

the coating is chipped, the iron rusts, though the rust remains localized: it very rarely spreads or raises the coating, as is the common case with paint or electro-deposits.

The protection of the iron being due to a superficial layer of magnetic oxide, and not to any thing penetrating the metal (which would weaken it), it follows that any manipulation that would injure or destroy the continuity of the surface of the iron must necessarily prove destructive of the coating. In riveting, for example, the coating in the immediate neighborhood of the rivet-holes suffers; similarly, in driving nails through sheet-iron roofing, the oxide is chipped at the holes; in fitting "rustless" gas and steam pipe, it is injured by the bite of the wrench and vise, unless these are furnished with lead or copper cheeks; in shearing, it scales along the edge of the metal; and in flanging or bending sheet-iron, the coating on the line of the bend is cracked. The limit of elasticity of the oxide is practically the same as that of the iron: it adheres firmly to the metal under tensile and compressive strains until this limit has been reached, and no further.

A piece of "rustless" iron can be heated on a kitchen range and then plunged into cold water without the least scaling or other change; while coverings of paint, tin, galvanizing, and enamel suffer very much under such action. For this reason, "rustless" hollow ware is more readily cleaned than even enamel

Should a child be born with curly hair, a strabismic eye, or distorted limbs, he is accepted as a healer of coming generations, and all his early training is carefully conducted with a view to increasing his supernatural powers, and control over the spirits of the air. His food is carefully selected, and many articles of every-day use among the common herd are carefully excluded from his bill of fare. He is put in training for a doctor from his infancy, and great things are expected of him when fully developed and endowed with his degree.

"The doctor seldom washes his person, and never cuts his hair, which grows long and bushy in masses, knotted from want of combing, and entangled with burrs and general rubbish, such as floats around an Indian encampment. He adorns his scanty raiment with eagle's down, and altogether presents a weird, not to say untidy appearance.

"In cases of serious illness among members of the tribe, the eastern medicine-man will administer sparingly some pulverized herbs and teas in considerable draughts; but the Haida doctor of the Queen Charlotte Islands scorns all sublunary aids, powders or lotions. When an Indian is very sick, the doctor proceeds slowly at first to agitate his attendant spirit, which is called 'Yëk' (in the Tlingit language), and, by extraordinary contortions and severe gymnastic exercises, succeeds, in the course of half an hour, in

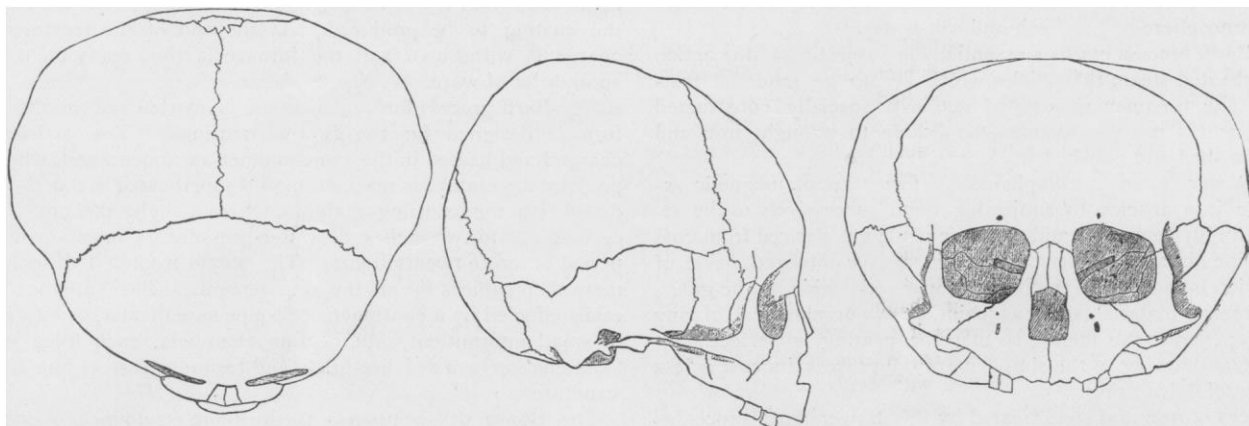


FIG. 1.—ORTHOGONAL VIEWS OF INFANTILE SKULL FROM COWICHAN, B.C.

ware. The latter must be allowed to cool after use; and the remains of food in it become dried and congealed, and stick to the utensil, necessitating considerable scraping, and involving danger of injuring the enamel.

Magnetic oxide withstands the action of many brines, alkalis, sulphuretted gases, and weak, organic acids, but it is gradually dissolved by sulphuric and hydrochloric and other powerful acids. The corroding action of these acids, however, is considerably retarded on "rustless" iron, and hence such iron has been successfully used in chemical works where it was exposed to strong acid fumes. Coated articles have been exposed for years, without the slightest deterioration, to sea-water and to the most varied atmospheric conditions.

ETHNOLOGY.

Notes from British Columbia.

IN 1879 Mr. Wardman, an intelligent reporter, accompanied the United States revenue cruiser "Rush" on her trip to Alaska, and described his experiences in a number of interesting letters to the *Pittsburgh Dispatch*. Some of his observations are well worth being rescued from the obscurity of a local paper.

He gives an interesting description of the Haida medicine-man: "The Indian doctor of the coast is an awfully mysterious personage. His first steps in the art of healing, according to the traditions of his tribe, are taken at an extremely early day in his career.

working himself up into a perfect paroxysm of clairvoyancy, throwing off his garments as he progresses, till finally he stands arrayed in a Lydia Thompson skirt about his loins, but is otherwise clothed in foam and perspiration. Then he is ready for business.

"He then makes 'passes' toward the body of the patient, inhaling powerfully through his teeth. Having sucked the disease out of the form of the sick man, the doctor proceeds to the centre of the house, and blows it out up the opening where smoke from the fire finds its exit. Of course, the patient is now in a fair way to recovery. But, in case the patient does not evince any signs of improvement, the doctor finds that the 'conditions are not favorable' owing to the influence of some witch who has evoked an evil spirit to operate against the recovery. In such a case it becomes the doctor's first duty to point out the witch, who is stripped, bound, and subjected to a perfectly puritanical course of torture, with a view of forcing a confession. The rack, the scourge, and starvation finally have the desired effect, and the witch acknowledges any thing that the doctor demands. This is always gratifying, and is considered one of the greatest triumphs of the healing art; but, should the confession be made too late to effect the desired cure, the witch may be killed, and generally is sacrificed on general principles. Even though the patient dies under these circumstances, it is still a triumph for the doctor, as killing the witch is as good a proof of witchcraft in Alaska to-day as it was in New England two hundred years ago.

"The Haida, as well as other Indians of the north-west coast,

own slaves, and have owned them since the memory of man runneth not to the contrary. The original stock of slaves generally consisted of children captured in warfare, whose posterity remain in a condition of bondage. Slaves have been sold by these more northern tribes to the Indians of Puget Sound; and the power over such chattels has been so complete that they have been killed out of compliment to or regard for a dying master, and the women have been leased out for even worse purposes. When a chief dies, it is supposed he will need servants in the felicitous fishing-fields, and that the best way to secure them is to take them with him.

"The records of the Hudson Bay Company at Post Simpson show that in 1842, on one occasion, the agent visited a dying man of some note, and entered the place where he lay just in time to find him engaged in an attempt to strangle his nephew. The agent rescued the boy, and took him into the post, where he was kept till after the departure of the spirit of his kingly uncle. Then the mother of the lad demanded compensation of the company for the annoyance and inconvenience to which her departed brother would be put in the other world by reason of not having the attendance of the spirit of her son, murdered, upon his ghostly majesty. The company paid for that interference in a strictly family affair."

The writer also witnessed a cremation, which he describes as follows: "We were hardly at anchor yesterday [at Sitka] before we were informed that a body was to be cremated. The funeral pyre consisted of a crib of dried logs, about six inches in diameter and six feet in length, arranged four on the ground and three upon each side, supported by green stakes.

"The arrangements were very simple. The body of a woman who had died three days previous was hoisted out of the smoke-hole in the centre of the house. Dead bodies are never permitted to go out through the doorway among these Indians. The body was wrapped in a common bark mat, such as these Indians make, and laid in the crib, the top and ends being closed with logs laid crosswise. The fire was then started; and the mourners, who consisted of female relatives, sat around upon the ground to the windward, and slightly to the right of the burning pile. Their hair had been cut short, their faces were all blackened, and, as the tears from their weeping eyes cut channels through the lamp-black, the effect was rather ludicrous, if grief can be ludicrous under any circumstances. The women, who numbered fifteen or twenty, sobbed, sniffled, and whined with every evidence of genuine grief. This is mentioned because it is the custom here for Indians to hire professional mourners who officiate at the 'wake,'—an important affair among the natives.

"To the left of the women, a number of male relatives of the deceased put in the time chanting continually, and keeping time with staffs about five feet long, which they raised and dropped upon pieces of board so as to produce a rapping noise. The men stood erect all this time, and were led by an old man who held a crow-frog totem in one hand, which, being shaken, produced a rattling noise, owing to pebbles being within the hollow instrument.

"The ceremony continued for about three hours and a half, when the remains were consumed, with the exception of some of the larger leg and arm bones and a portion of the skull. As soon as the residuum was cool enough to be taken up, the mass, along with some wood-ashes, was placed in a box, which was deposited in a small sort of hencoop on stakes, scores of which dot the hill behind the village. After the cremation, the tired Indians turned in and slept during the afternoon, and at night had their customary dance in honor of the successful issue of the enterprise."

DEFORMATION OF HEADS IN BRITISH COLUMBIA.—It is well known that many tribes of the north-west coast of America are in the habit of deforming the heads of their children. It is an interesting fact that the "fashion" of deformation is distinct in various localities. Thus it becomes possible to distinguish natives from different parts of the country readily by the artificially acquired shape of their heads. In British Columbia three methods of head-deformation are in use. The tribes inhabiting the north point of Vancouver Island compress their heads, particularly those of female children, by means of bandages, the head thus acquiring an extremely long, almost conical shape, the vertex being pushed far back. Farther south the head is compressed between cushions of

cedar-bark. The remarkable form resulting from this procedure is shown in Fig. 1. The marked depression behind the coronal suture indicates the place where a bandage passes over the head. In many instances the heads of adults, by this procedure, attain an enormous width, being wider than they are long. The third shape of head results from the application of a strong pressure on the forehead and occiput, which are compressed between boards. Fig. 2 shows the head of a male adult. It will be seen that the forehead and occiput are perfectly flat. The second method fre-

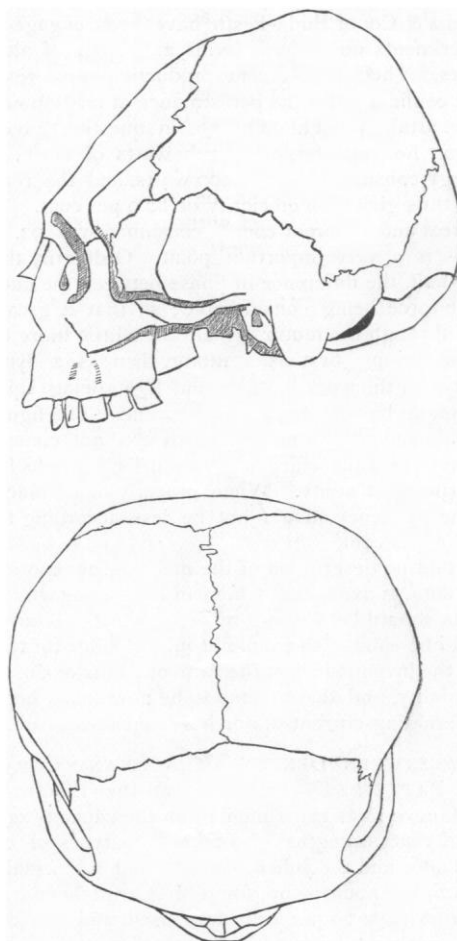


FIG. 2.—ORTHOGONAL VIEWS OF SKULL OF AN ADULT MALE, COWICHAN, B.C.

quently results in extremely asymmetric forms, the parietal bones bulging out very strongly. It is a noteworthy fact that in the majority of cases the left side of the head is more prominent than the right side. Presumably this is due to the fact that the child mostly lies on his right side when in the cradle. In Fig. 1, a well-developed Wormian bone is seen. These are of frequent occurrence in the deformed crania, while the true *Os Inca* is observed not rarely. Anomalies of persistence or premature synostosis of suture are characteristic of these crania. The frontal suture is often persistent, while in a few instances the sagittal suture was found closed at an early age.

ELECTRICAL NEWS.

A New Alternating-Current Electro-Motor.

PROBABLY the two things most needed in the field of electrical engineering are a good storage-battery and a successful alternating-current electro-motor. A year ago, Mr. Tesla described an alternating-current motor before the Institute of Electrical Engineers,—a motor which it was promised would overcome all the defects and