DEVOTED TO TEMPERANCE, SCIENCE, EDUCATION, AND AGRICULTURE.

VOLUME XIII., No. 10. MONTREAL & NEW YORK, MAY 15, 1878. SEMI-MONTHLY, 30 CTS. per An., Post-Paid.

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MAKING A FIRE.

BY J. F. PACKARD.

Were we to ask our youthful readers how they would make a fire they would reply that they would do so by using a lucifer match. But the lucifer match is of but recent date, previous to which time the people had to resort to various methods in producing a fire. It would be difficult to conceive of men without fire, or the knowledge of the means of producing it. There are stories of a fireless people, but they are apocryphal. Commodore Wilkes, the explorer, states that when he visited Fakaafof or Bowdish Island, in 1841, he found neither places for cooking nor signs of fire, and that the natives evinced alarm when they saw sparks from flint and steel, and smoke from cigars. But that is only negative evidence. Mr. Hale, philologist of the expedition, gives us a vocabulary of the language of these islanders, in which we find that they had a name for fire—*afi*—even if they did not possess it in fact.

The question, How did man obtain his knowledge of fire? is without an answer. Whether he obtained it from the lightning's vivid flash, or from the volcano's fiery upheaval, or from some other source, we have no means of knowing. The Greeks attempted to solve the problem in the fable of Prometheus, who stole fire from heaven, where it was the special possession of the gods.

Fig. 1.—SANDWICH ISLAND METHOD.

It matters but little, however, how the first knowledge of fire was obtained. We only know that all races and tribes of men possessed, and possess, the knowledge, although they have various ways of kindling the genial flame. And it is of these various ways that we propose to speak.

Probably the friction of two pieces of wood was the original means of fire-making used by man. The Patagonians employed this method. Two thoroughly dry sticks were selected and the bark removed; one end of one of them rested upon the ground, while the other end rested against the stomach of the performer. Holding the other stick firmly at right angles against the first, fire was produced by vigorously rubbing it up and down its length.

One of the simplest means of producing fire, is by what may be called the stick and groove method (see fig. 1).

A blunt stick is run along back and forth, in a groove of its own making, in a piece of wood lying on the ground. Mr. Darwin, the great naturalist, tells us that this was at one time the common method in the Sandwich Islands, where a very light wood is used for the purpose. This process is also common in some of the South Sea or Polynesian Islands. A practised native can, by this method, produced fire in a few seconds, although Mr. Darwin says that he found it rather hard work, and it took him much longer.

Another, and more widely different process, is what may be called "fire-drilling," represented in its simplest form in fig. 2. This has been found, a little more or less modified, in every quarter of the globe. Captain Cook found it in both Alaska and Australia, and it was in use in Ceylon and Central America. In the rude paintings of the Mexicans we find some striking illustrations of this process. Captain Cook thus describes it, as he found it in Australia:

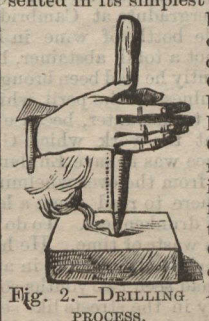

Fig. 2.—DRILLING PROCESS.

"They produce fire with great facility, and spread it in a wonderful manner. They take two sticks of dry, soft wood, one eight or nine inches long, the other five; the first they shape into an obtuse point at one end, and pressing it on the other, turn it nimbly between their hands, after moving them up and down, to increase the pressure. By this means they get fire in less than two minutes, and from the smallest spark, they increase it with great speed and dexterity."

An improvement was made on this process, by a contrivance devised on the principle of the common carpenter's brace, with which he works his centre-bit, as shown in fig. 3. This method is still in use among the *gauchos* of the Pampas of Buenos Ayres, and hence is called the "Gaucho method." One of them takes an elastic stick, eighteen inches long, against one end of which he presses firmly with his breast,

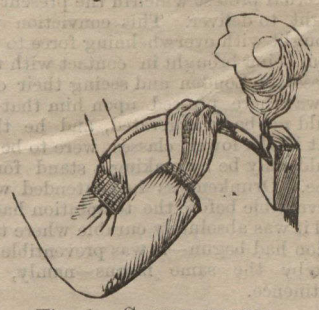

Fig. 3.—GAUCHO METHOD.

placing the other end, which is pointed, in a hole in a piece of dry wood, and then rapidly twirls it as the carpenter does his brace.

The next advance on this process was to wind a thong or cord around the drill, and then, by pulling the two ends alternately, make it revolve much faster than if rolled between the hands. In some parts of India butter-churns are worked in this way, instead of by the up and down dasher used in other parts of the country. And the Brahmins, although they have simpler and easier processes, still employ this method of producing fire upon sacred occasions.

The Esquimaux, when first brought in contact with the Europeans, employed a method like that last described, in procuring fire. Davis, the navigator, after whom Davis' Straits were named, describes how, in 1586, a Greenlander "beganne to kindle a fire in

Fig. 4.—ESQAIMAUX METHOD.

this manner; he took a piece of a board, wherein was a hole halfe throw; into that hole he put the end of a round stike, like unto a bedde-staffe, dipping the ende thereof in traine-oil, and in fashion of a turner, with a piece of leather, by his violent motion, did speedily produce fire." This was only used in making fire; but when the shaft was pointed with stone, it was used for drilling holes in stone and wood (see fig. 4.) The thong being passed twice around the drill, the upper end is steadied by a mouth-piece of wood, having a piece of the same stone imbedded with a counter-sunk cavity. This, firmly held between the teeth, directs the tool.

The next advance was the mere thong or cord of a bow, by which one hand can be made to do the work of two in driving the spindle. The bow-drill thus formed was used by the ancient Egyptians, and is employed at the present day in our own country by certain artisans. The apparatus lately, and possibly still used for making fire by the Sioux Indians of the North-West, which was constructed on this principle, is shown in fig. 5.

There is another contrivance, used equally

Fig. 5.—SIOUX METHOD.

for drilling and fire-making, and which is termed the "Pump-drill." That which is used in Switzerland, and elsewhere for drilling, armed with a steel point, and weighted with a wooden disc is shown in fig. 6.

As the hand brings the cross-piece down, it unwinds the cord, driving the spindle round; as the hand is lifted again, the disc, acting as a fly-wheel, runs on and rewinds the cord, and so on. This apparatus is used in several of the South Sea Islands, only the spindle is armed with a hard stone, instead of a steel point. A similar instrument is also used among the Iroquois Indians of New York (see fig. 7.)

The natives of Terra del Fuego (if we credit Magalhaens, from whom the Straits of Magellan takes their name) made fire from a flint on a piece of iron pyrites, the sparks being received on some kind of tinder. This method was also used by the Slave and Dog Kib Indians, near the Arctic Circle, as also by the Greeks and Romans.

There are certain varieties of cane, or bamboo, which contain large proportions of silica, which is the same substance that, in another form, we call flint. The natives of Sumatra, Borney, and the surrounding islands, produce fire by striking or rubbing together splints of bamboo, the silicious coating of which renders ignition possible. Producing fire by means of what is termed a "sun-glass" is

Fig. 6.—SWISS PUMP-DRILL.

not, by any manner of means, of modern origin Pliny mentions "glass-globes" (practically what we call double convex lenses), with water put in them, which set opposite the sun, so concentrate its rays as to set clothes on fire. The story of Archimedes informs us that the fleet besieging Syracuse was set on fire by means of "burning mirrors." In a like manner the vestal virgins lighted the fire it was their duty to keep forever burning in the fane of Vesta, on the banks of the Tiber. If these virgins allowed the eternal fire to go out, they were whipped by the priests, "whose custom it was to drill into a board of auspicious wood till the fire came, which was carried to the temple in a brazier." Inca, who acted as "prophet, priest and king" of Peru, lighted the fires of his nation annually, "on the occasion of the winter solstice," by means of concave mirrors fashioned out of nodules of iron pyrites, which are capable of being polished to the brilliancy of silver or steel. When, however, the sun failed to shine on the festival given in his honor—for the Incas were sun-worshippers,—then the new fire was kindled by means of friction.

In our own country we have in turn lighted our fires with flint, steel and tinder, and the sun-glass and of late with the friction-match. Before the invention of the match, if one's fire went out, it was a common practice to run to the neighbor's to borrow some; and, years ago, during the intermission between the services upon the Sabbath, there might be seen, upon the sunny side of the church, groups of men endeavoring to light their pipes with a sun glass.

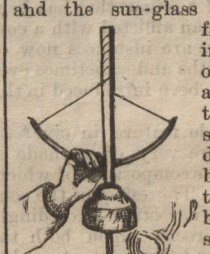

Fig. 7.—IROQUOIS METHOD.

But all of these methods have been supplanted by the friction match. Such is the progress of Science.—*Wide Awake.*

AN UNCONSCIOUS SERMON.

Mr. Harvey was riding slowly along the dusty road, looking in all directions for a stream, or even a house where he might refresh his tired, thirsty horse with a good draught of water. While he was thinking and wondering, he turned an abrupt bend in the road, and saw before him a comfortable looking farm-house, and at the same time a boy ten or twelve years old came out into the road with a small pail, and stood directly before him.

"What do you wish, my boy?" said Mr. Harvey, stopping his horse.

"Would your horse like a drink, sir?" said the boy, respectfully.

"Indeed he would, and I was wondering where I could obtain it."

Mr. Harvey thought little of it, supposing, of course, the boy earned a few pennies in this manner, and therefore he offered him a bit of silver, and was astonished to see him refuse it.

"I would like you to take it," he said, looking earnestly at the child, and observing for the first time that he limped slightly.

"Indeed, sir, I don't want it. It is little enough I can do for myself or any one: I am lame, and my back is bad, sir, and mother says, no matter how small a favor may seem, if it is all we are capable of, God loves it as much as he does a very large favor, and this is the most I can do for others. You see, sir, the distance from Painsville is eight miles to this spot, and I happen to know there is no stream crossing the road that distance, and the houses are all some distance from the road, and so, sir, almost every one passing here from that place is sure to have a thirsty horse."

Mr. Harvey looked down into the gray eyes that were kindling and glowing with the thought of doing good to others, and a moisture gathered in his own, as a moment later he jogged off, pondering deeply upon the quaint little sermon that had been delivered so innnocently and unexpectedly.—*Young Folks' News.*

— As art is not the avoidance of deformity but the study of positive beauty, so Christianity is not a flight from wrath, but a loving development and enjoyment of the more erfect life.—*David Swing.*