

# **Fire before matches**

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## ABSTRACT

In this paper I describe seven methods for making fire employed in Indonesia prior to the introduction of friction matches and lighters. Additional sections address materials used for tinder, the hearth and its construction, some types of torches and lamps that predate the introduction of electricity, and myths about fire making.

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## VERSION HISTORY

Version 2 [13 June 2020] Minor edits; 'candle' elevated to separate subsection.

Version 1 [12 May 2019]

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# Fire before matches

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*Down to the time of our grandfathers, and in some country homes  
of our fathers, lights were started with these crude elements—flint,  
steel, tinder—and transferred by the sulphur splint; for fifty years  
ago matches were neither cheap nor common.*

Alice Morse Earle  
*Home Life in Colonial Days*

## 1 Introduction

Chemical matches—which involved bringing the chemically coated match heads into contact with sulfuric acid—were invented in 1805, but were unsafe and impractical to mass produce. In 1817 a French chemist invented a match that lighted itself when exposed to air; each match was kept in a vacuum-sealed tube until needed and the glass broken. Friction matches (*korek api*) were invented in 1826 and proved their practicality. A major improvement of friction matches was the safety match. It used red phosphorus instead of white phosphorus, and incorporated the phosphorus into the striking surface (rather than in the match head). Safety matches began to be mass produced around 1850 and quickly grew in popularity.

Lighters are devices that hold a gas or liquid fuel and, when required, produce a spark to ignite the fuel and produce a controlled flame. An early kind of lighter was invented in 1823; it was fueled by hydrogen produced by a chemical reaction. Hydrogen as fuel gave way to naphtha, and later naphtha to butane, the fuel of modern-day lighters. However it was an advancement in the technology to produce a spark—specifically the invention of the alloy ferrocerium, a.k.a. the ‘flint’ in a lighter—that fueled the popularity of lighters (*pematik api*, *geretan*) beginning around 1910.

Matches had their precursors in splints of wood that were chemically treated to improve their flammability (e.g. with sulfur, as the Chinese were doing by the sixth century AD). However these sticks didn’t light themselves, and fire had to be produced by other means. Maybe you already know one or two methods for making fire. But if you’re like me, you have little practical experience in such matters.

The same is true in Indonesia. If you’re lucky you may encounter that rare individual who knows how to make fire from scratch, or find people who still have relic knowledge of it. This guide is written so that if the occasion arises, you will know what to ask about, and hopefully be able to better describe the relevant implements and materials. Section 2 covers seven traditional methods of making fire, all of which have been documented for

Indonesia. Section 3 is a partial list of materials that have been used for tinder in the Indonesian context. Section 4 discusses the hearth, its construction and placement in the home, and certain traditions related to it. Section 5 is a pictorial guide to kinds of torches and lamps, but is limited primarily to my personal experience on Buton Island in southeastern Sulawesi. Section 6 discusses folktales concerning firemaking. The paper concludes in section 7 with some related topics for possible further investigation.

A century ago knowledge concerning traditional fire making methods was more common. In the Appendix I have brought together English translations of several excerpts from the writings of the anthropologist Alb. C. Kruyt concerning what he learned in his day about fire making across central Sulawesi.

## 2 Traditional fire-making methods

In this section I describe seven traditional methods for making fire. These are the flint and steel strike-a-light, the bamboo and porcelain strike-a-light, the fire drill, the fire saw, the fire thong, the fire plow, and the fire piston.<sup>1</sup> All seven methods have been documented from Indonesia itself, although some methods were clearly in more common use than others.

When you encounter any of these methods, note precisely the materials used, whence they are obtained, and whether people use a container (wrapper, bag, case, etc.) for carrying their fire-making implements about. In many places people sufficed with just one method of making fire, or maybe also used a second method. The most I've read about in a single locale are the Balantak of eastern Sulawesi, who employed four different methods (Kruyt 1932:346). If people tell you about one method of making fire, probe whether other methods are also known or remembered. In addition to 'fire making,' you should investigate methods for 'fire preserving,' that is, how people used to (or still do) transport fire from one location to another.

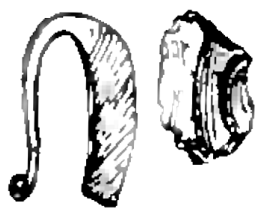
My primary source on fire making methods is Walter Hough. Beginning in the 1880s and throughout his employment at the National Museum of the Smithsonian Institution, Hough made a particular study of fire making tools, early matches and lighters, and early types of lamps. His publications on fire making include Hough (1888, 1890a, 1890b, 1891, 1926, 1928). Today you are apt to read that traditional methods of fire making were slow, inefficient, and laborious. However Hough became so experienced he could produce fire from any native implement, often within seconds (Hough 1890a:359–360; Mason 1891:283). While Hough provided the big picture, I also found much useful information in separate articles devoted to the fire piston (Balfour 1908, R. Fox 1969), the fire thong (Balfour 1914), and the bamboo strike-a-light (Lourens, Kivilaakso and Read 2015).

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<sup>1</sup> It is also possible to start a fire by various chemical or electrical means, or by using lenses or mirrors to focus sunlight. However I do not cover these methods since they are likely irrelevant to lexicographical research in Indonesia.

## 2.1 *Flint and steel strike-a-light*

Both in the West and in Indonesia, the flint and steel strike-a-light was formerly a popular method for starting fires. When steel is struck against the sharp edge of flint with a strong, scraping blow, the flint's hard edge shaves off tiny flakes of metal. At the same time, friction heats it to the point where some of the iron combusts. In these tiny metal shards with their high ratio of surface area to volume, the burning process continues as a chain reaction as nearby iron is also brought to its ignition temperature. The trick is to catch the spark in a nest of dry tinder while it is still burning—that is, before all the available iron has oxidized and it becomes a rusted-out cinder.



Strike-a-light, flint and steel, England. Source: Walter Hough 'Synoptic series of objects in the United States National Museum illustrating the history of inventions' 1922, plate 2, figure 12. Public Domain.

Without modification, the term 'strike-a-light' is understood to refer to flint and steel. In America, a tinderbox contained not only tinder but also flint and steel, and to 'start a fire with the tinderbox' was to employ this method.

In Indonesian, the stone flake is called *batu rijang* or *batu api*, and the steel striker is called *baja*. The strike-a-light method of making fire could be further elaborated as *metode membuat api dengan cara membenturkan batu rijang dengan baja, supaya memercikkan bunga api*. Although I have referred to 'flint' up until now, similar rocks can be employed including chert, jasper, chalcedony, agate, quartz, and quartzite. The two most important properties are suitable hardness and that it can be fractured or flaked to produce a sharp edge. The Nuaulu of Seram refer to a stone flake used to make fire as *kinonote*, and distinguish five different kinds based on color and composition (Glover and Ellen 1975:73–74).

Prior to the invention of steel, an older method of obtaining a spark was to strike flint on pyrite, or even by striking two pyrite rocks together. This method was maintained in Europe into historical times, and among the Eskimo and certain other Native American peoples into the modern era (Hough 1928:55 ff.). Craig (1967) documented fire made by striking pyrite on pyrite in western Papua New Guinea. However I have not seen the pyrite strike-a-light mentioned for Indonesia, except as a hypothetical possibility in former ages (e.g. Glover and Ellen 1975:53).



Strike-a-light, flint and iron pyrite struck together as the ordinary flint and steel, Eskimos of Alaska. Source: Walter Hough 'Synoptic series of objects in the United States National Museum illustrating the history of inventions' 1922, plate 2, figure 11. Public Domain.

## 2.2 *Bamboo strike-a-light*

The bamboo strike-a-light consists of a length of bamboo and a striker made from a piece of broken porcelain (or from a 'glassy' type of rock such as chert, flint, or quartz). Tinder is held pressed against the striker as a strong, glancing blow is made against the bamboo.



Strike-a-light, bamboo tube and striker of pottery used as flint and steel, two boxes for tinder, Malay. Source: Walter Hough 'Synoptic series of objects in the United States National Museum illustrating the history of inventions' 1922, plate 2, figure 13. Public Domain.

The best bamboo for the task has a rough exterior surface that feels like fine-grade sandpaper (owing to its high silica content), for which slender bamboo (Indonesian *buluh*) is particularly suited.<sup>2</sup> The small bits of silica are apparently “capable of taking up the force of the blow and converting it into heat sufficient to ignite tinder” (Hough 1928:69). However I am not aware of a study that details this process from a mechanical or chemical point of view.

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<sup>2</sup> Principally *Schizostachyum jaculans* on mainland Southeast Asia, *Schizostachyum iraten* in Java, *Schizostachyum blumei* on Borneo, and *Schizostachyum lima* from Borneo and the Philippines through Sulawesi, the Moluccas and New Guinea (Lourens, Kivilaakso and Read 2015).

The bamboo strike-a-light is a distinctly Asian invention. It has been documented from northeastern India through mainland Southeast Asia and as far west as the island of New Guinea, although the principal area of its distribution seems to be centered around the southern Philippines, Borneo, Sulawesi, the Moluccas, and Papua (Lourens, Kivilaakso and Read 2015). I have not come across a Malay or Indonesian name for this apparatus; it could be described as *alat untuk membuat api dengan cara membenturkan buluh dan pecahan keramik supaya memercikkan bunga api*.

### 2.3 Fire drill

The simplest kind of fire drill consists of two pieces of wood. A round piece, the so-called spindle (*gurdi*, *kayu poros*), is twirled and pressed downward with the hands into a cavity on a second, usually somewhat flat piece of wood, known as the hearth, hearth board, fireboard, or base board (*papan api*, *alas kayu*). The cavity in which the spindle rests is called the drill hole or hearth pit (*lubang api*).



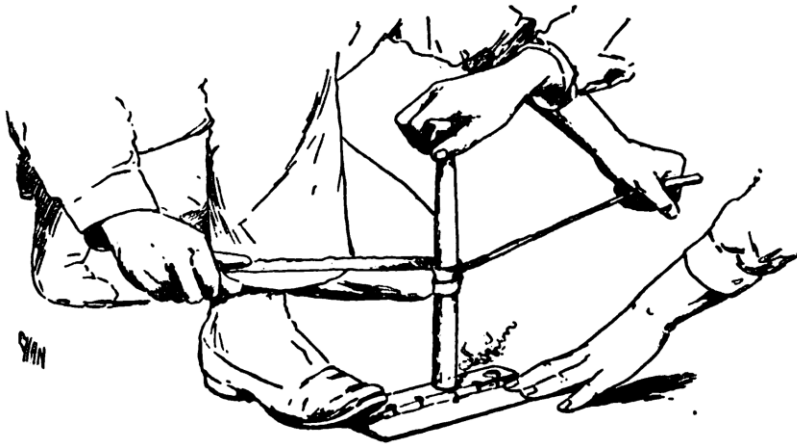
Simple two-stick fire-making apparatus. Source: Walter Hough 'Aboriginal Fire-Making' 1890, page 362. Public Domain.

Initially light-colored wood powder (*serbuk kayu*) is ground off by the working of the spindle in the cavity, but “soon the powder increases in quantity and begins to get darker; the smell of burnt wood is speedily noticed and then smoke is seen. Probably when the next motion ceases there will be a little curl of peculiarly colored smoke, which shows that active combustion has begun” (Hough 1890a:363).

Usually a slot or channel is made in the wall of the hearth pit where wood dust collects, or so that wood dust falls through the crack and collects in a conical heap at the edge of the

hearth board.<sup>3</sup> In Australia sand (to increase friction) and sometimes grease (scraped from the side of the nose) was added to the hearth pit (Davidson 1947:431), but I haven't read specifically of similar practices in Indonesia.

In addition to the simple hand drill, ethnographers have described three other types of fire drills. The cord drill or strap drill is operated by two people. The bottom of the spindle sits as before in the fireboard, while the top of the spindle is held in a socket in a second piece known as the bearing block, hand rest, or handhold (*pegangan*). The bearing block may be of stone, or fitted with a stone bearing, to reduce friction at the upper end. A second person twirls the spindle by pulling back and forth on the ends of a cord (*tali*) looped around it.



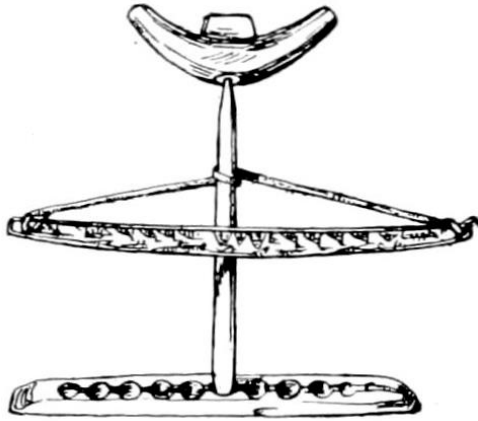
Eskimo two-handed fire-drill. Source: Walter Hough 'Aboriginal Fire-Making' 1890, page 363. Public Domain.

The bow drill is similar to the cord drill, but in this case the cord is held in a bow. The bow drill can be operated by a single person.

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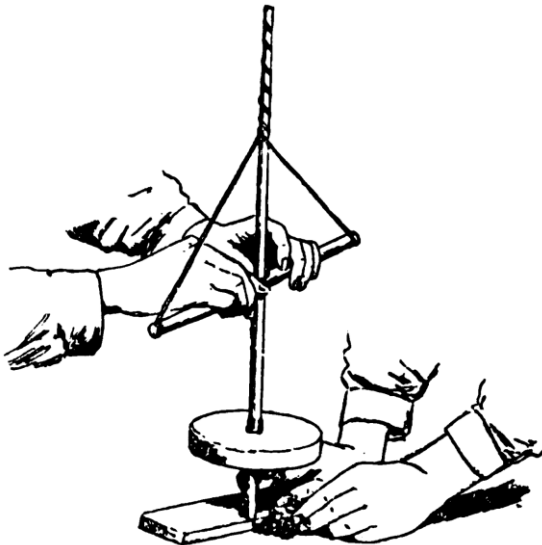
<sup>3</sup> Hough adds, "Prof. A. C. Haddon, in the discussion following this paper, pointed out that the slot cut in the drill hole was not made by the Torres Straits Islanders, nor by the natives of Queensland, and therefore is not essential. Professor Haddon is right, in a sense. Fire *can* be made on a plane surface without groove, but the difficulty is so great that it is almost prohibitive, and the slot is essential to quick and easy fire-making" (1890a:370).





Fire drill, rod held in a socket and gyrated with a bow and cord, lower piece with cavities on a central groove, Eskimos of Alaska. Source: Walter Hough 'Synoptic series of objects in the United States National Museum illustrating the history of inventions' 1922, plate 2, figure 9. Public Domain.

In a pump drill, the spindle runs through a hole in a crossbar. A cord attaches the ends of the crossbar to the top of the spindle. A flywheel of wood or stone on the lower portion of the spindle is needed in order to store enough rotational force to rewind the cord after each downward stroke of the crossbar. By pumping the crossbar, the drill can be kept continuously spinning, first in one direction then the other.



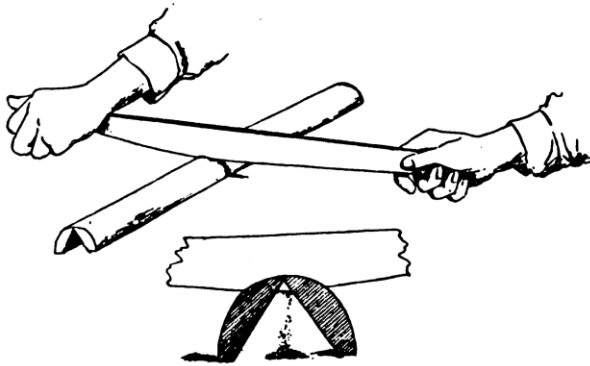
Iroquois pump-drill for making fire. Source: Walter Hough 'Aboriginal Fire-Making' 1890, page 364. Public Domain.

The drill as a means of making fire has been documented in one or another of its forms from around the world, including Indonesia. In addition to making fire, the drill was also adapted in various cultures as a means of making holes in stones, bone, shells, and other material. Apparently the pump drill was widely used across Polynesia and Micronesia for drilling holes, but curiously was not used for making fire, for which the fire plow (§ 2.6) was employed (Linton 1926:38, 96).

Of the four types of drills, only the bow drill seems to have a somewhat standardized name in Indonesian: *busur gurdi*. The other types of drills would have to be described in prose, e.g. *alat untuk membuat api dengan cara memutar-mutar tongkat kayu di lubang dalam alas kayu hingga muncul serbuk api*.

## 2.4 Fire saw

The fire saw, also spelled with hyphen fire-saw, consists of a piece of sharpened bamboo (the 'saw') which is rubbed back and forth in a notch made on a piece of convex bamboo (the 'hearth' or 'hearth bamboo'). As the saw is worked, the bamboo becomes scorched and hot dust falls onto tinder placed below.



Fire saw. Source: Walter Hough 'Aboriginal Fire-Making' 1890, page 367. Public Domain.

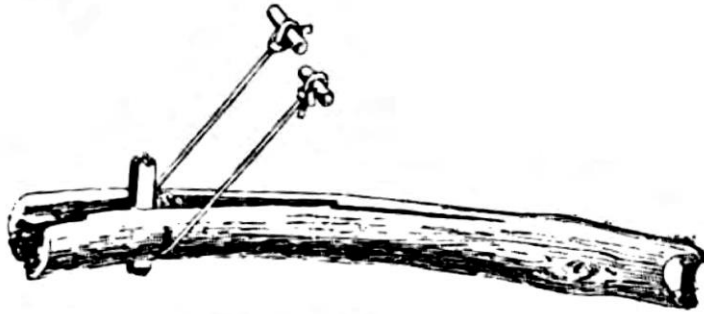
There are at least two variants of this method. In one method the action is reversed, that is the saw is made stationary, and the convex piece is rubbed across it. Tinder is placed on the concave side of the hearth bamboo above the notch where the saw makes contact. Among the Sa'dan Toraja of Sulawesi, Kruyt (1923:278) describes a saw made of two pieces of bamboo rather than one. In this method the tinder to be ignited is clamped between the two pieces of the saw blade.

The fire saw is known from mainland Southeast Asia through the Philippines, Indonesia and Australia. Although the use of bamboo is usual, the two pieces can also be of wood as reported from Burma and Australia (Hough 1890a:366, 1926:104 ff.); wood instead of bamboo was also used in the Pakawa area of central Sulawesi (Kruyt 1938:25). The widely reported Indonesian name for this implement is *gergaji api*. It could further be described as *metode membuat api dengan cara menggesek bambu dengan bambu hingga muncul serbuk api*.

## 2.5 Fire thong

In a fire thong, a strip of rattan, bamboo, or other suitable, flexible material is drawn back and forth across a stout piece of wood. Usually the wood is partially split, and the two halves are held open with a peg wide enough for a small amount of tinder to be inserted into the cleft. The sawing motion of the thong against the wood produces enough heat to make the wood dust and tinder ignite. In the typical case, a single person operates the fire

thong by holding the wood under knee or foot, and pulling the ends of the thong alternately with the left and right arms. In some locales the stout piece was made of bamboo rather than wood.



Semang fire-making set with a sawing thong of bamboo strip, the ends of which are fitted with small wooden toggles, Malay States. Source: Henry Balfour 'Frictional Fire-Making with a Flexible Sawing Thong' 1914, page 35. Public Domain.

The fire thong operates on the same principle as the fire saw described in section 2.4, and in fact has sometimes been termed the 'flexible fire saw.' The fire thong has been noted in recent history from India through mainland and insular Southeast Asia to New Guinea and Australia; it has also been reported as a native implement from parts of Africa, North America, and Europe (Balfour 1914). A few Indonesian websites report the name *tali api* for this device. It could further be described as *metode membuat api dengan cara menggesek kayu atau bambu dengan seutas rotan (atau bahan lentur yang lain) hingga muncul serbuk api*.

## 2.6 Fire plow

The fire plow, also spelled fire plough, is a method of making fire by rubbing a stick back and forth in a groove in another piece of wood.



Samoan fire sticks (a.k.a. fire plow). Source: Walter Hough 'Aboriginal Fire-Making' 1890, page 367. Public Domain.

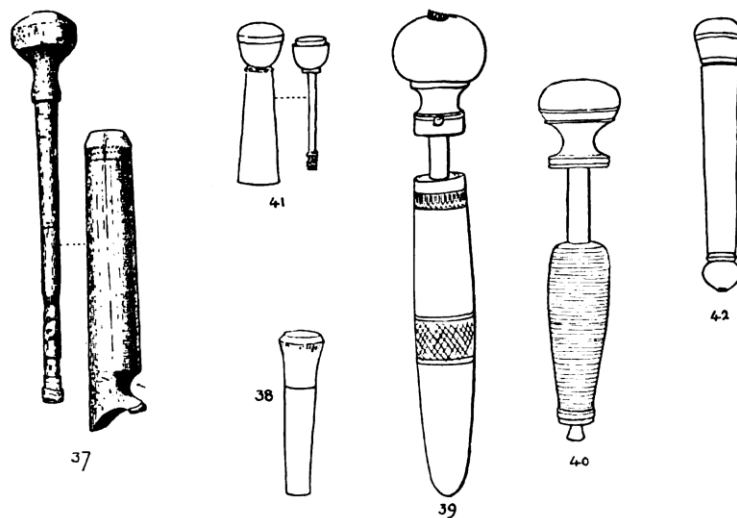
The hearth piece (*bahan kayu untuk digesek*) is invariably made from a kind of soft wood, while the rubbing stick (*kayu penggesek, alat penggesek*) may be of the same wood or a

hard wood. The action of rubbing not only forms the groove or trough initially, but also results in the accumulation of a small mound of wood dust at the end of the trough. As the fire maker quickens their stroke, the wood dust smolders then ignites.

The fire plow is known from Polynesia, the Bismark Archipelago, Tasmania, and parts of Africa, and has also been described from Borneo (Hough 1926:107–109, 1928:53). Some Indonesian websites refer to this implement as a *bajak api*, a straightforward loan translation of the English name. It could be further described as *metode membuat api dengan cara menggesek kayu maju mundur di jalur dalam alas kayu hingga muncul serbuk api*.

## 2.7 Fire piston

Unlike the strike-a-lights, which are ‘percussion type’ tools, and the fire drill, fire saw, fire thong, and fire plow, which are ‘friction type’ tools, the fire piston is an ingenious implement which uses the heat produced by the sudden compression of air to ignite tinder. It consists of two parts: a cylinder closed at one end, and a closely fitting piston. Typically there is a cavity in the end of the piston where tinder is placed. When the air in the cylinder is quickly compressed by hand to an extremely small volume, the resulting heat is sufficient to light the tinder. The piston is withdrawn and the glowing tinder is used as needed. Other names for the fire piston include fire syringe, slam rod fire starter, aerophore,<sup>4</sup> pyrophorus, and tachypyrion. The Malay name is *gobek api* (Balfour 1908:575).



Fire pistons from Borneo (37, 38), Java (39–41) and Flores (42). Source: Henry Balfour 'The Fire Piston' 1908, plate V. Public Domain.

As documented by R. Fox (1969), the fire piston was developed in France in the early nineteenth century and enjoyed a brief period of popularity before being displaced in the

<sup>4</sup> At one time the term aerophore also made reference to a kind of breathing apparatus, e.g. for firemen, or for inflating the lungs of newborn infants.

1830s by the more reliable friction matches. In Europe fire pistons were made of metal (although a few demonstration models had a glass cylinder).

Fire pistons were also known in Southeast Asia. Balfour (1908) and Hough (1928) document its occurrence in Burma, Thailand, Laos, the Malay peninsula, the Philippines, Sumatra, Borneo, Java, and Flores. These researchers also note a wide variety in the materials of its construction, including metal (e.g. a lead-tin alloy, or brass lined with lead), bamboo, wood, ivory, bone, and horn. If you encounter the fire piston, document as specifically as possible the materials of its construction and the type of tinder used. Also note whether grease or packing material is used to maintain a tight connection between the piston and the cylinder wall.

People have questioned whether the fire piston was an independent development in Southeast Asia or introduced from Europe. Balfour (1908:584 ff.) summarizes the pros and cons of this debate. On the one hand there appear to be no reports of the fire piston in Southeast Asia prior to around 1865. On the other hand if it had been introduced (as an item of trade) from Europe this must have occurred in the window of roughly 1815 to 1830. This leaves an improbably short time for it to have been adapted to local materials and to spread to people groups located as remotely as the Kachin of northern Burma and the Bontoc of central Luzon. It is clear from the historical record that in Europe the precursor to the fire piston was the air gun, and that the heating of rapidly compressed air—to the point where it could ignite tinder—was a chance discovery. What the precursor to the fire piston in Southeast Asia might have been is unknown. People have variously proposed the piston bellows, the blow gun, the pop gun, and even the betel-nut mortar and pestle.

## 2.8 *Transporting fire*

In the early days of Western colonial expansion, reports came back of primitive people who did not know how to make fire, but always preserved their fire from one day to the next. Today such reports have been discredited. Nonetheless before matches and lighters, people may have found it more convenient to preserve embers from an old fire, and to transport fire as necessary to new locations.

If people transport fire record all such materials and methods. Transporting fire from one house to another may involve simply bringing embers over in a dish or coconut shell. For longer distances other methods may be employed, for example smoldering fungus or smoldering wood.<sup>5</sup> Ijuk fibers (from the trunk of the sugar palm) are naturally resistant to heat and flame; a rope made from ijuk “can be used as a portable fire lighter; the rope remains glowing in all weathers.”<sup>6</sup>

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<sup>5</sup> A burning stick, especially one removed from a fire, can be called a firebrand; a slow torch of deadwood or fungus is better called a ‘spunk.’

<sup>6</sup> *Pl@ntUse*, s.v. “*Arenga pinnata* (PROSEA)” [https://uses.plantnet-project.org/en/Arenga\\_pinnata\\_\(PROSEA\)](https://uses.plantnet-project.org/en/Arenga_pinnata_(PROSEA)) (accessed December 31, 2018).

It is possible that an implement used for illumination can also be used for starting a fire. The Manggarai of Flores Island used candlenut torches (§ 5.3) at night to light their way to their garden huts, and on arrival used the same torches to start a fire (Pfeiffer and Tado 2012:35).

### 3 Tinder

Tinder (Indonesian *rabuk*) is material that is easily ignited. Most tinder is characterized by its loose, open structure and, preferably, low ignition point. The high ratio of surface area to volume allows combustion to spread until, with gentle wafting, the tinder bursts into flame.

Sometimes in the process of starting a fire, two different materials are used: a small amount of very fine, easily combustible material, which could be called the ‘inner tinder’ or ‘catching tinder,’ and a larger amount of coarser ‘outer tinder.’

Tinder is required with strike-a-lights and the fire piston. The friction methods (fire drill, fire saw, fire thong, fire plow) produce their own small coal of semi-carbonized wood dust, but typically this ember is supplemented with a nest of additional tinder material.

Tinder material may be charred ahead of time, mixed with charcoal, or treated with urea or certain plant juices<sup>7</sup> to increase flammability. If possible not only the source of tinder *but also its preparation* should be documented. Compare following description from the island of Flores.

The tinder used is called *moke* and is extracted from an unidentified *Arecaceae* palm that is also named *moke*. ... After ascending the palm, a few handfuls of soft, fluffy, down-like brown fibrous matter were scraped from the exterior of the leaf stem (petiole) using a machete. Once extracted, this downy substance was left to dry in the sun. Meanwhile, a fire was started to which the husk of an old coconut fruit was added. Smoldering ash and charcoal from the charred husk was then scraped into a bowl and, using a wooden pestle, crushed and ground into a fine powder. The dried downy substance was thoroughly mixed with the powder by both stirring with a stick and kneading in the hands; during the process more powder was periodically added to the mixture. After several minutes of mixing and kneading, the downy substance took on a much darker colour due to infusion with the ash powder. At this point the *moke* was announced to be ready. (Brumm 2006:168–169)

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<sup>7</sup> Adriani and Kruyt (1950:182) mention sap from heated stalks of nutra cane (*Schumannianthus dichotomus*) and cardamom (*Amomum* sp). The tinder was then dried and mixed with charcoal and lime.

A cursory search of the web shows that there is no shortage of information on what kinds of materials serve as tinder in the West. Here I include a partial list of some tinder materials you may encounter in Indonesia. You will need to investigate on your own the steps used locally to prepare these materials for use as tinder.

1. Tinder made from the stalks of palm fronds. The four species of palm usually mentioned in this regard are the sugar palm (*Arenga pinnata*); the related, low growing *Arenga undulatifolia* with its distinct, crinkled leaves;<sup>8</sup> the clustering fishtail palm (*Caryota mitis*); and the fishtail palm (*Caryota rumphiana*). However there may be others.

The tinder material, obtained by scraping the stalk, is variously described in English as scurf, scurf down, downy substance, fluff, pubescence, hair, woolly hairs, flock, flocky material, and flocculent mass.<sup>9</sup> In Indonesian it can be described as *kaul*, *kawul*, *bulu* atau *miang halus yang terdapat pada pelepah pohon palem (enau, nibung, dsb)*.



Fluff scraped from the stalks of *apiang* palm fronds (*Arenga undulatifolia*), here being mixed with charcoal and ash from dried and burnt leaves of the giant pandanus. © 2011 Ash Kivilaakso. Used with permission.

As far as I know, it is the outside of the stalk which is scraped, although one should be careful to specify whether this is the sheath (the thickened base which partially or completely wraps around the trunk), the petiole, the rachis, or more than one of these.<sup>10</sup> I assume that fronds of a certain age or maturity must be selected, but I have no information about this aspect.

For the island of New Guinea, Craig (1967:434) mentions tinder made of ‘dried pith’ from the ‘base of black palm fronds.’ Possibly this refers to the same material discussed

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<sup>8</sup> This species is known only from Borneo, Sulawesi, and Palawan Island in the Philippines. The Indonesian name is *pohon aren gelora* (from the wavy leaves), while the name *apiang* (from the root *api* ‘fire’) is encountered in parts of Borneo. An English common name is unknown to me.

<sup>9</sup> Perhaps technically it could be called ‘tinder from palm trichomes’ (trichome = a small hair or other outgrowth from the epidermis of a plant). However the material that Kulisusu people scrape from clustering fishtail palm frond stalks clearly includes bits and pieces of the epidermal layer itself, not just hairs from the surface.

<sup>10</sup> For the named parts of a palm frond, see my article on palm parts (Mead 2012).

here (but using an inaccurate description); however it could refer to a different material, obtained from the inner part of a palm frond rather than scraped off the outside.<sup>11</sup>

2. Tinder made from shreds of the soft medullary substance scraped from the inside of bamboo.

From a television episode, *Ray Mears' World of Survival: The Spice Islands, Indonesia*, I learned it is also possible to make tinder by scraping the *outside* of bamboo, provided the hard, outermost layer (the 'varnish') is removed first.

3. Tinder made from fibers of coconut husks. These fibers, which have other uses besides tinder, are called coconut fiber or coir in English, and *serabut dari sabut kelapa* in Indonesian.



Coir, or coconut fiber © 2015 David Mead. Released to the Public Domain (CC0)

4. Tinder made from coconut frond stipule. Coconut frond stipule is the coarse, burlap-like material found at the base of coconut fronds (Indonesian: *tapas kelapa*, *bahan seperti saringan yang berada di antara batang pohon dan pelepah daun kelapa*). Some sources suggest it is shredded first before used as tinder.



Coconut frond stipule. © 2013 David Mead. Released to the Public Domain (CC0)

5. Tinder made from tree bark. One source of bark tinder is the broad-leaved paperbark tree *Melaleuca viridiflora* (Williams 2010:291).

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<sup>11</sup> Similarly De Clercq (1893:72) mentions tinder from the inside (Dutch *binnenzijde*) of the broad, lower end of the fronds of the *nibung* palm.



6. Punk, tinder made from prepared fungus. For western New Guinea Van der Sande (1907:19) mentions the Lycoperdaceae family (puffballs). In Europe punk was made from mushrooms of the Boletaceae family or from shelf fungi of the Polyporaceae family.<sup>12</sup>

7. Punkwood, tinder made from dead wood, especially wood that has been made soft by fungus. This type of tinder also goes by the names touchwood and punk. It may be charred beforehand.

8. Charcloth, tinder made from cloth turned to charcoal.

9. Tinder made from dried moss or lichen. Ellen (2017:34) mentions “the fine dry soft earthy-coloured lichenous tinder scraped from the bark of coconut, sago and aren palms,” but I have not been able to find out more about it.

## 4 The hearth

*The hearth as a central image of the marriage process, with its overlapping connotations of household, reproduction and nurturance, has powerful resonances in many Austronesian societies.*

Roxana Waterson  
*Paths and Rivers*

One aspect of the hearth (Indonesian *perapian*, *tempat memasak*) is its physical layout and construction. Across much of Sulawesi, the traditional hearth consists of a wooden box filled with earth and on which are placed the three stones of the fireplace. Above the hearth are one or more racks of different sizes and often differently named, for storage and drying, e.g. rice, corn, pots, firewood. However other means of constructing the hearth are also known (see Dewi et al. 2016 for an interesting picture gallery), so be alert to design elements that are prevalent in your locality. In traditional houses the hearth may have been located centrally in the dwelling, or against one wall of it, and performed three functions: heating, cooking, and lighting. In the present day it has often been transferred to a separate structure at the back of the house, where it is used solely for cooking.

At the hearth a cook will need to have various implements at the ready. Some of these are for cooking,<sup>13</sup> while a few are for manipulating the fire itself, such as fire tongs (for moving coals and burning wood), fire blower (a hollow tube for blowing on the fire), and fan. Check whether there are special locations or holders for any of these. What else is kept near the hearth (e.g. salt, spices, water containers)?

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<sup>12</sup> The terms amadou, German tinder, and surgeon’s agaric refer to a felt-like material made from a particular species of shelf fungus ( the so-called tinder fungus, *Fomen fomentarius*), and oak agaric to this or material from a few similar species. These terms should probably be avoided in the Indonesian context.

<sup>13</sup> For a description of some of these, see Mead (2013).



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A second aspect of the hearth is as a symbol of marriage. In both Sa'dan Toraja *mendapo* and Tolaki *merapu*, we find that terms which originally meant to have a hearth (< PMP \*dapuR) have come to mean 'be married' (Waterson 2009:243; Mead 2009:501), after the general expectation that a couple will establish their own hearth. This may happen even while a newlywed couple lives with parents (they will cook separately on their own hearth), or later when they move into their own residence. There may be specifications for a new hearth, including the kinds of leaves used to line the frame, the number of loads of dirt to fill it, when and how the first fire is made on it, and how long that first fire is to be kept burning (see the Appendix for details). These specifications relate to the fact that traditionally the hearth was a focus for ritual in the home—the other foci in general being the stairs, house posts, and ridgepole (J. Fox 1993). In some cultures the space above the hearth was regarded as the residence of household guardian spirits (Sather 1993:73).

Here are a few other questions to keep in mind. Besides the ritual installation of a new hearth, are other rituals performed at the hearth? Is it considered unlucky for a fire to go out? Who is responsible for maintaining a fire? Are there times when a fire on the hearth should be extinguished, and a new one made? Are there prohibitions about contaminating fire (e.g. with spittle or urine), or certain things you should never put in a fire? Are braziers, fire pans, or other types of portable hearths ever used? On a practical level what provisions are made for ventilating smoke? What precautions are taken to prevent damage by fire?

While investigating the hearth, this may be a good time to probe for the following vocabulary items if they are not already in your dictionary (incomplete checklist):

firewood = *kayu bakar*

kindling = *kayu bakar yang dibelah tipis-tipis*

fire = *api*

sparks = *percikan api*

smoke = *asap*

soot = *jelaga, sulang*

ash = *abu*

glowing coals = *bara api*

charcoal = *arang*

charred pieces of wood leftover from a fire = *puntung kayu bakar*

hearth = *perapian, tempat masak*

hearth frame = *kerangka perapian*

fireplace stones = *tungku, batu dsb yang dipasang untuk perapian*

floor space in front of or surrounding the hearth = *bagian lantai di depan atau sekeliling perapian*

rack above the hearth = *para, sebuah rak di atas tungku (untuk menaruh perkakas dapur, mengeringkan kayu api, gabah, jagung, dsb)*

small rack above the hearth for drying/jerking meat = *salaian, para-para tempat menyalai daging*

fire tongs = *sepit api*

fire blower = *salung api, teropong api, pengembus*

fan = *kipas api*

simple earthenware stove (shaped like a ring with an opening in front) = *kompot sederhana terbuat dari tanah liat, berbentuk silinder berlubang (see picture above and illustration on page 33)*

earthenware pot stand (bowl-shaped with an opening in the middle to transmit heat, used when cooking) = *pelapis panci (see picture below)*

earthenware pot pedestals (used in pairs to keep a pot elevated over fire) = *tumpuan panci (?) (see illustration on page 33)*

horizontal metal rods (used as a pair to keep pots suspended over fire) = *sepasang batang besi, tempat panci dsb sambil memasak*

earthenware baking cloche = *penanak kue (see picture below)*

earthenware griddle = *wajan ceper*

earthenware griddle with troughs (for baking sago) = *wajan ceper beralur (see illustration on page 33)*

plaited rattan trivet (for setting hot pots on) = *lekar, anyaman rotan tempat meletakkan kuali, periuk, dsb yang baru diangkat dari tungku*

light a fire = *memasang api, membuat api, menyalakan api*

blow on a fire = *meniup api, mengembus api*

fan a fire = *mengipas api*

tend a fire = *memelihara api*

warm oneself by a fire = *memanaskan diri di depan api*

extinguish a fire = *memadamkan api*

be burning, blaze = *menyala*

spread (of fire) = *merambat (tentang api)*



Left: Pot stand. Right: Baking cloche. © 2013 by David Mead. Released to the Public Domain (CC0).

## 5 Torches and lamps

Fire has a number of different uses in the home. Besides cooking and warmth, a third common use for fire—especially prior to village electrification—is lighting. Recently I sought to document some older types of torches and lamps that are becoming unfamiliar to the youngest generation of Kulisusu speakers of Buton Island, Southeast Sulawesi. Doubtless this is only a small sample of all the types of lighting devices that are or were in use (before electricity) across Indonesia. Nevertheless I hope it will inspire you to undertake your own investigations. I begin with torches, move to oil lamps, and finally discuss kerosene lamps and lanterns.

### 5.1 *Palm frond torch*

The general word for ‘torch’ in Kulisusu—indeed as emerges below, for any kind of lamp or light—is *hulu*, a regular reflex of Proto Malayo-Polynesian \**suluq* ‘torch, resin.’ A simple torch made from a dried palm frond is known as a *hulu koroka* or *hulu ngkoroka*. The stem *koroka* refers to dried palm fronds, especially that of a coconut palm.



Palm frond torch. © 2016 by David Mead. Released to the Public Domain.

The leaflets are clumped together and coarsely braided, then tied at intervals so that they form a more or less compact mass around the stem (rachis). Once the end is lit, a torch made this way lasts ten to fifteen minutes before burning itself out. In Indonesian this kind of torch can be referred to as an *andang*, *suluh yang dibuat dari daun palem kering*.

## 5.2 Resin torch

Another type of torch is made from the putty-like resin or a particular tree. Clumps of the resin are formed into a sausage shape and wrapped in leaves of *lewe wiu*, a species of *Licuala* fan palm.<sup>14</sup> Kulisusu people say to be careful the way you position the torch lest you get burned by hot resin dripping out the bottom.



Resin torch. © 2017 by David Mead. Released to the Public Domain (CC0).

Both the resin itself and the torch made from it are known locally as *hulu bawu*, that is ‘pig resin’ or ‘pig torch.’<sup>15</sup> The tree from which the resin is obtained is known as *keu hulu*, literally ‘torch tree’ or ‘resin tree,’ but since I’ve encountered only the harvested resin and not the tree itself, a scientific identification has remained elusive. Because the resin does not dissolve in alcohol, this suggests a tree in the Dipterocarpaceae family (Boer and Ella 2000:23). However Sulawesi in general is poor in dipterocarp species, and none were found in a survey conducted in the southern part of Buton Island (Powling et al 2015:283).

A similar torch is known from parts Borneo. Here the leaf wrapper is packed with crumbled decayed wood mixed with keruing oil (from *Dipterocarpus kerrii*).<sup>16</sup>

## 5.3 Candlenut torch

A kind of small torch is made by pounding candlenuts (*Aleurites moluccana*) together with cotton fibers, then pressing the mixture onto the end of a splint of slender bamboo (*Schizostachyum lima*). Finally the torch is supplied with a palm leaf wrapper, for example from the leaf of the footstool palm (*Saribus rotundifolius*) or a fan palm of genus

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<sup>14</sup> For the process of making this torch, see the YouTube video “Hulu Bawu Torch” at <https://www.youtube.com/watch?v=nvaWhmQ1GrA> (accessed May 6, 2019).

<sup>15</sup> Compare also Pamona *silo bawu* ‘a kind of resin’ (Adriani 1928:s.v. ‘silo’), but not identified as to source.

<sup>16</sup> See the YouTube video “How to Make a Burning Torch” at <https://www.youtube.com/watch?v=90v1N47rFu8> (accessed May 7, 2019).

*Licuala*.<sup>17</sup> In the picture below the wrappers are tied with plastic string, but the material traditionally used for this is the split and dried stems of donax (*Donax canniiformis*). This torch is known as a *hulu beau*.



Candlenut torches. © 2017 by David Mead. Released to the Public Domain (CC0).

This Kulisusu implement is similar to a kind of torch known in Manggarai (western Flores Island) as *culu rades*. Here people variously use candlenuts, nuts of the Javan olive (*Sterculia foetida*), or kusum nuts (*Schleichera oleosa*) pounded together with kapok fibers (*Ceiba pentandra*). This mixture is then applied to the “meter-long midrib” of the sugar palm, *Arenga pinnata* (Pfeiffer and Tado 2012:35).

#### 5.4 *Bamboo torch*

Yet another kind of torch is made from a length of bamboo. At the upper end the bamboo is cut a few inches above the node, and the recess is filled with oil or kerosene. The opening is then plugged with cloth or a dried corncob, which inhibits leakage and acts as a wick. This kind of torch is known in Kulisusu as a *hulu oboro* (from Malay *obor* ‘torch’).



Bamboo torch. © 2016 by David Mead. Released to the Public Domain (CC0).

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<sup>17</sup> For the process of making candlenut torches, see the YouTube video “Torch made from candlenuts, Buton Island, Southeast Sulawesi, Indonesia” at <https://youtu.be/Y1YVqBGjgG8> (accessed May 6, 2019).



### 5.5 *Open-saucer oil lamp*

An elementary oil lamp is made from the half-shell of a marsh clam (*Polymesoda expansa*, Kulisusu *kalancue*) partially filled with oil and supplied with a simple cotton wick that rests on the edge. The wick is made by twirling and pressing fluffed cotton fibers together between the palms. People prefer coconut oil for fuel, although cooking oil can also be used.



Open-saucer oil lamp. © 2017 by David Mead. Released to the Public Domain (CC0).

This type of lamp is rarely used today. Kulisusu people call it simply a *hulu mina* ‘oil lamp.’ Curiously it bears a striking resemblance to early Greek and Roman oil lamps that had the form of an open clay saucer with a wick that either floated or rested on the rim. To distinguish it from other kinds of oil lamps, it could perhaps be termed in English an open-saucer oil lamp (or: open-bowl oil lamp), and in Indonesian as a *lampu minyak terbuka*.

### 5.6 *Footed bronze oil lamp*

Another kind of oil lamp is made of brass or bronze with a long spout, globular body, and pierced handle. The preferred fuel is coconut oil as this burns cleanly without smoking. When used the base of the lamp is fitted onto a matching metal pedestal. At some point the lamp pictured on the right lost its pedestal, for which a stout block of wood has been substituted.



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From similar museum artifacts that I've seen online, it appears that these lamps date from the late nineteenth or early twentieth century, but I don't know where they were manufactured.<sup>18</sup> Today these lamps have only a ceremonial use, for example at circumcision ceremonies and weddings.

In Kulisusu these lamps have two names. The first is *hulu minano isilamu* that is 'an Islamic oil lamp.' The second name is *(hulu) padamara guara*. In other contexts *guara* means 'peduncle (of palm inflorescence), handle (of axe)' but here it refers to the lamp's pedestal.<sup>19</sup> The term *padamara*, is taken up below. I have yet to come across a particular name for these lamps in English or Indonesian; a possible Indonesian description would be *lampu minyak berkaki yang terbuat dari tembaga*.

### 5.7 Multi-spout bronze oil lamp

Another kind of bronze lamp is pictured below. To increase the amount of light supplied, this lamp has five nozzles. The preferred fuel is coconut oil.



Multi-spout bronze oil lamp. © 2017 by David Mead. Released to the Public Domain (CC0).

In Kulisusu this kind of lamp goes by the name *simporo* (related to Indonesian and Javanese *semprong*). As this is the only one I have encountered, I don't know whether other *simporo* may have more or fewer nozzles, nor have I been able to track down anything about the history of this kind of lamp. In the Kulisusu dictionary I refer to it as a 'kind of antique bronze oil lamp with multiple spouts'—one could also call it a multi-nozzled lamp—and in Indonesian as *sejenis lampu minyak antik dengan beberapa cerat sumbu, terbuat dari tembaga*.

<sup>18</sup> Copper casting was known on Buton Island, but Van den Berg (1940:636) mentions only cookpots, kettles, lime boxes, gambier boxes, betel-nut pounders, and ferrules (for the the handles of machetes, etc.).

<sup>19</sup> This is similar to the Wolio term, *padhamara koe*, literally 'footed lamp' (from the stem *ae* 'leg, foot'), which also makes reference to the pedestal.



## 5.8 *Hurricane lantern*

The Kulisusu know three types of kerosene lamps. One type, made for portable and outdoor use, has a sheet-steel frame, glass chimney, flat wick, and a control knob for raising and lowering the wick.



Hurricane lantern. © 2016 by David Mead. Released to the Public Domain (CC0).

This type of lamp is known in Kulisusu as a *hulu lantera*. In English it could be called a kerosene lantern, but the terms ‘barn lantern’ and ‘hurricane lantern’ are more precise and avoid ambiguity. In Indonesian it is usually called a *lentera minyak tanah*, although (following the English) sometimes also *lampu badai* and *lentera badai*.

## 5.9 *Pressurized kerosene lamp*

Another kind of kerosene lamp uses pressurized air (from a hand pump) to force kerosene fuel from a reservoir through a gas generator and then through a mantle (Indonesian *kaos*). As the kerosene burns, the mantle is heated to incandescence, producing a bright light for a relatively small amount of fuel consumed.



Pressurized kerosene lamp. © 2002 by David Mead. Released to the Public Domain (CC0).

In English this type of lamp can be referred to as a pressurized kerosene lamp, although when I was growing up our family always referred to this kind of lamp as a Coleman lantern (thus using a specific brand name). In Kulisusu it is known as a (*hulu*) *torongke* or (*hulu*) *strongke*. Both terms are adaptations of Indonesian *strongking*, which in turn is from ‘Storm King,’ the brand name of a popular, early-20th-century model of pressurized kerosene lamp.

### 5.10 Simple kerosene lamp

Prior to village electrification, the most common lighting device—it seemed every household had several—was a kerosene lamp made from a tin can (as fuel reservoir) supplied with a round wick encased in a metal tube. Commercially manufactured models were (and continue to be) available at local markets.



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In Kulisusu this kind of lamp is known as a *hulu padamara*, or *padamara* for short. In English it can be called a ‘kerosene lamp,’ but without additional context the English term is more likely to bring to mind a lamp with a glass chimney. The most appropriate Indonesian term is *pelita*, although this term is used for other kinds of lamps as well.

### 5.11 Candle

A candle (Indonesian *lilin*, Kulisusu *hulu lili*) consists of a wick embedded in a solid, combustible material such as tallow, beeswax, or paraffin. Candles have been known since Roman times, but became more popular after nineteenth-century advances in manufacturing processes. The flame of a candle needs to be protected from drafts, for which candle lanterns (*lentera lilin*) have sometimes been used.



Public Domain (Pixabay).

### 5.12 *Miscellaneous devices*

Here follow brief descriptions of four other kinds of lighting devices which predate the advent of electricity. However I haven't encountered any of these in the Kulisusu context.

The English term 'kerosene lamp' is usually understood to mean a lamp with a flat wick and a glass chimney. These lamps are also encountered in Indonesia, where they are called *cempor*, *lampu semprong*, and *lampu teplok*. The terms *semprong* and *teplok* refer to the glass chimney itself.



Kerosene lamp. Public Domain (Flickr).

In another kind of torch, the splayed ends of bamboo hold a container of fuel. For structural and decorative purposes the splayed ends are usually woven together in the fashion of a basket. These torches were introduced in the United States in the 1930s. Although they can be referred to as bamboo torches, they are popularly known as 'tiki torches' (which in fact is a brand name). They are also growing in popularity in Southeast Asia. In Indonesia they are known as *pelita raya* because of their association with festive occasions.



Tiki torch. © 2008 by Andy Thrasher. Released to the Public Domain (CC0).

Carbide lamps (not pictured) are fueled by the chemical reaction of calcium carbide with water, which produces acetylene. Carbide lamps enjoyed a period of popularity in the first half of the twentieth century. Although famously used in mines, they were also used in homes and as headlamps on bicycles and on some early car models. Carbide lamps were also known in the Indonesian context, where they are variously called (from most common to least common term) *lampu karbit*, *lampu karbid*, *lampu kabaid* and *lampu kabait*. According to some internet sources carbide lamps are still used in rural Malaysia, but I have not come across anything about their continued use in Indonesia.

In the Sundanese language, the term *dadamaran* refers to kerosene lamps (Indonesian *cempor*), even though it contains the root *damar* ‘resin.’ Similarly we must suppose that the Kulisusu term *paḍamara* originally referred to a lighting device fueled by dammar. In addition to the resin torch described above, I am alert for other types of lighting devices that may use tree resin. One website suggests crumbled dammar, mixed fifty-fifty with decayed wood in a bamboo container, makes a ready kind of light (Junglecrafty 2013).

## 6 Legends about fire making

In your linguistic or ethnographic research you may encounter myths about the discovery of fire—how people learned to make fire, or how a particular means of making fire was introduced. Some stories include how fire came to reside inside a particular kind of rock, bamboo, etc. and how people learned to get the fire inside the material to ‘come out.’ Some of these stories may relate that when people were first introduced to fire, they were ignorant of how to properly keep it, with disastrous results. A motif encountered in a number of fire legends is that fire, or the knowledge of how to make fire, resided with the gods or was monopolized in some distant place, whence it was retrieved (or stolen, or obtained by trickery). Sometimes this occurred by an animal emissary acting on behalf of humankind.

The setting for some of these legends is following a great flood. Others imagine a time before people knew about fire and what life was like prior to its introduction. In yet other stories, people had fire (e.g. from the gods) but not the knowledge of how to make it; later fire was taken away or through lack of care they let their fire go out, and people were at a loss how to rekindle it.

Here follow three stories from the collection of fire myths compiled by Frazer (1930). Additional folktales from central Sulawesi can be found in the Appendix.

The Sea-Dyaks of Borneo say that after the great flood, in which all mankind perished save one woman, the solitary survivor found a dog lying at the foot of a jungle creeper, and feeling the root of the creeper to be warm, she thought that perhaps fire might be extracted from it. So she took two pieces of its wood and rubbed them together and thus succeeded in kindling fire. Such was the origin of the fire-drill, and such the first production of fire after the great flood. (Frazer 1930:94–95, from Perham 1880:289)

The Kiau Dusun of North Borneo say that, rubbing against each other in the wind, two growing bamboos caught fire. A dog, passing by, seized one of the burning pieces and carried it home to his master's house, which soon blazed up. The fire charred some cobs of maize which were in the house, and it boiled some potatoes which had been left to soak. Thus the Dusuns learned not only how to kindle fire but how to cook their food. (Frazer 1930:95–96, from Rutter 1929:253)

The inhabitants of Nias, an island to the west of Sumatra, say that in the olden time certain evil spirits called Belas, who are supposed to have been formerly men, used to consort with mankind in a friendly way. Nowadays only the priests can see the Belas, but formerly they were visible to everybody. Belas and men visited each other and borrowed fire from each other, just as the people of Nias do from one another at the present day; but the Belas alone knew how make fire, and they kept the art a secret from the human race. One day a man went to fetch fire from the wife of a Bela. but it happened that her fire had gone out. Hence in order to prevent him from seeing how she made it, she proposed to cover him up with a garment. But he said, "I can see through a garment; put a basket over me"; for he knew that he could see through the interstices of a basket. She complied with his request, and then proceeded to kindle the fire. The man had now attained his object; for he had seen how the woman made fire, and he laughed in her face at her simplicity. Therefore the indignant Belas said to men, "From henceforth you shall see us no more, and shall come no more to us." (Frazer 1930:96, from Chatelin 1881:132)

## 7 Additional areas for investigation

In this section I briefly suggest possible topics for further investigation. As with the rest of the article, questions for investigation have been informed by the section on 'Fire' in *Notes and Queries on Anthropology* (Royal Anthropological Institute 1951:240–241).

Three common uses of fire are cooking, warmth, and lighting. Is fire used in other activities, for example farming, fishing, boatbuilding, woodworking, or metalworking, to name a few? In kilns for firing pottery, drying copra, or making quicklime or charcoal? For burning refuse? Also investigate the implements (braziers, tongs, rakes, etc.) used in such activities.

Are there occasions where fire is made publicly? Bonfires in fall or winter are traditional in the U.S., and have an even longer tradition in Europe. In central Sulawesi people danced the *moraego* (a kind of circular dance) by firelight, the fire either being placed in





Natives dancing the *moraego* by the light of a fire of logs. Source: Walter Kaudern *Games and Dances in Celebes* 1929, plate 1. Public Domain.

the middle of the dancers or nearby. Similar traditions existed in southeastern Sulawesi (Kaudern 1929:418, 422, 433).

I was surprised to learn of a pit-baking tradition in northern Buton Island. The evening for bit-baking (*rampu'a*) is fixed for an entire village (sometime during the dry season, as determined a week or so ahead of time by a council of village elders). On the established evening, extended families gather and light piles of wood and rocks. After the fire has died down wrappers of food are placed in the midst of the coals and hot rocks, then the entire pile is covered with leaves and dirt. Cooked food is retrieved the next morning.



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Left and Right: © 2012 by David Mead. Released to the Public Domain (CC0).

Is fire used in rituals? In particular, are older methods or implements maintained in ritualistic contexts, whereas they have been displaced in everyday life? Were (or are) offerings made on a fire? Is fire used for purification, and if so how is it applied? Is incense burned on particular occasions?

Is fire ever used as a beacon? Warning beacons were famously used in *Lord of the Rings* to communicate between the realms of Gondor and Rohan.<sup>20</sup> However I have also heard of a similar tradition on Buton Island.

In all cases described in this paper it would be good to note how native methods and associated implements are being (or have been) replaced by newer methods.

## Appendix: Fire making in Central Sulawesi

The following excerpts concerning fire and fire making have been drawn from various writings by the anthropologist Albertus Christiaan Kruyt, who worked as a missionary and ethnographer in Central Sulawesi from 1892 to 1932. The selections are arranged chronologically from when they appeared in print; see the references section for full bibliographic information. Each selection has been translated into English. Original pagination according to the Dutch source is indicated by including the page number in square brackets, e.g. [p. 340].

### *Pamona*

*Source: Kruyt (1894:340–341), translated by David Mead*

[p. 340] Lamoia also gave fire to the first people, but he did not divulge the art of how to make fire. So people took care never to let the fire in the hearth go out.

On a certain day, however, it happened by negligence that all the fire went out, so that people were at a loss of [p. 341] how to cook the rice. But heaven was near the earth, and people decided to send someone to the heavens to ask for a little fire. This Alifur Prometheus was named *Tambuya*.<sup>21</sup> Arriving In Heaven, he asked for fire.

The celestial inhabitants answered, “We want to give you some fire, but you must cover your eyes with your hands, so that you do not see how we make fire.”

Tambuya did as he was commanded, but the celestial inhabitants were unaware of the fact that Tambuya also had an eye under each arm. When he lifted his arms to cover the eyes

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<sup>20</sup> In the movie the beacons were placed on absurdly high mountaintops.

<sup>21</sup> [footnote 1, page 341] Tambuya is derived from Wuya, Moon, and means: Father of the Moon. In connection with Lasaeo, the sun, who appears later, it would not surprise me that we originally have to do here with a myth of sun and moon. [Translator’s note: According to Adriani (1928:797), *tambuya* is the Pamona word for a kind of large fly or wasp, therefore this etymological speculation must be scrapped.]

in his head, he saw with the eyes in his armpits how the heavenly beings took a machete and struck it against flint, causing sparks to fly out. When some dried wood had been ignited in this way, they gave it to Tambuya, who, along with the fire, also brought the secret to make it on earth.

### ***Pamona***

*Source: Adriani and Kruyt (1912:139), translated by David Mead*

[p. 139] In the former homes of the Toraja, as many fireplaces were found in the home as families living there; or often, two families used one hearth, which was then located between the two rooms inhabited by them. These fireplaces consist of a large square opening in the floor. In it a small floor is laid, about half a foot lower than the house floor. The space that is thereby created is filled with earth, which is brought in carrying baskets. The number of baskets with earth must be 7 or 9, 17 or 19, 27 or 29, 37 or 39. People come up with the required number by making the baskets whole or half full. Filling the hearth with earth is often arranged for the day of the house inauguration.

Before the hearth is filled with earth, people place in it some plants, from whose sympathetic action one expects benefits, such as the leaves of *sumaniu* and *sibuke*, because *maniu* means ‘sparingly, slowly running out,’ and *buke* means ‘full’; it is hoped thereby that there will be plenty of rice to prepare on this hearth. People also place here the fruits of the *pidari*, a type of tickseed, with the intention that the rice, which is cooked on this hearth, will remain in the stomach for a long time, and therefore one will not soon be hungry again. Also a kind of vine, called *siondongi*, is often placed under the hearth; people hope to achieve hereby that all who come into the house will be kindly disposed toward the inhabitants.

There are no special prescriptions concerning the fire that must be brought to the hearth. One can bring newly created fire to it, or fire from the old dwelling, or fire requested from others. However, when a house in the village burns down, in the night following the day of the fire, some inhabitants from each house parade to the river or bathing place, carrying a piece of burning wood from the hearth. This fire is extinguished in the water. This ceremony is called *mengapu*. During the next day, no fires are to be lit in the village; one eats food which was prepared beforehand. Only in the evening can people make fire again, new fire. The purpose of this is so that the fire responsible for burning the dwelling—and that therefore could also easily consume other houses—should thereby be destroyed, and entirely new fire comes to the hearth.

### ***Pamona***

*Source: Adriani and Kruyt (1912:184–187), translated by David Mead*

[p. 184] *The hearth.*



The thing that first draws our attention when we enter a Torajan house (such as it was before the government brought change in the construction) is the hearth, the centerpiece of domestic life. In the chapter "Houses and villages" we have already related how the hearth is constructed by a lowered floor filled with earth. This box of earth is edged by a wooden frame called *polowiwi*. On this hearth are placed three upright stones, on which the cooking pot is set, and between which one makes the fire; mostly in the place of stones people use overturned earthenware pots that have become unusable. Among the Bare'e tribes living in the west, such a hearth set is called *posudo*, among those living in the east *tondi*. People also know how to make an earthen stove, called *poaro*, which we come back to in regard to pottery (chapter "Industry").

Above the hearth is constructed a frame, which is of great importance for domestic use. Immediately above the hearth some bamboos are tied [to the frame]. These are called *lombea* and serve the housewife as a place to set down and have near at hand her wooden rice scoop (*iru*), with which she loosens and removes rice from the pot; her ladle of coconut shell with long handle (*tangkau* or *kola*); her fan plaited from bamboo for freshening the fire (*kambero*); and her fire blower (*tambolo*, *tolowe*) consisting of a bamboo tube, with which she blows on the fire. [p. 185]

Half a foot above these *lombea* are two racks placed one above the other, which are black from the smoke always passing through. On these two racks, called *topo*, rice is dried before it is pestled. For this one uses large flat baskets (*taru* or *pontine*), which are laid on the drying rack. There one can also find the cooking pots (*kura*), along with the baskets (*okota*) in which they are set to keep them from falling over. Among the earthen pots there is usually one of a very large size, called *kura mpebeko*; in this pot is prepared the side dish for joint field work (*mesale*), when villagers go to help one of their own. The earthen pots are fitted with a lid of baked earth, or also merely with a coconut shell.

On the uppermost of these racks are usually also the rice winnower *duku* (described in the chapter on "Nutrition and Stimulants") and the sieve (*kandea*, *buria*, *poheho*). To make this sieve, the outer hard layer is removed from a of a piece of bamboo, which is then beaten flat and then bowed round. A number of holes are burned in the bottom edge of this hoop and rattan strips passed through, to that they cross each other and thereby form square interstices. With these one sifts the pieces of corn kernels, so as to be able to pestle the large pieces that remain in the sieve. Furthermore on this rack lies a piece of wood, in one end of which is attached a piece of iron with teeth. Sitting on the wood with a half coconut in the hands, one removes the meat from the nut by means of the serrated piece of iron. This implement is called *pongkou kayuku*. There in addition one sees the *toduyo*, the bamboo in which salt is stored; the *pondute lada*, a joint of bamboo in which chili peppers are crushed with a piece of wood; and the *isupi* or bamboo tongs. These tongs are either made of a single bamboo slat, the middle part of which has been cut thin, so that the slat can be bowed on itself and still spring, or it consists of two bamboo slats, one end of which is split and cut out, so that there are teeth. The teeth of the two slats are interlocked, and bound firmly together with rattan braiding. With such a pair of tongs one shifts burning wood, extinguishes coals, turns corn which is being roasted, picks up hot cooking pots by the neck, etc.

Finally, above the just-mentioned racks are tied some pieces of wood, on which lies the requisite finely split firewood (*ayuta*), so that it is well dried there and in the immediate reach of the cook. A mound of wood is sometimes also in a hallway next to the hearth. If a large stock of firewood has been collected, this will be piled up under the house between a pair of house posts.

Against the frame above the hearth stand the requisite bamboo water containers (*woyo ue*, or if it is very large, *bumbu ue*), and the bamboos in which palm wine is fetched. For these containers [p. 186] one uses genuine bamboo (*woyo kojo*); near the shore the people of Parigi also make water vessels of a very hard but less reputable bamboo species (*woyo watu*). People leave a branch attached to these containers, with which it is carried over the shoulder. Such a water container is called *kele* (Parigi).

### *The fire.*

The Toraja know various ways of making fire. Certainly the oldest method is that whereby a piece of sharpened bamboo is rubbed forcefully in a shallow cut in another section of bamboo, as if one were cutting the section in two. By the heat produced by rubbing, the small particles of bamboo begin to carbonize, after which fire arises. One calls this *mongkojo*, which simply means ‘notching, sawing.’

Another method is to place a pointed piece of wood (usually from the *molowagu*, *Hibiscus tiliaceus*) with the point on another piece of dry wood. This spindle is quickly rotated between the hands, whereby at last flame springs out. People also produce this movement by means of a bow, the cord of which has been wrapped once around the pointed piece of wood; By pulling the bow back and forth, the pointed wood is also rotated to the left and right. As the flame spreads, some coconut fibers are brought over, which catch fire and can then be transferred. This is called *motoropana*.

According to some elderly Toraja, they used to make fire with a piece of ceramic. They pressed a piece of tinder from the aren palm against a potsherd and struck them both against a dry bamboo, by way of fire striker. We have never seen this method practiced.

The general way of making fire is the strike-a-light: a piece of steel, against which a piece of tinder is pressed, is struck against a flint. Reportedly flint is found in certain streams of Onda’e and of the Bada uplands. According to legend, the insect *tambuya* obtained this method of fire-making from the gods. In the early days of mankind, when fire had gone out, people sent the *tambuya* to the gods to ask for fire. The gods were willing to do this, but they instructed the *tambuya* to cover its eyes with its forelegs so that it would not see how the gods obtained fire. The *tambuya* [p. 187] did as commanded, but it also had eyes in its armpits, and it saw that the gods struck fire with stone and steel. Back on earth it shared its discovery with men, and since then every family has had fire.

### ***Pamona***

*Source: Adriani and Kruyt (1912:337–338), translated by David Mead*

[p. 337] The To Pada make a kind of wide ring out of clay that stands upright, with an opening on the front, through which firewood is inserted. Such a ring, called *po'aro*,<sup>22</sup> is used on the hearth as a stove.

[p. 338] For the same purpose people also make clay pedestals. The pot is placed on two of these pedestals and fire is built underneath. These objects bear the name of *perangamari*.



Po'aro.



Perangamari.



Suba.

Another product of this industry is a kind of earthen griddle, for baking sago pancakes. Such a pan is placed over the fire, then sago is sprinkled on top and pressed flat with a second pan. For this purpose people also use a square piece of hard-baked clay with elongated slots in it. When this object is glowing in the fire, the slots are sprinkled full of sago and covered with leaves until the sago is cooked. This object is called a *suba*.

### ***Sa'dan Toraja***

*Source: Kruyt (1923:277–279), translated by David Mead*

[p. 277] Just as elsewhere in the Indies, where houses with wooden floors are found, the hearth consists of a square space, which is placed in the floor and filled with earth. Before doing this, people place the leaves of the *pasakka*, because *masakka* means 'cold,' and thus also 'prosperous.' On these leaves, pieces of pinang leaf sheathes are laid, which also have cooling power, and the earth is poured onto it.

The first fire that is put on the hearth does not need to be created specifically for this; usually it is transferred from another dwelling to the new house. Only in the Sa'dan district is it necessary to create a new fire when one occupies a new house. This may not go out for three days and three nights. [p. 278] There are circumstances in which no fire can be given out from home, such as when the householder has gone out to participate in a rooster fight, or if he has gone on a journey. Also during the first three days after the rice has been sown, no fire should be given out. Also not during the same amount of time after the woman of the house has given birth, or after a cat has had a litter of kittens. After a torch is lit, it may not go out while eating; this is also not allowed while feeding fighting cocks, otherwise they would never win. Urinating on a fire is dangerous, because then the scrotum will swell. When a corpse is borne to the grave, fire must also be taken from the house to cook the farewell meal held at the grave. If one did not bring along fire, the

<sup>22</sup> [Translator's note: In Adriani and Kruyt (1951:320), spelled instead *po'ara*.]

survivors in that dwelling would not remain healthy. When someone from Barupu burns his clothes while on a trip, he immediately returns home.

Fire is made in two ways: by rubbing pieces of dry bamboo over each other (this is called *ma'pe'*) and with the strike-a-light, *pete'tek*. Making fire by rubbing bamboo is done in the following way: A small slit is made in a piece of bamboo, which is then laid on the ground. For a saw one uses two bamboo slats, which are tied with the soft portion toward each other: Between these slats are clamped fibers from the aren palm. By rubbing these slats in the groove of the bamboo lying on the ground, the aren fibers catch fire.

In the Pana' area, in Mamasa and in Barupu people know the story of the *dali*, a kind of horsefly, which was sent to Puang Matua to ask him for fire. The heavenly lord instructed the insect to close its eyes with its legs, lest it should see how the deity made fire. The fly followed the [p. 279] command, but with the eyes which, according to the Toraja, it had in its armpits, it now saw how Puang Matua rubbed two pieces of bamboo, and made fire in this way. The fly returned to Earth without fire, but it revealed to men the secret of how to make fire. In Mengkendek it is the first man Pong Mula Tau, who sent the rice bird, *dena'*, to heaven to ask for fire. As a reward for this service it would get young rice. The bird completed the assignment, and therefore its descendants collect their wages every year by coming to eat of the young rice standing in the field. In Pangala' it is a buffalo guard, a certain Maradonde, who first made fire by rubbing bamboo against each other. This happened at Engkokna Padang on Pongko', the legendary island in the sea (Engkokna Padang 'The breach of the land, the horizon in the South'; Van der Veen).

Everywhere in the Toraja lands, people tell the story of fire and water fighting each other. The fire was defeated and had to take flight. It hid itself in a bamboo and in a stone. Now when the first man Pong Mula Tau searched for fire, the bamboo and the stone said, "Take me from out of here." The man asked, "How should I do that?" Then the bamboo told him that it had to be rubbed, and the stone told man that he had to be struck with a piece of steel, in order to get fire to come out.

### ***Balantak***

*Source: Kruyt (1932:346), translated by Ewald den Blaauwen*

[p. 346] When the hearth is made, the space set apart for it is covered with *bu'ese*-leaves, after which soil is poured on it; the number of baskets that they use is not counted. This is the last thing that they do to the house, because in the evening of the following day fire is made in the fireplace and the family settles in the new house. The fire may not be brought over from another dwelling, but must be made new. They know different ways of making fire. When a spark from flint and steel is caught on a bit of sugar palm tinder (*baru*), this is called *kaluli*. A flint and steel of *Bambusa longinodes* (*kambangan*) with a piece of a porcelain bowl, is called *lean*. Fire-making with a saw, for which they use the same type of bamboo on top and on the bottom, is called *mongkokor*. For a fire drill they use *saro* wood, both for the spindle as well as for the hearthboard which is bored on. This is called *momiol*.

## **Balantak**

Source: *Kruij* (1934:129–130), translated by Ewald den Blaauwen

[p. 129] In order to have the wood [of the newly cleared swidden field] dry quickly, the branches are cut into pieces; this is called *monsoso*. Before they pass on to burning the wood (*monsuap*), the ancestor is first spoken to (*moliwaa*). They ask for his intervention, in order that the wood may be consumed well. The fire which is intended for burning the wood must be made new. Nowadays they do that with flint and a piece of steel, while catching the spark on a bit of tinder from the sugar palm. This flint and steel is called *kaluli*. If they don't have these at their disposal, then they [p. 130] light fire with a ceramic potsherd (from a ceramic bowl) and a piece of dry bamboo (*lambangan*, *Bambusa longinodes*). Such a strike-a-light is called *lean* (after the ceramic pottery, which carries the same name). They know the fire-saw too: a slat of dry bamboo is sawn quickly back and forth in a groove in a piece of bamboo. Fire making in this way is called *mongkokor*. In addition they make fire by drilling, *momiol*; the spindle, as well as the board on which the spindle is twirled back and forth, are made of *saro* wood.

## **West Toraja**

Source: *Kruij* (1938:24–25), translated by David Mead

[p. 24] As soon as the hearth is readied, fire is made. In a large number of villages the first fire on the new hearth is made with a strike-a-light. “If you ask fire from another house and bring it to the new dwelling, you will always have to do so,” say people in Pantunu Asu (Pakawa group); in other words, your fire will keep going out, so that you have to go to neighbors repeatedly to get fire. In an equally large number of villages, this fire is transferred from one or another house to the new hearth. Sometimes certain things are taken into account. In Ri Io (Pakawa group), a burning piece of wood is transferred from three houses to the new dwelling. At Tamodo from the same group, a fire is first made on the nearby premises,<sup>23</sup> for which the fire has been taken from another house; from this fire glowing coals are brought in a coconut shell to the hearth. At Siwongo (Koro group) and at Sibalayo (Kaili) the fire is requested from the house of the village head. At Bora (Sigi group) one steals fire for his new hearth, together with some ashes, from the dwelling of a rich man, preferably from the ruler's palace. One must take care that no one sees the theft, otherwise the fire will no longer ‘have value.’

Fire is usually created on the hearth on the occasion of the dwelling being occupied. People set about cooking immediately, and a chicken is prepared to be eaten at the meal (in some villages the blood of this chicken is smeared on the hearth). It is not so in Napu; here the house is only occupied three nights after the fire has been made, and then the chicken is cooked. But whether it is cooked or not, it is necessary to ensure that the fire does not go out during the first three days (in Siwongi seven days). During this time one cannot give this fire out to people from other homes. If one did not observe these things,

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<sup>23</sup> [Translator's note: Or possibly a common area between houses; the Dutch here is *woonerf*.]

it would have evil consequences (*bui*): one would have no luck or prosperity, and if one did gain an advantage, it would soon disappear again.

Commonly known is the story of the horsefly (Lore *tamboli*. Koro, Kulawi. Kaili *tambula*, *tamula*; among the Poso Toraja the *tambuya*, a large fly), who was sent by men to the Lord of the heavens (Alatala) to ask for fire. The first fire, however, that they had received directly from the creator, people had placed in a bamboo [p. 25] tube. This tube caught on fire, and the fire had turned the whole house into ashes. When the horsefly came to the Lord of the heavens, it relayed the people's request. God commanded the insect to cover its eyes with its wings. However, the animal could look from under its wings. And then it saw how the Lord of the heavens made fire by striking a piece of steel against stone. Returning to the earth, the fly gave the secret to men: to reward it, the animal was allowed to suck blood out of horses.

At Rounding in Pakawa I heard a story that mankind was first introduced to fire by a certain Sulu (Malay *suluh* 'torch'). When there was as yet no fire, people heated pieces of meat by clamping them for a long time in the cavities of their armpits. Rice was not cooked; it was placed in water, and after it had softened people ate it raw. Then Sulu visited a feast; whence he came no one knew. He also got his portion of the raw flesh and the uncooked rice. Then Sulu called out: "What is this now? You eat like werewolves, who also eat their food uncooked. You need to cook it first." But men had never heard of cooking.

Then Sulu had a bit of a bamboo water container (*balo lau*) fetched, and dried it in the sun. When the bamboo was dry, he cracked it and made a fire saw of it. The glowing particles that fell off, he caught on tinder (*waru*) from the sugar palm. With this he ignited wood, and cooked his portion of the meat and the rice. He did this in bamboo tubes, because people did not yet have earthen pots. When Sulu left, people collected the precious glowing coals in a bamboo, and covered it with a piece of durable cloth (*mbesa*). The result was that the whole house burned (see above). It is also said that people bought the fire from Sulu for a cleaver and a precious cloth (*mbesa*).

At Biromaru (Sigi group), people say that Alatala sent his messenger Jibaraili (Gabriel) to people with a strike-a-light of steel and flint, to make known to them this useful object. Everyone knows the strike-a-light, and before matches were known in the interior, every Torajan carried a strike-a-light in his betel pouch. This tool had supplanted the older ways of making fire, but people still knew them, and in remote areas they are still sometimes used.

So too in the Pakawa region: the fire saw of bamboo was already mentioned in the story of Sulu. People also used wood for this: a piece of *wayapo* wood as saw is drawn back and forth (*nosikoyo*) over a piece of dry *wentonu* wood,<sup>24</sup> and the glowing coals allowed

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<sup>24</sup> [Translator's note: I have not been able to identify either tree with certainty. In Pamona the brown pine *Podocarpus neriifolius* is known as *wentonu* and *bentonu* (Ranuntu and Mallombasang 2015:90); possibly Pakawa *wentonu* refers to the same tree.]



to fall on fluffs of coir from coconut husks. People here also operate the fire drill (*nitoyo*), presumably in the same way as Kaudern (1921:213) once saw a man do on the Sadaunta River: by using his hands to quickly rotate a spindle of hard wood against soft wood. Also in other areas where I asked around, these ways of making fire appear to be known, although they are seldom or never used.

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