or, if given, students of mythology are unable to perceive it. To go no farther than England, we find two different answers given to the question, in the form of two different theories.

"The first of these theories may be called the 'theory of oblivion'; the second, the 'theory of confusion.' Max Müller's theory of oblivion is founded on the hypothesis that men did not and could not make myths till they had forgotten who the chief actors in these myths were; that myth-makers only began to work when they had no means of knowing what they were working with, or with whom they had to deal in making up their stories; Müller's dictum being, 'It is the essential character of a true myth that it should no longer be intelligible by reference to a spoken language.'

"Herbert Spencer's theory of confusion is founded on the supposition that myths owe their origin to a confusion in the minds of primitive people, who worship their own earthly and natural ancestors under the guise of beasts, birds, reptiles, and plants, because these ancestors, when alive, received the names of beasts, birds, reptiles, and plants, and, after being dead two or three generations, were confounded with those creatures or plants. So the people who began by worshipping the ghosts of ordinary human beings, their own fathers, fell to worshipping wild beasts, snakes, birds, and insects, from whom they thought themselves descended by the ordinary process of fleshly generation. To fill out the whole list, men, if their ancestors came from the east, were descended from the sun; if from beyond the sea, they were descended from the sea; if from a mountain, the mountain was their ancestor. This theory is discussed with as much seriousness as if it had foundation or proof in the world, as if it had ascertained facts to support it.

"Besides these two theories, we have a method of studying mythology which is ably explained by Andrew Lang, author of the article 'Mythology' in the 'Encyclopædia Britannica.' According to this method, Aryan mythology had its beginnings when the ancestors of our race were in the same condition as the ancestors of the American Indians and other contemporary uncivilized races of the earth, when they began to make their myths; and therefore all that seems anomalous to us, all that Müller calls silly, senseless, and savage in Aryan mythology, is a survival from times when the Aryans were in the same stage of thought and development as the men who made the savage myths: consequently Aryan myths are to be explained by comparison with myths of savage races, and by a study of man in the sum of his manners, ideas, and institutions.

"England cannot tell us at present what a myth is. Though England has one of the finest myth-fields in the world to work in, Englishmen have done little in collecting myths, except in a desultory fashion — nothing toward collecting them in their integrity, with all their details, and in such groups that they would throw light on each other. Now, can we in this country describe the nature and origin of a myth? The Bureau of Ethnology has a collection of at least fifteen hundred stories obtained directly from the Indians of North America. Many of these stories are true myths from the earliest period. The collection is an important one, the largest yet made in any country, so far as known, and I believe also the most valuable. Now, if we were asked to tell what myths are, we should be safe in answering, 'We can tell what the oldest and simplest myths in the Bureau of Ethnology are.' My answer, based on the myths I have collected and on those I have examined, would be, myths are stories in which the characters are represented as persons who brought about by their activity every thing that

took place in the world of the senses and imagination of the men who framed the stories.

"The myth-persons are always and without exception non-human. They appear as animals, including birds, fishes, reptiles, insects, and sometimes shells, stones, plants, and fruits, all of which are persons; for in myths there are as many persons as there are individual entities. There is another very important category of persons, — the seasons; certain processes in nature; certain objects in nature, as the sun, moon, and stars; the four cardinal points; the highest point in heaven, and the lowest point under the earth. Many of these, on account of not belonging to the animal personages, became assimilated and confounded with men sooner than the others. These animals of mythology are the reputed ancestors of the Indians who have totems, and, I believe, of all the primitive people of the earth who have totems. The spirits of these animals are the familiars or attendant spirits of the medicine-men among all Indians, whether they have totems or not. The Indians of California have no totems, but their medicine-men are aided by animal or elemental spirits. The myth characters, though appearing as persons having volition and desires, eating, drinking, and living the ordinary lives of men, have wonderful powers and peculiarities. In certain directions they are unconquerable, and bring about all the things in nature observed by the myth-makers. This is the true source of the grotesque and strange things in mythology. Thus we find a person performing all the acts of a nature power, and at the same time entering into such relations of love, hatred, enmity, and friendship as exist among men; becoming the husband or wife of another nature power or process, or being the offspring of two nature powers. These myth characters are armed only with weapons and appliances of men in an early stage of development. There is no correspondence between the alleged cause and the visible effect: but, to compensate for their outward and evident insufficiency, these weapons have a magic virtue; and the persons using them, powers beyond comprehension, and peculiar to themselves. These persons are represented as doing things which no living agent could ever do, which only the forces of nature do. On the other hand, the forces of nature are in myths represented as doing the things that only men do. When to these two features are added the customs, ways of thinking, and social habits of the early myth-makers, there is plenty of room for the most ludicrous and unheard-of adventures, as well as cruel and revolting deeds.

"The earliest myths are the simplest in structure, and the persons in them are those that come under the observation of primitive man soonest: animals, objects, and processes in nature belong to this category. Later, because more complicated, and involving the participation of these forces, are the creation myths, with which are intimately connected myths concerning the origin of the arts necessary for the maintenance of life; games; forms of dress and ornament; the observances necessary to obtain the favor and assistance of the elemental powers or spirits, who, in nearly all cases, are represented as animals, birds, reptiles, etc., of pre-human time, or, as the Indians phrase it, 'of a world before this.' But, no matter in what forms they are presented, they are always called people. The same term is applied to them as to the Indians of to-day, — among the Iroquois Senecas, *ongwe*; among the Modocs, *maklaks*; among the Yana, *yana*; and so on, through every stock in America.

"But before proceeding further, it is best, perhaps, to give in condensed form the myth of the birth of thunder and lightning. The characters in this story are, Wimaloimis (grisly-bear maiden); Sula pokaila (mountain-trout old woman); the thigh-bone of the western red-tailed hawk; and Walokit and Tumukit (lightning and thunder), born of the grisly bear.

"The Grisly Bear comes to the house of the Trout, and asks for a night's lodging. Next morning she tries to eat up the Trout; but the latter turns into water, and escapes. Now, the Grisly Bear sets up her home at that place, and, finding a thigh-bone of the red-tailed hawk, hangs it up in the centre of her house, looks at it continually, and from looking becomes pregnant. She brings forth twins. Walokit (lightning) is born first. The moment he is born, she turns to eat him up; but he, prophetic in mind, knows her thoughts, and flashes up so brightly that she is frightened, and drops him. Next, Tumukit (thunder) is born. She tries to swal-

low him; but the infant roars so loudly, that she, terrified almost to death, rushes out of the house, and away on to a mountain, which is called Grisly Mountain to this day. At the birth of the twins the thigh-bone became a hawk, and flew away to the sky. The Trout comes to the deserted twins, and rears them. The boys call her grandmother. When grown up, they are anxious to know who their mother and father are. The old Trout said, 'Your mother is Grisly Bear, a bad woman. She tried to eat me up, tried to eat you up as soon as you were born. She is living on that mountain over there now. She is a bad woman. But your father is a good man: he is Lade herrit' (the red-tailed hawk).

"The brothers go in search of their mother, find her. She pretends to be fond of them, tries a second time to eat them, again is frightened and runs away. Later the brothers find her, and this time they kill her. Then they go home, purify themselves after the matricide, and set out to look for their father. 'He is up in the sky,' said Sula pokaila (the old trout), 'but before you go, here is a cup of trout's blood. The cup will always be full, no matter how much you take out. This will always give you strength.' They went up to Nohlestawa, who lives in Olpanti (above in the high), who said, 'Stay with me. I will employ you when I need you. He gave Thunder large balls, which he tied to his ankles; and they make a great noise now, as he runs through the sky. In the tones of Thunder is heard the voice of a Grisly; for he resembles his mother, and inherited her voice. But Lightning is like his father: he flashes with brightness as he goes.

"This is the account of how lightning and thunder were born into the world, — a beautiful myth, true and easily understood, — a myth of great value, for it reveals with the utmost clearness the process of genuine myth-making.

"Compare this with the Sanscrit myth of the creation of Indra's thunderbolt (I quote from memory): Vritra, at the head of his immense host, pursued Indra and the Celestials in every direction. Then Indra and the gods went to Brahma, and stood before him with joined hands. Brahma said, 'Every thing that ye seek is known to me. I know your desire: you want to kill Vritra. Now, I will tell you how to do it. There is a high-souled and great Rishi named Dadhichi. Go all of you to him and ask a boon. Say ye to him, "For the good of the three worlds give us thy bones." Renouncing his body, he will give you his bones. With these bones of his, make a weapon, which you will call *vajra*, capable of destroying every enemy. With this weapon will Vritra be slain.' They went to the holy hermit, who lived in a jungle on the bank of the Saraswati, and begged the boon, which was granted. The Rishi gave them his body, and left it of his own volition. They took the bones and carried them to Tvashtri (the celestial artificer), who was filled with joy when he knew what they wanted, and, going to work, made of the bones the thunderbolt, *vajra*, which he gave to Indra, who, armed with it, went at the head of the Celestials to attack Vritra, at that moment occupying all the earth and the heavens. After a terrific encounter, and after he had borrowed strength from all the Celestials, Indra hurled the *vajra*, and Vritra, great as a mountain, fell headlong. His host fled, and took refuge in the sea.

"In the American myth there are few, if any, doubtful elements. The characters tell their own story. The Sanscrit myth is an interesting example of how similar results may be worked out in different ways in two mythologies.

"If American myths are used to test the value of the two theories in England to which I have just referred, it will appear with reference to the first, — Max Müller's theory, — that mythology does not owe its origin to any action of language whatever; neither to a disease of language, nor to the influence of language on thought. The framers of the earliest myths — the myths on which succeeding ones were fashioned, and from which characters and materials were borrowed in after times; the myths which were preserved with the greatest care, and are most sacred in the minds of the people to whom they belong — were men who described what they saw in the most direct manner. The earliest myth is a simple narrative in which the names of the actors were understood in all cases: in most cases they are understood down to the present day. Whatever difficulty there may be in interpreting such myths was not caused by linguistic influence.

"In a later period of myth-history, linguistic influence is apparent; in particular cases it may be great, in some mythologies more prominent than in others; but it is never a main factor, never a predominant element, never the parent of mythology.

"If American myths are to be used to test the second theory, — that of Herbert Spencer, — which affirms that mythology, no matter what forms it may assume, is simply a worship of the ghosts of human ancestors, who, through the influence of language or some other causes, came to be mistaken, some of them for animals, plants, mountains, seas, sun and moon, while others grew in time to be the gods, the divinities of their race, it will be shown that there is no such ancestor-worship as that in America. There is an ancestor-worship, however, which is universal, and which I believe can be demonstrated by the mythology of every race on earth, if that mythology is only interpreted faithfully, and if we arrive at its inward and true thought.

"There is an ancestor-worship in America which is the worship of elemental or nature powers, which, as animals or in their own names as powers or objects in nature, are the myth-persons, the totems, or non-human ancestors, of the North American Indians, — the protectors, the guides, the enlighteners, of those whom we call 'medicine-men,' but who, as represented by the best among them, were the sages and philosophers of their race. That there were such, we know from myths which they constructed, and which we have received from their descendants.

"This ancestor-worship is the worship of the various manifestations in nature which primitive people noted and named, in all cases having significance for them. They worshipped in detail, and mainly, though by no means exclusively, in its external aspects, that which the man of our day worships as one which acts not merely in the universe outside, but in his own breast, — that Power men of the highest civilization and of every creed call 'Father,' and say that they descended from it. The Indians say that they are descended from manifestations of that same Power, are the children of those manifestations. We say, 'Our Father who art in heaven, give us this day our daily bread.' They say in their fashion, and according to the most ancient and sacred utterances of their race, 'Our fathers, give us this day our food,' using the plural where we use the singular. The Indian, therefore, stands precisely on the same line as the most enlightened man of the nineteenth century; with this difference, that he is nearer the beginning of the line, and sees in detail the Power which we see in unity.

"The work already done by the Bureau of Ethnology is small, if compared with what remains to be done before we can have a science of mythology on clearly demonstrated and symmetrically arranged facts; but it is a very large and important work if compared with what preceded it, and it shows, as no other work has been able to show, the nature of the task before us. When we shall have completed our collection of myths in the leading, if not in all, the American linguistic stocks, and obtained all the possible variants of each myth, we can make our final contribution to the science of mythology, which can never be founded without the American contingent.

"If much remains to be done in this country, there is still more to be done in Europe Asia, and elsewhere. Lang, in his article on 'Mythology,' omits the mythologies of the Celts and Slavs because so difficult and so little known. Now, the Celts are remarkable for the great extent of their recorded mythology, which has extended largely into English and other national literatures of Europe, though the fact is not generally known. Chaucer and Spencer have drawn much from Celtic sources. King Lear, Queen Mab, and other Shakspearian characters, are Celtic; and, if we consider the efforts made to destroy their language, the Celts of Ireland have a great number of living myths. The Slavs, though they have very few myths of ancient record, have within the territory they occupy more myths still existing in the minds of the people than all the rest of the nations of Europe taken together.

"Of Hindu mythology, little is known outside the Sanscrit, which, though extensive beyond any known mythology on record, has not been utilized to an extent at all commensurate with its value. The rest of Asia is practically unknown. Chinese mythology is as a sealed book; and it must have immense treasures with its so-called 'ancestor-worship,' the origin of which is undoubtedly misunder-

stood. I have said that we must obtain the complete mythologies of each linguistic stock of America, and we must work until we have shown what the characters of the myths of each stock really represent. This done, each stock is to be compared with that most nearly related to it, and then a general comparison of all. The final result will be a scientific American mythology. If the Aryan field is worked in a similarly careful manner, we shall have a complete Celtic, Teutonic, Greek, Slavonic, Persian, and other mythologies, and, finally, Aryan mythology as a whole.

"There still remain Africa, Australia, and the Pacific Islands, where there are materials of the highest value for the completion of mythologic science and the history of the human mind, — materials which are perishing every day, and which will never be collected if missionaries and travellers are to collect them. You could no more make a collection of myths through the agency of missionaries and travellers than you could make a geological survey of the United States if you depended on the voluntary and intermittent efforts of missionaries and travellers, some having, but most not having, definite ideas about geology or topography.

"Though mythology is as nothing on Wall Street in comparison with geology, the time, I think, is coming when a good number of men will place it higher; because mythology is to the history of the human mind what geology is to the history of the earth, — documentary evidence of the character of its different epochs. Even now there are few persons who would say that the earth on which he treads is better than man. You remember the words of the great poet, —

" 'The cloud-capp'd towers, the gorgeous palaces,
The solemn temples, the great globe itself,
Yea, all which it inherit, shall dissolve,
And, like this insubstantial pageant, faded,
Leave not a rack behind.'

"When that time comes, it will be found that the only real, the only permanent, results achieved on earth were those relating to the human mind."

SCIENTIFIC NEWS IN WASHINGTON.

Phonographs, Graphophones, etc.; Curious Experiments with Jets of Water. — Replenishing Rivers with Shad. — More about the Water-Spouts. — United States Fish Commission Work on the Pacific Coast.

Instruments for Recording and Reproducing Speech.

PROF. ALEXANDER GRAHAM BELL read, at the last meeting of the Fortnightly Club, a paper upon recent inventions for recording and reproducing speech, exhibiting, to illustrate what he said, some of the latest and most curious devices that have been produced. He explained the nomenclature of the subject as he thought it ought to be used, by saying that a phonograph is an instrument for making a record of speech; phonogram, the record so made; and graphophone, an instrument for reproducing speech from a phonogram. In some cases the phonograph and graphophone are the same in most of their parts, but in many they are entirely different.

Professor Bell exhibited the graphophone, of which a number are now in practical use, and which, in its essential parts, is similar to Edison's phonograph. The record is made on a cylinder covered with wax or paraffine, and the speech is reproduced by conducting the sounds to a diaphragm connected to an open trumpet-shaped instrument, or, by wires to devices placed upon the ears, vibrations corresponding to those that were produced when the record was made.

A modification of these instruments was shown, in which the record was made upon a pasteboard disk revolved upon a shaft in a horizontal plane. The upper surface of the disk is covered with wax, upon which a similar impression to that on the wax-covered cylinder is made by a stylus connected with a diaphragm which is caused to vibrate by the sound of the voice. The record is a spiral groove cut in the wax. The reproduction is obtained in a manner similar to that used in the cylindrical machine. The principal advantage which this form of the instrument is expected to present over the older, cylindrical form is in the greater facility

of multiplying copies. Electrotypes are much more readily made from the flat disks than from the cylinders. From these electrotypes other disks covered with wax, and that with tinfoil to prevent sticking, obtain the spiral impression by pressure of the former upon the latter; and when one of these duplicates, the tinfoil having been removed, is put into the instrument, the reproduction of speech is as perfect as from the disk on which the original record was made.

The most interesting and curious part of Professor Bell's paper related to experiments based upon investigations and discoveries made by Dr. Chichester Bell in regard to the effects of sounds upon jets of fluid. It is well known that if a jet of fluid, like water, is placed in sound-waves, it is not only sensitive to them, but it reproduces them as the string of a musical instrument, tuned in unison with that of another, will vibrate, and reproduce the tones given out by the first. It is not easy to hear the sound or speech reproduced by the jet of water. The former mode was to connect the hearing-tube with a rubber diaphragm placed in the jet of water, which is discharged perpendicularly from above, at a given pressure, from a very small orifice. When the rubber is held very close to the orifice, the sound reproduced is very faint; but, as it is moved away, it increases in volume until the point of maximum loudness is reached; then it diminishes again until near the point where the stream begins to break; and then it is broken up, and is entirely unintelligible. As the sounds to be reproduced by the jet have to be made in the same room, and very near to the jet of water, it is very difficult for any but a practised ear to detect the one from the other.

In order to make this more satisfactory, Dr. Chichester Bell made the following experiment. Substituting two platinum wires for the rubber diaphragm with a small piece of some non-conducting substance inserted between their ends, he placed this in the jet at the point where the largest volume of sound has been found to be reproduced. These wires being connected with an electric battery, and a telephone placed in the circuit, it was possible to have the speaker and listener almost any distance apart. With this apparatus, speech was not only reproduced, but with increased volume: the jet of water not only spoke, but acted also as a microphone to magnify the sounds it made.

Upon these experiments were based those which Professor Bell explained to the club. The jet of water, somewhat colored, was discharged upon a glass plate placed in it at the point from which the greatest volume of sound was known to issue in reproducing speech. This caused the jet to spread out in a thin film over the plate. The under side of the glass was covered with an opaque substance in which there was a small slit through which a small amount of light could pass. Behind the slit a moving piece of photographic paper was placed, upon which the record was made. Then a person spoke over the plate, and the result was a very curious line upon the photographic paper. When this line was transferred to gelatine in the ordinary way, it was found that a series of elevations and depressions was produced, which could be felt with the fingers, and from which an electrotypes could easily be made. This showed that the sound-waves, striking the film of water on the glass, caused constant changes in the thickness of the latter, and thus caused a variation in the intensity of the light that passed through the slit. From such a record as this, it will probably be a simple problem to reproduce the speech. Professor Bell exhibited specimens of the original record upon the photographic paper, of the negative that is made for the transfer to the gelatine, and of the gelatine after the transfer had been made. The possibility of developing from these experiments an instrument for the reproduction of sounds that may be superior to any yet made is what makes them so interesting.

Shad-Hatching.

The shad-hatching by the United States Fish Commission this year is confined to four stations, — one at Fort Washington, on the Potomac; one at Havre de Grace and another at Battery Island, on the Susquehanna; and one on board the 'Fish hawk,' on the Delaware. The season for taking eggs will continue until the last week in May or the first week in June; and the number of eggs captured this year up to May 19 was far greater than had been taken at the same stations at the corresponding date of 1887, when the