

low, and others. Salicylic acid and its salts are prohibited, as are also boracic acid and borax, glycerine, and alum. A list of harmless coloring-matters is given. The pamphlet also contains a list of periodicals, official reports, and general and monograph volumes of the greatest importance in connection with the detection of adulteration of food and drugs. This bibliography is exceedingly valuable, and, we should judge, very complete.

THE SURGEON-GENERAL AND THE NATIONAL BOARD OF HEALTH.—The "Annual Report of the Supervising Surgeon-General of the Marine Hospital Service of the United States for the Fiscal Year 1888," has just been published. It contains the customary statistics of this branch of the national service, and, in addition, a considerable amount of interesting matter in reference to the recent epidemic of yellow-fever in Florida, with photographic illustrations of the camps of refuge, and a map of Jacksonville showing the streets and sewers. It is much to be regretted that the supervising surgeon-general should, in an official report, have attacked the National Board of Health, and the excellent work which it did during the days when it had the power and the means. He charges Dr. Bowditch of Boston with "special pleading for a pet object," when, in September last, he expressed in a public letter the wish that a new birth might be granted to the national board with greater powers. The supervising surgeon-general speaks of this letter as being "ingeniously constructed," and further says that unfortunately the facts do not bear out the statements therein contained. If men of the standing and reputation of Dr. Bowditch can be thus attacked in governmental reports, we shall wish that some censorship may be established to which these reports shall be submitted before they are permitted to go forth with the official sanction.

TEMPERANCE INSTRUCTION IN PUBLIC SCHOOLS.—The report of the Department of Scientific Temperance Instruction in Public Schools for the year 1888 shows that twelve million children in this country are now under compulsory temperance education laws; that is to say, that the law has provided the education in favor of total abstinence that results from learning the nature and effects of alcoholic drinks and narcotics. This report further shows that there is no New England State without such a law; New Jersey is the only Middle State that has not enacted such a law; ten Southern and two Western States are still unprovided in that regard. The Act of Congress of 1886 brought all the Territories under the law. Those interested in this subject will find reports from the different sections of the country of the work done, and the difficulties to be met and overcome in States in which as yet compulsory laws have not been enacted.

DIPHTHERIA AND SANITATION.—If the reports which the newspapers publish in reference to the sanitary condition of Gallitzin, Penn., are true, it is not a matter of surprise that diphtheria, once introduced, should prevail in epidemic form. In a population of only two thousand people, one hundred deaths from this disease are said to have occurred since November. The disease is attributed to the disregard of the common rules of sanitation. The town has no water-supply. The outhouses and wells stand close together, and, since the McCoy mines have been opened, over half the wells in the town have gone dry. The inhabitants have used water from the few remaining wells that have become impure. Fortunately there is an excellent State board of health in Pennsylvania, which will at once take the matter in hand.

ETHNOLOGY.

The Blackfoot Sun-Dance.

MUCH has been said regarding the barbarous dances of the Blackfeet and their neighbors, but the majority of reports have been made on hearsay. Therefore an authentic description of the ceremonies by an eye-witness, who is, moreover, thoroughly conversant with the native language, must be highly welcome to students of primitive man. The Rev. Dr. John McLean has presented such a description to the Canadian Institute of Toronto. It is one of the important results of the establishment by the British Association, of a committee for the study of the Indians of the Canadian

North-west, that missionaries begin to improve their opportunities of observing native customs, and of making available their studies of native languages.

The sun-dance is celebrated every summer. Last summer, when Dr. McLean visited the Blood Indian camp, he found the sun-lodge erected. There were by actual count one hundred and ninety-eight lodges, comprising about two thousand souls. An old man was riding through the camp, calling upon the people to attend the ceremonies. In a lodge near at hand, a medicine-man was decorating the persons who were to undergo the rite of torture. In arranging their head-dress, before putting it on, he passed his hand around it four times, praying. In the sun-lodge the sacred fire was burning, and this was used by the people for lighting their pipes. No child or woman was allowed to supply the fuel; but young men who had performed some valorous deed, especially the stealing of horses from a hostile tribe, felt it to be an honor to attend to this duty; and none but the brave are qualified for this work. On the sacred pole were placed, in the form of a cross, two bundles of small brushwood taken from the birch-tree. The pole was decorated with sacrifices to the sun of clothing and various kinds of Indian goods. The cross evidently refers to the four winds, from its four points, as does the number 4, which is regarded as the sacred number. In the bower made of light brushwood sat a woman who gave the festival that year, her husband, and a medicine-man. These persons were fasting and praying; and, during the full term of the continuance of the ceremonies, very little food was partaken of. In the mornings they were allowed a short smoke and a little water; and in the evenings a few of their friends brought a small quantity of food hidden under their blankets, and, without exposing it to view, it was eaten in silence. The medicine-man had a crown of leaves upon his head. His body was painted, and without any clothing, save a long strip around his loins. At short intervals he arose and danced, keeping time to the motions of his body with a small bone whistle, which he blew upon incessantly, producing a series of monotonous sounds. In the evening the woman prayed to the sun for good health for the people, protection in danger, good crops, and a bountiful harvest of wild fruits. The virgins came in the evening, and prayed for a long time for blessings from the sun. During the day the ceremonies consisted of dramatic representations of heroic adventures by single individuals, and contests with the Crow and Sioux Indians by war-parties. One chief borrowed several guns from his friends, and a large number of Indian war-implements and native trinkets. Stepping forward that all the people might see him, amid profound silence, he addressed the assemblage. Holding a gun aloft, he told how, in a contest with an enemy, he had slain him and taken his gun. The band of musicians beat on their tomtoms in token of applause. Each article that he had represented his various victories, and each had its separate story, which was narrated at first, and the same routine gone through. When he had finished, the whole assemblage joined the musicians in applauding the speaker. Many warriors during the day related their brave deeds in the same manner.

Sham-fights were engaged in, which were representations of actual battles. Five or six warriors appeared as Crow Indians, and the same or a less number were the Blood Indian warriors. A single horse represented that they had been on horseback, and this was decked in its war-paint. One of the men, the hero of the battle, acted as instructor of the ceremonies to the others. Four times they entered the lodge, and then the fight began. They fired their guns over the heads of the people; the Crow Indians fell one by one; and when they had been scalped, amid the laughter and applause of the audience, the scene was at an end. Berries cooked in fat were brought in by the women in pails and pots; and for a short time eating, smoking, and conversation were the duties of the hour. Occasionally some old lady would call out the name of a young man, and declare his noble qualities before the people; and another would urge the young men to emulate the heroic deeds of their fathers, and go to war.

Presents of bracelets, finger-rings, and ear-rings were made to some of the women. The chief warrior carried in his hand the sacred pipe, which he first held aloft with the stem toward the sun, that he might have the first-fruits of every thing; and still holding it,

stem toward the chiefs, each was allowed to take a smoke. The pipe was beautifully ornamented, and was used only at the sun-dance. Some of these pipes are of great value, the one seen costing fifteen of the best horses in the tribe, and these were used for hunting the buffalo. The women have one important ceremony to perform; namely, the preparation of the tongues. In former years, when buffalo were in abundance, as many as two thousand buffalo-tongues were used at a single sun-dance: now the Indians have to be contented with two hundred tongues of domestic cattle. These are slightly boiled and dried, cut in slices very carefully, taken in sacks to the sun-lodge, and guarded by two young men. This rite partakes of the nature of a sacrament. None but virtuous women are allowed to go up and take a piece of tongue. After the persons devoted to the sun have partaken of the meal, the rest of the tongues are distributed among the people as a religious ceremony.

At this time a young Indian went to an old medicine-woman and presented his sacrifice to the sun. During the year he had gone on a horse-stealing expedition, and, as is customary on such occasions, had prayed to the sun for protection and success, offering himself to his god if his prayers were answered. He had been successful, and he now presented himself as a sacrifice. The old woman took his hand, held it toward the sun, and prayed; then, laying a finger on a block of wood, she severed it with one blow of a knife. She held the portion of the finger cut off toward the sun, and dedicated that to him as the young man's sacrifice.

One of the principal features of the sun-dance is the self-torture of those who are admitted as warriors. Dr. McLean witnessed one of these ceremonies. Two young men, having their whole bodies painted, wearing the loin-cloth only, and with wreaths of leaves around their heads, ankles, and wrists, stepped into the centre of the lodge. A blanket and a pillow were laid on the ground, and one of the young men stretched himself upon them. As he lay, an old man came forward and stood over him, and then in an earnest speech told the people of the brave deeds and noble heart of the young man. In the enumeration of his virtues and noble deeds, after each separate statement the musicians beat applause. When the aged orator ceased, the young man arose, placed his hands upon the old man's shoulders, and drew them downward, as a sign of gratitude for the favorable things said about him. He lay down, and four men held him, while a fifth made the incisions in his breast and back. Two places were marked in each breast, denoting the position and width of each incision. This being done, the wooden skewers being in readiness, a double-edged knife was held in the hand, the point touching the flesh, a small piece of wood was placed on the under side to receive the point of the knife when it had gone through, and the flesh was drawn out the desired length for the knife to pierce. A quick pressure, and the incision was made, the piece of wood was removed, and the skewer inserted from the under side as the knife was being taken out. When the skewer was properly inserted, it was beaten down with the palm of the hand of the operator, that it might remain firmly in its place. This being done to each breast, with a single skewer for each, strong enough to tear away the flesh, and long enough to hold the lariats fastened to the top of the sacred pole, a double incision was made on the back of the left shoulder, to the skewer of which was fastened a drum. The work being pronounced good by the persons engaged in the operation, the young man arose, and one of the operators fastened the lariats, giving them two or three jerks to bring them into position.

The young man went up to the sacred pole, and, while his countenance was exceedingly pale, and his frame trembling with emotion, threw his arms around it, and prayed earnestly for strength to pass successfully through the trying ordeal. His prayer ended, he moved backward until the flesh was fully extended; and, placing a small bone whistle in his mouth, he blew continuously upon it a series of short, sharp sounds, while he threw himself backward, and danced until the flesh gave way and he fell. Previous to his tearing himself free from the lariats, he seized the drum with both hands, and with a sudden pull tore the flesh on his back, dashing the drum to the ground amid the applause of the people. As he lay on the ground, the operators examined his wounds, cut off the flesh that was hanging loosely, and the ceremony was at an end.

In former years the head of a buffalo was fastened by a rope to the back of a person undergoing the feat of self-immolation, but now a drum is used for that purpose.

From two to five persons undergo this torture every sun-dance. Its object is military and religious. It admits the young man into the noble band of warriors, whereby he gains the esteem of his fellows, and opens up the path to fortune and fame. But it is chiefly a religious rite. In time of sickness or danger, or in starting upon some dangerous expedition, the young man prays to the sun for help, and promises to give himself to the sun if his prayers are answered. Upon his return, when the annual sun-dance is held, he fulfils his vow, gives himself to his god, and thus performs a twofold duty. Of course, the applause of the people and the exhibition of courage are important factors in this rite, but its chief feature is a religious one. Instead of being a time of feasting and pleasure, the sun-dance is a military and religious festival, in connection with which there are occasions for joy, and the feast enhances the pleasure.

During the feast the entire assemblage will burst forth in songs of thanksgiving, and again a famous warrior will sing aloud the praises of a young man or some brave kinsman who merits the applause of the tribe. This is a kind of chant, in which the name and noble deeds are spoken of.

A SURVIVAL OF CORPORAL PENANCE.—The state of mind from which the infliction of self-torture arises is not confined to primitive people, but has manifested itself in all great religions of the world. In the middle ages the Order of the Flagellants was devoted exclusively to this purpose. A survival of this once powerful organization offers an interesting comparison to the practices of the Blackfeet, just described. This was observed to exist by Mr. O. H. Howarth in the village of Fenaës d'Ajuda on the Azores, and has been described by him in a recent number of the *Journal of the Anthropological Institute*. The Order of the Ferceiros in that place now consists of a body of from fifteen to eighteen lay inhabitants of the parish, who are admitted to it by election every seven years; the order being held in such reverence, and the efficacy of the penance so profoundly believed in, that vacancies are much sought after. The ceremony takes place annually in connection with the procession of N. S. dos Passos on the third Sunday in Lent. The costume of the Flagellants is a white linen tunic, with a large oval opening in the back for the purpose of flagellation; and the head of the performer is entirely concealed with a wrapper of white linen, so that his identity may be unknown to the general spectators. Mass is conducted by the priest, and the flagellation commences when the church is darkened in the course of the Lenten ritual, the order kneeling in two rows at each side of the chancel. It is continued throughout the procession which follows. The principal streets of the village are traversed, and the self-punishment is inflicted with special violence during pauses at the street-corners, when the members of the band seem to vie with one another in the severity of their discipline. The procession returns to the church; the flagellants resuming their former position, and continuing to scourge themselves with increasing vigor until the conclusion of the ceremony. The torture is carried to such extremities that the side walls, railings, and confessionals in the chancel are smeared and spotted with blood to a height of four or five feet. The type of the scourge and flagellum are such that the author concludes the institution to be kept up by unbroken tradition from the middle ages, the implements being of the same description as those used six centuries ago by the Flagellants.

ELECTRICAL NEWS.

SMALL ENGINES FOR ELECTRIC LIGHTING.—The Society of Arts in England having offered a gold medal for the best small engine to be used for electric lighting, some tests have just been published giving the results of the trial. There were four competitors, — three gas-engines, and a high-speed high-pressure steam-engine. As the machines are especially useful for isolated lighting plants, the results give some valuable data as to the cost of lighting by electricity as compared with gas. One of the three gas-engines,