

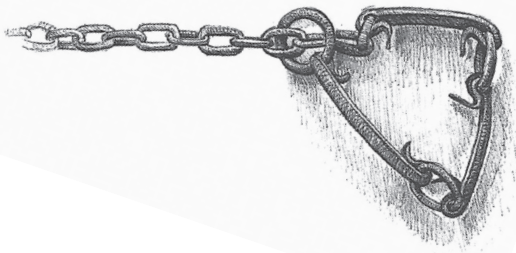
Special equipment for problem situations

Several types of equipment have long been used to train or condition elephants not to fight their chains; another device based on the same principles is designed to stop elephants from trying to throw their riders. In all cases the goal is to ensure that elephants do not escape to cause damage to crops or property and most particularly to kill people.

The following devices should be used, if at all, only by true experts and never for more than a day or so. The elephants should be frequently inspected for serious injury and any small wounds should be treated immediately. The gear should be carefully cleaned before and after use.

Spiked hobble

มะจับ



This is a hobble with “spikes” about 4 *hun* long [1/2 inch or 1.3 cm]; the tethering chain is attached to it. If the elephant stands still or moves slowly and carefully, it will feel no pain. If the animal moves very quickly or with force, the spikes will dig in and cause great pain.

There are spiked tethering chains built on the same principle. If the elephant handles them gently, there will be no pain, but if handled roughly or with force there will be great pain.

Spiked collar

ไม้ค้ำคอ



The *mai kham khaw* is a rope collar, fitted neither too tightly nor too loosely, with knotted-in spikes made of iron or hard wood. Thai mahouts usually work their elephants, whether logging or giving tourists rides, while sitting perched on the neck. Some elephants have the bad habit of vigorously shaking and rolling their necks, often strongly enough to throw the mahout. (A few elephants have the special skill of twitching their skin so vigorously that that action can forcibly dismount mahouts.)

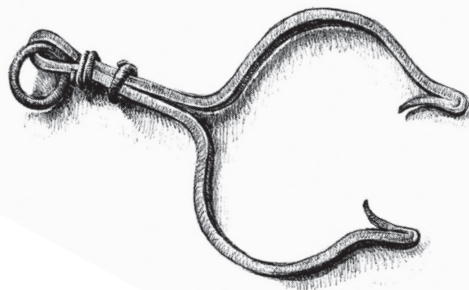
When the spiked collar is fitted to the neck, the mahout mounts. If the elephant stands or walks normally, it will feel no pain. If it twists, turns, rolls or shivers its neck, it will feel great pain.

Looking at pictures, the spiked hobbles and spiked collar look cruel and they have indisputably been designed to cause pain. But rather than being cruel, that pain is quite humane in a curious way. These seemingly cruel and primitive devices are actually quite sophisticated because the elephant itself determines the amount of pain. The struggling animal gets progressive negative feedback — increasing pain — as it more rigorously struggles. The mahout has no direct role in applying pain at the moment it is felt. Spiked hobbles and collars can do the job with the mahout far away, which is normally when elephants fight chains.

These devices are, in expert hands, far better for the elephant than the usual contemporary method to counter ‘chain fighting’: the mahout physically punishing the elephant. The trouble here is that the elephant can get confused and not understand the reason for which the man is causing it pain. Such unskilled ‘disciplining’ is counterproductive and far more likely to cause serious injuries than the above devices. Abuse by mahouts traumatizes elephants more than this passive equipment.

Spiked grappling pole

ไม้ทวน



This U-shaped device with two inward facing spikes at the open end is affixed to a long pole. It was used to recapture escaped elephants by slipping it over a hind foot. When the elephant moved, the pole would hit against rocks, trees, etc., causing the spikes to dig in painfully and slow the elephant down. With the invention of tranquillising drugs fired from special rifles, there is no longer any justification for using this device.

Spear

หอก

Spears are used to control elephants from a distance when circumstances are so dangerous that mahouts cannot approach closely. The use of spears is acceptable only when elephants pose a clear and imminent danger to humans or to other elephants (often calves and cows).

The need to use spears is, apart from emergencies, an admission of incompetent mahouts who are neither loved nor trusted by their elephants. The most common use for spears is to force (by “pricking” their feet and rumps) frightened, traumatized, or stubborn elephants to exit a space they do not want to leave or, more often, into a space that they do not want to enter, most often loading onto trucks.

In the rare instances with a justifiable need to use spears, the traditional elephant spear is far superior to make-shift spears such as a bush knife on a pole. The traditional spear has a metal head with a sharp point (but not so sharp as to draw blood) no longer than six *hun* [$3/4$ " or 1.9 cm.]; behind that point is a thick rim preventing the spear from entering deeply. The spear thus causes pain but the rim makes it impossible to cause a wound whereas an ordinary spear can cause horrendous wounds.

Guidelines for tethering elephants

- Never tether an elephant in a place that is steep and slippery because if the elephant falls it can be crippled or killed.
- Mahouts must check chains to ensure they have not kinked, making them easily caught in trees or rocks, rendering the elephant immobile and vulnerable to fires and attacks from other elephants.
- If the elephant is tethered in an urban space or a village, the mahout must carefully inspect the site for exposed live electrical wires. Chains conduct electricity and the elephant can be electrocuted.



- If the elephant is tethered in an area with garbage or trash, the area must be inspected for plastic bags (especially bags with food remnants) that the elephant might swallow, for toxic chemicals, etc.
- If the elephant is tethered at a building site in a city, the area must be very carefully inspected for metal scraps, nails, sharp pieces of wood, glass shards, etc.; these must all be removed.
- Do not tether an elephant at a site that once held a house, particularly around the area which had been the kitchen or dining area or where dishes were washed; there will be salt in the soil and the elephant will likely dig up and eat the soil, causing an obstruction of the intestines.
- Before tethering an elephant, the mahout must ensure that the vicinity is free of aggressive or rambunctious elephants, particularly males (most particularly males in musth) that have not been chained.
- Do not tether elephants too closely together because their chains can get entangled, which is dangerous.
- Do not tether elephants unfamiliar with each other close together because this places them under great stress, hampering their eating, drinking, and resting, which leads to deteriorating physical condition. (Such elephants should be tethered at least 100 metres apart.)
- When elephants need to be tethered in one place for a long time, such as musth elephants or situations where the mahout must go away for a long time, the site should have very good shade and water.
- Never tether an elephant near very bright lights at night because the elephant will not dare to sleep and will stare at the lights until its eyes get irritated and susceptible to infection.

Absolute prohibitions in controlling elephants

- Never, for whatever reason, feed an elephant with addictive drugs such as amphetamines, opium, marijuana, or any other drug.
- Never pour or spray turpentine over an elephant's body [usually trying to force a sick elephant to its feet] because it will cause the skin to be infected and peel off in sheets. Successful treatment is very difficult.
- Never use heat (boiling water or fire in close proximity or actual contact) to force an elephant to load onto a truck, to do work, or anything else because it can get injured and possibly die or become mentally disturbed.



- Never use a slingshot, arrows, crossbows, shotguns, cap guns, gas-powered guns, .22 calibre rifles, air guns, or any other weapon to shoot at elephants to intimidate them into doing something. If a projectile should hit their body or a vital organ, it can injure or cripple the elephant and possibly even kill it.
- Never take a mother elephant and her calf younger than three years of age near other elephants unfamiliar with the pair, because the calf might get attacked and even killed.

Dragging gear

Dragging gear, the harness used to drag logs through the forest, looks quite simple but in fact is incredibly complex. The two simple looking “saddle pads” (*nang awn* and *nang khaeng*), for example, not only require bark from two trees that are found only in natural forest, they require great craftsmanship in the preparation. The breast band is a piece of equipment that requires complex weaving (also from a special plant); in the old days, each mahout was very adept at making his own although today very few can. Thus, to try to teach the true old craft is far beyond the scope of this book, and in any case those relatively few people still involved in logging are mostly great masters of the art, and writing for them would be like “teaching the supreme patriarch how to read” [a Thai idiom much like “teaching your grandmother to suck eggs”].

Dragging equipment is these days most often used in simple demonstrations for tourists, almost always with very light logs over smooth ground. For any camp manager who is thinking of adding a logging demonstration to his show we recommend simply hiring an old time mahout for a few days for help in acquiring the equipment and teaching its proper use. The most important warning is that if heavy logs are being dragged, the breast band (*pa ok*) should be made of sisal (*paw*) rather than nylon rope, which is both very hot and which causes much more abrasion and pressure than a breast band made of natural materials.

The advice for managers of camps which offer rides is similar, because bad-fitting saddles or wrong-sized saddles or inappropriate girths can cause saddle sores and wounds. If you have a good master mahout, you will have no problems. If you do not have a good head mahout, then hire one as a consultant or, better, put him on permanent staff.



LIFE-CYCLE EVENTS

Determining age

Determining the age of an elephant is useful when ascertaining whether or not an elephant fits with the age given on the Registration Certificate. Usually determining the approximate age of an elephant is possible with young and elderly elephants. In elephants in the middle age group there is room for much error. The characteristics are as follows:

	Young (Under 12 years)	Mature (13-45 years)	Old (Over 46 years)
Head	Skin fits tightly. Temples are smooth.	Skin fits tightly. Temples are slightly depressed	Temples are deeply concave.
Ears	No curl at top of ear. No tears at bottom of ear.	Forward curl at top of ears. Some tears at bottom of ear.	Deep forward curl at top of ears. Many tears at bottom of ear.
Skin	Thick, taut, smooth, and unblemished. Supple to the touch.	Thick and not very wrinkled. Supple to the touch.	Wrinkled, droopy, rough and dry.
Muscles	Bundled, strong.	Bundled, strong.	Flabby and weak.
Feet and nails	Circumference of foot and ankle are about the same. Toenails are smooth.	Circumference of foot is a bit larger than the ankle. Toenails are smooth. Footpad is not cracked.	Circumference of foot much larger than ankle. Toenails are spread apart. Toenails are chalky/rough.
Tail	Not knotted/kinked. Tail hairs are orderly.	Not knotted/kinked. Tail hairs are orderly.	Knobby. Missing tail hair.
Dung	Finely textured.	Finely textured.	Coarse, with undigested leaves or even bananas.



Determining heat (Oestrus)

Most female domesticated elephants begin to come into heat starting at about 9 years old or later and enter their 'heat cycle' which has a length of about 16 weeks or 4 months. Thus, in a period of one year, the average female elephant will be able to breed and become pregnant only about three times in a year. Elephants do not show any blatantly obvious external physical signs that clearly indicate that they are in heat, which is different from other animals such as cattle, pigs and dogs, which have swollen genitalia or secrete blood or mucous when they are in heat. Therefore the mahout must very carefully observe and notice subtle differences in behaviour.

A good mahout will always know when his cow elephant is in oestrus. If a female is in heat, males will use their trunks to frequently smell the female's sexual organ or her urine. If you are a skilful observer you will see that the cow elephant's vulva slackens or droops a bit and she dribbles urine often. Many cows will repeatedly swat their tail against their vulva and some will then lift the tail into the air, as if advertising. Sometimes cows ready to mate will show excitement, irritation, cry out and even cause damage to other elephants nearby. Some cows will secrete a modest amount of a clear, mucous-like fluid. If an elephant exhibiting such behaviour is mated, there is a very high chance for pregnancy.

For accurately determining if the elephant is in heat, it should be inspected every day. The best time for inspection is in the morning before the elephant is sent to work. Especially in large camps this can be done by lining up all the females of breeding age, presenting their rumps, and then having a bull 'sniff test' each cow. If a cow is in heat, the bull will show great interest and be determined to use his trunk to smell.

Predicting heat

Determining heat [oestrus] is often not useful unless there is a good breeding bull already present. In cases where there is no breeding bull, by the time you have determined heat it is usually too late to arrange for a sire, arrange for transportation, and, most importantly, to give the two animals time to feel comfortable with each other before actual breeding takes place.



Thus, it is predicting when heat will occur rather than determining heat which already exists that is truly useful to an owner who wants to breed his cow. The period between heats is on average about 16 weeks (112 days), but many elephants will cycle slower or faster than that by a few days or even weeks. Luckily, there is a way to predict, within a week or two, when a cow will probably come into heat.

1. When your elephant comes into heat the first time

Go to a calendar, mark the date and write it here: / /

2. When your elephant comes into heat the second time

Go to that calendar, mark the date and write it here: / /

Using the calendar, count the number of days between the two heats.

Write the number of days here: _____ days

On the calendar, from the date of the second heat count forward the number of days written above.

Mark that date and write it here: / /

The last date will be the day that your elephant is most likely to come into heat for the third time.

Knowing the likely day of heat, some weeks before this date you can arrange for a sire, transport the cow to the bull (or vice versa), and have a week or so for the animals to get to know each other before heat sets in.

This method of prediction will usually work quite well but it can be wrong, particularly if the cow has been ill, been overworked, been poorly fed, or been psychologically upset, such as moved to a new site she does not like or exposed to another elephant she does not like.

Pairing

Usually before setting two elephants to mate, it is best to give the pair an opportunity to get to know each other and to both get in the mood. If they do not like each other enough, it is possible that they will do damage to each other or that the bull will try to ‘rape’ the female, possibly even killing her. Normally, females prefer the larger and older males. Some females do not like males with tusks.



You should not pair elephants that are related as the calf is likely to be feeble or deformed.

The place selected for the elephants to mate should be peaceful, quiet, shady and near a stream or water. The period of time where the elephants will be interested in mating is anywhere from one week up to a month, depending on the desire of the male and the willingness of the female. The bull's tethering chain should be tied so as to be very long. The female should be unchained in order to prevent a frustrated bull from damaging her if she is not willing to mate.

Before mating the elephants will engage in courtship behaviour. The male will use his trunk or his tusks to push the female so as to get her in front of him. The female will use her trunk to smell or touch the male's penis, and the male will use his trunk to do the same to the female's sex organ. When the male has a full erection, the penis will be distorted into an 'S' shape (1.5 to 2 metres in length). The male will mount the female from behind, and each congress will normally last between one and two minutes. At first, the elephants are likely to mate up to ten times a day but after a while this will reduce to two or three times a day. Mating usually occurs in the morning and around dusk, when the temperature is cool. (While elephants are mating, mahouts and other people in the area should be very quiet; do not make noises or do activities that might disturb the elephants.)

After a period of mating, some bulls will go into musth and if this happens, the male should be taken away immediately if the situation seems dangerous or if the male cannot be controlled.

Mating

Selection of breeding animals

Sire

- Aged between 20-50 years
- The body should be massive, well-configured, and robust. When the elephant walks, his muscles should bunch up. Folds on the skin should not droop.
- No diseases
- No wounds or physical deformities, such as limping.



- No bad personality, such as is suggested by much swaying of the head
- Not particularly aggressive, such as having a history of attacking mahouts or other elephants
- With a strong sexual urge, shown by having the penis descend from its sheath often and showing that it wants to mount when females are near
- Has a reputation of being a good breeder and of actually fathering calves

Dam

- Aged between 15 and 50 years (if over 20, the animal has probably already been pregnant or calved)
- Fit body condition, neither too fat nor too thin
- Good health with no diseases or crippling conditions
- Good temperament
- No problems with giving birth, such as having aborted, had a difficult delivery, or attacked its own calf

Pregnancy

Pregnancy lasts for 20 to 23 months. Most mahouts believe that male calves spend a significantly longer time in the womb than do female calves.

It is very difficult to tell if a female has conceived until very late in the pregnancy, though a good mahout will usually know by observing that his cow has not come into heat again. After one year of pregnancy the breasts and the belly enlarge, and for about a month before birth if you squeeze a breast, a clear fluid will be emitted. Pregnant cows are slow, lethargic, and move in a lumbering manner. Pregnant elephants should not be worked hard because being overworked can lead to a spontaneous abortion. Pregnant cows should be given supplementary food such as bananas, unhusked rice, and rock salt (by grinding up salt from a salt lick to small bits and soaking it in water and feeding it to the elephant or by mixing it with food) but supplementary food or extra food should not be given too late in pregnancy because the foetus can become too large, leading to a difficult delivery.



Birth

An elephant near to giving birth should be separated from other elephants. She should be taken to a quiet, shady place that is not steep and has a smooth surface, such as soft dirt or a grassy field. If there is a senior cow elephant that is familiar with the mother, she should be brought near to the mother in order to be the ‘receiving mother’ [*mae rab*, much like the Indian “Auntie”] in order to comfort the mother and look after the calf at birth.

Most cows give birth during the night. When close to dropping the calf, the mother will show agitation, will not eat or drink water, and will seem to be tired. Sometimes cows will use their trunks to blow grass, sand, dirt, etc., over their backs. The end of the tail tenses up. The elephant will alternatively lay down and stand up and make sounds suggestive of pain. A clear fluid with some blood will discharge from the birth canal. At times the hind legs will be spread wide, much like a triangle. The elephant will lift its tail constantly and the area of the *fii yeb* [perineum] will be swollen and enlarged for about 3 or 4 hours. The actual birth is a matter of a few minutes.

The newly born calf usually weighs about 70 to 100 kilograms and stands about 80 to 90 centimetres tall.

Either the front feet or the rear feet emerge first in a normal delivery. When the calf reaches the ground it is still largely covered by the foetal sac. The mother will use her feet or her trunk to tear away the sac, and she might use her trunk to blow sand over the calf or use grass to wipe down the calf in order to clear the sac and the mucous. The mother will use her feet to stroke or gently kick the calf to stimulate breathing. Sometimes cows use their trunks to suck mucous and fluid from the amniotic sac from the calf’s mouth and trunk. The calf should not be separated from the mother at this time because it can make her scared or angry, even to the point of trampling the calf to death.

The calf will take about half an hour attempting to get to its feet, stand, and walk to the mother in order to nurse. The milk is of the highest quality and is called ‘yellow milk’ [*nom nam leuang* or colostrum], which has great nutritional value and also antibodies against illnesses. If calves do not get colostrum, which flows for only about the first two days, they will likely be feeble and susceptible to disease.



Normally the placenta will be expelled from the birth canal between 1 and 30 hours after the birth.

When the elephant is pregnant the owner should know its history and temperament, such as if it has ever aborted before, ever had a calf before, ever had a calf which died, or ever injured its own calf. If it has ever experienced any of the above, a veterinarian should be present.

Cows that are giving birth for the first time should be watched especially carefully because they are inexperienced and their reaction to the calf is unpredictable. Inexperienced domesticated elephants are likely to become confused by the pain of the delivery and the blood from the birth canal. The resultant fear can cause them to attack and even kill their calves. (With wild elephants, young cows have usually helped their own mother with 3 or 4 calves before they have a calf of their own.)

Choosing the site

The birthing site must be an area that is shady, peaceful, cool, and well ventilated. There should be no people, animals, or vehicles to cause disturbance. The site must be level and free of holes, garbage, sharp and pointed objects, chemicals, and other dangers. There must be a post or a tree to which to chain the mother.

Preparing the people

People who assist in the birth or in caring for the newborn calf must be brave, strong, and intelligent because if the mother turns violent and tries to injure or kill the calf, they must immediately rush in to separate the calf. They must wipe the calf clean and dry and help the calf to stand. At the same time they must control and try to comfort the mother and quiet her down. Then the people must bring the calf closer to the mother to determine if she will accept the calf or not. If the mother accepts the calf and does it no harm, then observe the calf to see if it is able to nurse by itself and if the mother shows love and concern.

Two special preparations are essential for first births and births by cows with troublesome histories:

1. Stay close and observe very carefully, with the mahout having at hand the equipment that he needs to control the elephant. A bamboo



spear about two meters long and sharpened to a point should be available; if the cow tries to injure her calf, use the spear to separate her from the calf immediately.

2. Your veterinarian should be informed and be prepared to help if there is a problem and the mother turns aggressive or tries to injure the calf. The veterinarian can use a sedative to quiet her down sufficiently that the calf can usually be safely introduced to her so that bonding might be attempted once more.

The relationship of calf and mother

Usually calves should be kept with their mothers for three years before undergoing training, which is about the time when most cows will wean on their own. Calves will begin to eat food such as bananas and soft grass from about three to six months. Starting from six to eight months calves will eat some of their mother's dung (or that of another adult elephant) to infect themselves with beneficial micro-organisms needed to digest food. During these three years the mother will teach the calf how to find food and how to avoid dangers such as snakes. During this time the mother should not be made to work since this can be dangerous, with the mother distracted and worried about her calf. Further, the calf itself being very "naughty" [*son*, playful and adventurous], which can easily cause accidents.

Weaning

In domesticated elephants, weaning at the age of three is best. With really healthy calves, weaning at two is possible so long as excellent food is provided, because a two-year old is able to eat natural food and is big and strong enough to train. Males are temperamentally suited to be separated from their mother earlier than females.

Food for calves

- From birth to the age of four months, calves eat only mother's milk.
- From the age of five months, calves make attempts at chewing and eating the food that the mother is eating.



- From the age of six months, calves will eat the mother's dung in order to infect themselves with micro-organisms that are essential in the digestion of the coarse vegetation that is the staple diet.
- From the age of eight months, calves will begin to eat ripe bananas and other soft, easily digested foods.
- From the age of ten to twelve months, calves will begin to eat various hard foods, including plants and vegetables.
- Still, for the first year of a calf's life, the principal food is mother's milk.

After one year, calves will increasingly eat foods found in nature until the calf is two or three years old. At about three, usually, the mother will instinctively choose to wean the calf and then will come into oestrus and breed. Almost two years later she will give birth to the second calf, meaning that a healthy mother able to breed at every oestrus period will have a calf about every five years. This is true of both wild and domesticated elephants.

In present day Thailand, elephant calves live in, roughly speaking, one of two circumstances. In the first case, in the way of the past, the calf is far off in the countryside and spends much time with the mother in the forest. In such a case, which is much like with a wild elephant calf, the calf will with the mother's help make a switch over to the abundant natural vegetation with little or no need for supplemental foods. As long as the calf is strong and healthy, the usual case, there is no need for mahouts or owners to supply supplemental food.

In the second case, the mother and calf are kept in a tourist camp or other setting where most of their food is supplied by humans. Given this, the food of the calf during the first three years or up until weaning should be soft food that is easily chewed and digested (ripe bananas, peeled sugarcane, etc.) and given in small amounts until the calf is able to eat on its own. Any grass given should be clean and given in small amounts. Elephant calves raised in such artificial environments are far more likely to have problems with nutrition and digestion than calves raised in totally natural settings.

From the age of three, calves can eat the same food as adults although the food should be cut or sliced into smaller pieces so as to make it easier to eat.



Food for orphaned elephants during the first three months

If the mother attempts to damage a newborn calf, or if she is unwilling or unable to nurse it, then the mahout must milk the mother so as to get colostrum that the mahout must feed the calf. (This must be done within twelve hours of birth.) There should be an attempt to find a nearby nursing mother to serve as a wet nurse, but if this is impossible then there is the need to supply milk from another source, usually powdered milk which is easily available in the market place. But the easily available powdered milk types are usually difficult to digest and can lead to feebleness, stunted growth, constipation, diarrhoea, and even death.

1. **Powdered milk for infant animals** such as the young of cattle, pigs or dogs. Sold in animal supply stores everywhere, it is the cheapest milk available. But cheap powdered milk can cause both diarrhoea and constipation. Before using it, it is best to consult a veterinarian, or if you use it and the calf has digestive problems, stop immediately and consult a veterinarian.

2. **Powdered milk for human infants** is for sale in shops everywhere but it is expensive and likely to cause diarrhoea by being difficult to digest, as can be noticed through off-white coloured, liquid stool. If this is observed, consult a veterinarian immediately.

3. **Powdered formula for human infants with difficulties digesting** lactose is made mostly of soy beans. It is more expensive than ordinary infant powdered milk, but sometimes it also causes either diarrhoea or constipation. If so, stop immediately and consult a veterinarian.

4. **Formula especially made for elephant calves** is best but it must be ordered from overseas.

Many calves die in Thailand every year simply because they are given inappropriate milk that they cannot digest. In selecting the best powdered milk or formula for elephant calves a veterinarian should be consulted.

Mixing powdered milk

In mixing or blending, you must sterilize with boiling water both the drinking vessel and the mixing vessel every time before preparing milk



or giving milk. Feeding calves requires very strict attention to cleanliness and sanitation because calves can very easily contract infectious diarrhoea and die. (See Diarrhoea caused by germs, page 119.) In mixing milk, you should very carefully study and follow the instructions printed on the side of the can.

It is very important to not mix in any granulated sugar as this can cause diarrhoea. The calf should also be given multi-vitamins and calcium pills every day.

Calves should be fed small amounts of milk every time but should be fed often. The caretaker or mahout must be with the calf day and night, never leaving it for more than an hour under any circumstances. The elephant must be fed every time it is hungry, which it will show by calling out or walking to the keeper.

Warning to camp managers: Caring for a calf is not a job that you can assign to just any mahout as it is like being the nurse for a sick elephant. Often the best person is an elderly mahout or even the wife of a mahout, as the job requires similar sacrifice needed to care for a human child.

Method of giving milk

There are many methods of giving milk, such as putting a rubber nipple in a milk bottle or using a hose coming from a milk bottle, the hose being long enough to reach past the tongue to the swelling of the throat. Very young elephants should be fed every two or three hours. When they get older, middle-of-the-night feedings can be skipped. After the calf is nine months, four feedings a day are sufficient. Feedings should always happen at the same time every day, changing only rarely, and the feeding should always be done by the same person, as calves will bond incredibly tightly with their care giver. Calves should be fed infant formula until aged 15 to 18 months, after which they can eat only grass and other plants.

If the elephant develops diarrhoea, you should immediately stop feeding milk and as a substitute start giving electrolytes (*nam gleua*) [cheap and available in all pharmacies], those made from a powder, by adding water. Then consult a veterinarian immediately.



Food for orphaned calves aged 3 to 6 months

After the age of three months, calves can begin on solid foods starting with boiled rice in the following formula:

Ground-up rice	1 cup
Ripe bananas (<i>gluay nam waa</i>)	5 fruits
Clean water*	3 litres
A pinch of salt	

*The water should be boiled and then left until cool.

Method of preparation: Boil the rice until it is cooked, then squeeze the ripe bananas into a mush with your hands and add them to the rice and boil further until they are liquid. Add a pinch of salt. Let stand until cool. Feed the calf about 1.5 litres a time two or three times a day, gradually increasing the amount of boiled rice. Be careful not to overfeed or the calf might become constipated.

Also give very ripe bananas three or four times a day by kneading them into a mush. After feeding (whether ripe bananas, or the boiled rice-and-banana mixture, or milk), you must each time use a clean cloth soaked in water to clean up around the mouth. Use this cleaning as an opportunity to carefully inspect the inside of the mouth, because if the calf's mouth or tongue develops sores it will be unable to eat, even to the point of starvation. When feeding calves, the proportion of milk, bananas, and boiled rice must be considered as follows: If the calf has liquid stool or diarrhoea, then reduce or eliminate the milk but if the calf is constipated or has dyspepsia then reduce the boiled rice but increase the milk. Thus, when rearing orphaned calves, the mahout must observe the dung every time the calf defecates. If the stool is loose or has bloody mucous or if the calf is constipated, the mahout must call a veterinarian for treatment as quickly as possible.

Food for orphaned calves aged 6 to 18 months

When the calf reaches the age of six months, you must find dung from a mature elephant (usually it is the calf's own mother) and that dung must be fresh and from a fit, healthy elephant. Offer a lump about the size of a fist to the calf every day for a month or two, leaving it up



the calf whether or not it eats it. At the same time, find some Para grass (*Brachiaria mutica* [Forsk.] Stapf.) or *Yaa tawngkong* grass so the calf can practice eating. Gradually increase the amount of grass.

For elephants in this age group, beyond the daily milk, boiled rice, and bananas, other supplements are peeled sugarcane, grass, calcium, vitamins, and whatever else the veterinarian stipulates.

Food for orphaned calves aged 18 to 36 months

Calves of this age can be taken off of milk and boiled rice, but they should be given steamed sticky rice with a bit of salt added. Sometimes they can be given sugarcane juice with fresh coconut meat. The major part of the food given should come from the following group:

1. Various grasses, including bamboo leaves and shoots
2. Coconut fronds
3. Banana stalks cut into very short lengths
4. Ripe bananas (*kluay nam waa*) and sugarcane
5. The cobs (core) of ripe maize [corn]
6. Horse pellets, about 1.5 kg a day, giving two or three fistfuls at a time
7. Various mineral salts, vitamins, supplementary foods, etc., as directed by the veterinarian.

Tips to practice when feeding

1. When giving a food for the first time, give only a little bit and then observe whether it was easily digested or not by later inspecting the stool. If the food is not well digested, then that food should be chopped up, ground up or boiled until well cooked (such as maize [corn]). If the calf gets constipated or gets diarrhoea, then that food should be decreased or stopped entirely.

2. All food given to calves should always be chopped or sliced into small pieces.

3. You must be sure that all food given to calves is fresh, clean, and uncontaminated by toxic elements and chemicals.

After the age of three years, calves can be given ordinary food for adult elephants.



Musth

Musth is a natural phenomenon of nearly every healthy male elephant the age of 18 years and above. With some elephants their behaviour and personality do not change, that is they do not become aggressive, but most elephants experience a behavioural shift and become stubborn, dangerous, and aggressive for a period of one to four months until the condition runs its course. The musth fluid that flows has a foul smell and has a grey or dark grey colour.

Aggression can be directed at the mahout, at any and all humans, or at other elephants, even cow elephants. Some elephants will tolerate humans and be aggressive only to other elephants.

Some male elephants from about the age of twelve years and up begin to show signs of musth. If the elephant is in good health and has been receiving abundant food and water, and sufficient rest, that first musth is called “grass musth” (*tok man yaa*). “Grass musth” [honey musth] is shown by a secretion oozing from the temporal gland and agitation and stubbornness in the animal’s behaviour. Sometimes such elephants will play very roughly or injure other elephants or their keepers — but this is not the same strength as true musth. Elephants will generally come into true musth about 4 or 5 years after the first “grass musth”.

Sometimes female elephants which are fat and healthy will also come into “grass musth”, most often when some outside influence makes them nervous or before giving birth. The secretion exuded is greyish and pasty without a particularly bad smell. Beyond some agitation, there are few of the behavioural problems posed by males in true musth.

Coming into musth (1 - 5 days)

- The elephant’s neck will thicken (as felt by the mahout on the neck) and the elephant will seem fatter.
- The temporal gland on the forehead swells and seepage begins.
- The elephant will resist authority and become stubborn, refusing orders.
- The elephant’s eyes will change to become very alert, staring for a long period of time at the mahout, at other elephants, or at something else.



- The penis frequently becomes erect, and the elephant will slap it up into its belly while at the same time urinating in a dribbling manner.
- Finally, the elephant becomes listless and begins to eat less.

Full musth (1 - 5 months)

- The temporal gland swells greatly, and there is a smelly secretion that exudes in increasing quantity. Sometimes the secretion actually flows into the mouth.
- The penis is continually erect, secreting a stinky, mucous-like substance that falls onto the hind legs, making them moist, in a condition called *long bawng* [green penis syndrome].
- The elephant will be aggressive and will not recognize its mahout and elephants it has known. The mahout and others near the elephant must be very careful at all times.

Ending of musth (2 weeks - 2 months)

- The temporal gland will shrink back to normal at the same time as the amount of secretion reduces.
- The elephant becomes more peaceful and begins to follow the mahout's orders.
- The elephant is normal.

Preparing for musth

When the elephant shows the very earliest signs of musth, the mahout should choose a site and prepare as follows:

- Select a tethering place that is quiet and apart from other elephants. Critically important is to keep at a distance people who have no duties with the elephant.
- The tethering site must be cool and in the shade all day long.
- The tethering place should have clean water that flows continually. If this is not possible, it must be possible to bring clean water so the elephant can bathe and drink safely and conveniently every day.
- The tethering place must be smooth, with no holes or depressions and no garbage and sharp edges dangerous to the elephant.



- Choosing a site on a slight rise is extremely important because that will facilitate drainage of rain, of bathing water, and most particularly of the elephant's urine. Good drainage will also minimize the ill effects of foot and nail problems that can arise when a musth elephant is confined for months to a wet or muddy place. Similarly, choosing a site that has soil that absorbs water well is very useful in forestalling foot and nail problems.
- For safety, there should be a tree or some other secure tethering point that is strong enough to hold the elephant.
- All of the equipment used for musth elephants must be strong enough to withstand the elephant's strength and must be readily at hand. Every link in the tethering chain should be carefully inspected, the swivel should be strong and not defective, moving freely. The U-bolt should be oiled so that the post screws easily and securely into the threaded holes.
- Consideration should be given to providing musth elephants with special foods.

Diet in musth

When the elephant is in musth, the most appropriate food has low nutritional value, such as banana tree stalks (always cutting it to about a hand's length before feeding), green squash (*fak khiow*), and dried grass (which can be sprinkled with salt water to improve palatability), because such foods have a low nutritional value. When the elephant eats such food, it will feel full very quickly.

Other foods are possible but the amounts given should be decreased from when the elephant is not in musth. High-energy foods such as unhusked rice, sticky rice, etc., should be absolutely avoided.

High-energy foods are in no way dangerous to the elephant's physical health, but feeding high-energy foods will ensure that the musth period will endure much longer than if provided with foods with low caloric value. Low value foods in the proper amount will keep the animal in good health and will also give it the contentment of eating and having a full belly.

Warning: It is important that a musth elephant be given sufficient clean water.



Disposal of elephant carcasses

When elephants die, the carcass is in one of two conditions, either safe for humans to dispose of or dangerous towards humans or to other elephants. In the first case, where the carcass is “safe”, the elephant has died of old age, a bad fall, a bad heart, being struck buy a truck, etc. You can burn or bury the elephant, or even butcher it for the meat, without any worry, although in fact no animal that dies on its own should ever be eaten. (Whether the person reading this thinks eating elephant meat is appropriate or inappropriate does not matter; villagers do it all of the time so the important thing is to do it safely.)

Warning: In any case where an apparently perfectly healthy elephant dies within one or two days with little or no obvious cause, that elephant’s carcass should undergo a post-mortem by a veterinarian (to ascertain whether or not it died of a dangerous contagious disease).

The second case, where the carcass poses danger to humans or elephants, is where the elephant has probably died of a contagious disease (the different types are discussed below) that can kill people or kill elephants — or both. In such dangerous cases, there are two further types: (1) cases where the elephant has been treated by a veterinarian and you already know the exact cause, and (2) cases where the mahout or camp manager knows or suspects that the elephant has died of a disease but does not know what that disease was.

If the elephant died of what you think was probably a disease, immediately consult a veterinarian and have him do a post-mortem on the animal. Sometimes the veterinarian will be able to tell you the disease immediately, sometimes he will have to take samples to analyse in a laboratory. Only when you know the exact cause of death can you and the veterinarian decide how to safely deal with the carcass.

Warning: Never deal with the carcass of an elephant that might have died of a contagious disease (like anthrax) without a veterinarian first inspecting the animal. (In fact, it is best if every elephant that dies is necropsied by a veterinarian, but whether because of the trouble or the wasted time or the expense, to the mahout’s thinking, it often does not happen.) If you ignore this, you can easily kill yourself and everybody who has helped you. Most especially, never sell the meat of such an animal because you could cause many people to die.



Place of disposal: Conducting the post-mortem is obviously the business of the veterinarian but because disposal is usually done at the place where the elephant died, the mahout or the manager is usually the person who ends up selecting the site, and therefore they should consider it very carefully. The post-mortem site should normally be where the carcass will be disposed of, because if not that will mean renting a truck with a crane or a hoist to move the carcass.

The disposal site should be (1) far away from inhabited areas, (2) far from streams, ponds, and natural water supplies, and (3) away from where other elephants or other animals are raised. The three conditions are especially important when the elephant died of certain contagious diseases. Thus, if an elephant is being treated in a place that does not meet the three safety conditions but it looks likely to die, if it can still walk, it might make sense to take it to an appropriate disposal site. This is particularly true with elephants that might have a contagious disease but are being kept in a place that will be used for keeping elephants in the future.

Methods of disposal: According to the national law governing the control of epidemic diseases of animals, carcasses of infected animals must be disposed of as follows. There are two accepted methods of disposing of carcasses, burning and burying. Each has disadvantages and disadvantages.

1. **Burning:** If there is an appropriate furnace, then burning is very easy; unfortunately, this is rare. Otherwise, the carcass can be burned by piling firewood or old rubber tyres very near it and on top of it. (If firewood is put right against the elephant, escaping steam and gases will interfere with efficient burning and the fire will not be as hot.) Petrol can be used to help start the fire. Personnel should be very careful to ensure that the carcass is completely burned and be very careful that the fire does not spread. The ashes should be buried in the case of contagious diseases.

Advantages:

- Burning is very effective at destroying germ organisms, but only if great attention to detail is paid.
- Burning uses little space.



Disadvantages:

- It is much work to gather the combustible materials, such as wood, tyres, fuel, etc.
- There is the potential for accidentally starting a large fire that can spread.
- The carcass might not be incinerated perfectly.
- Burning takes much time as the fire must be very carefully tended for 48 to 72 hours.
- Burning is not a good idea during the rainy season.
- If rubber tyres are used, the smell is very bad.

2. ***Burial:*** The carcass must be buried deeply enough that it will be covered with at least one metre of dirt. In cases of anthrax sprinkle the carcass liberally with lime before filling the hole. All dung, bedding, and even topsoil should also be buried. A fence should be built around anthrax cases because the spores can survive for many tens of years.

Advantages:

- Burial is convenient, quick and not difficult.
- Burial is good at stopping the spread of disease.

Disadvantages:

- Burial uses extensive space.
- If no back hoe is available, digging is very hard and time-consuming work.
- If a back hoe is used, this method is expensive.

Diseases requiring caution during disposal

Diseases dangerous to both humans and elephants are anthrax, rabies and tuberculosis. Before contact with a potentially carcass, prepare as follows: (1) wear rubber gloves or, if that is impossible, rub the hands and arms with the head of the tumeric plant before and after contact to counter infection, (2) inspect yourself carefully for cuts and sores and bandage the wounds or, better, do not take part as germs might enter the wound, and (3) any workers ill or not feeling well should take no part because their immune systems will be compromised, making them more likely to contract the disease. Use a mask or cloth to cover the nose and mouth.



Contagious diseases transmissible to humans

Anthrax is primarily an animal disease but it can also infect humans and it is often fatal. Anthrax can be easily contracted through spores entering open cuts or sores, or by inhalation of spores, while disposing of an elephant carcass. Therefore, after the the burning or burial of an elephant, the mahout should bathe very carefully and he should change to new, clean clothing before entering into contact with other elephants. Wear your oldest clothes, because the clothing must be burnt after the work.

The clinical signs of a person infected by anthrax are high fever, vomiting, and respiratory problems. Some cases have erupting sores and/or boils on hands and arms or wherever the organism has entered. Death can follow after 10-15 days.

See Page 123.

Tuberculosis can be transmitted from people to elephants or from elephants to people. Therefore, anybody working on a post-mortem or disposing of an elephant carcass thought to be infected with tuberculosis must take preventative measures to avoid inhaling the germs by wearing a mask.

See Page 128.

Rabies can afflict humans, elephants, and all mammals. The means of infection is through the bite of a rabid animal or by contamination by blood, lymph secretions, or saliva of an infected animal. Any mahout or worker with open cuts or sores should avoid working with the carcass of an elephant that has died from rabies. Rabies in humans is always fatal.

See Page 133.

Internal parasites should be considered. Even though there is no evidence that internal parasites of elephants can infect humans, all of the people involved in post-mortems of animals with worms should be careful. In particular, eating the meat of worm-ridden elephants should be avoided.



Contagious diseases transmissible to elephants

Haemorrhagic septicaemia is highly contagious disease capable of infecting other elephants in a very short period of time. Therefore, anybody who was involved in disposing of the carcass of an elephant which has died of haemorrhagic septicaemia should avoid contact with other elephants or with mahouts until having cleaned his body very carefully and having changed his clothing.

See page 125.

Diarrhoea from contagious diseases may be transmissible through humans, so all workers should bathe carefully and change their clothing before contacting other, healthy elephants.

See Diarrhoea from germs, page 119.

All tools and implements used should be disinfected after use. (See Hygiene, page 66.)

PRIMARY MEDICAL CARE

Primary medical care is a very important and mahouts should study it and practice until they are proficient. Always keep in mind that a sick elephant will not return to normal if it does not get correct treatment, even if the medicines are there.

Primary medical care is very useful because the mahout can provide proper care for his elephant before the veterinarian comes to treat it, can provide follow-up care after the veterinarian has visited, and the mahout or camp manager can treat minor injuries and conditions on his own.

Medicines and drugs to have at hand

There are certain common medicines and drugs that the mahout can easily keep nearby at all times in order to treat minor or emergency health problems. Most of the medicines to be kept at hand are for external use (eye drops, pain-relief ointments, oral pain relievers, etc.) and are



useful in emergency situations where there is no veterinarian nearby or where the veterinarian can not be contacted and the mahout or manager must provide the initial treatment.

1. Medicines used on wounds:

Tincture of iodine. A dark brown colour, it can be bought at any pharmacy or veterinary supply store.

Method of use: To put in new, fresh wounds (but not deep wounds) one time only and to cause abscesses to ripen.

Povidone-iodine 1%. A dark brown colour like tincture of iodine, but ten times less concentrated and not so irritating to wounds. It is very widely available and can be bought at any pharmacy or veterinary supply store.

Method of use: Only for treating fresh wounds, sores, scaldings, etc., where it should be mixed one part Povidone-iodine 1% to ten parts water. Dilution is essential because stronger solutions will cause irritation. When washing infected tusks, Povidone-iodine 1% should be diluted 20 to 1.

Acriflavin solution. A yellow coloured liquid. In fact, Thai mahouts call it “yellow medicine” (*yaa leuang*). Acriflavin is applied after a wound has already been cleaned. It can be bought at any pharmacy or veterinary supply store.

Method of use: Apply to chronic wounds with pus and decomposing/rotten wounds.

Gentian violet. A deep purple coloured liquid. Gentian violet can be bought at any pharmacy or veterinary supply store.

Method of use: Gentian violet is used with wounds in the mouth, trunk, and soft tissues [mucous membranes]. Gentian violet is particularly efficient with wounds that have come about as a side effect of fungal infections.

Hydrogen Peroxide. A colourless transparent liquid. It can be bought at any pharmacy or veterinary supply store.



Method of use: Use to clean infected and decomposing/rotten wounds that have pus. After application, let it sit for about five minutes before washing off with clean water. Hydrogen peroxide should be used only once or twice at the initial treatment for cleaning the wound in order to clear the pus in a wound.

Warning: Absolutely never use hydrogen peroxide on a fresh wound.

Alcohol. A transparent, colourless or blue liquid. It can be bought at any pharmacy or veterinary supply store.

Method of use: Alcohol is used to clean skin before giving an injection or before operating. Alcohol should never be applied on or in a wound.

Antibiotic ointment. A yellowish cream. It can be bought at any veterinary supply store or in any large market area. Brands include Bactacin, Mytacin, etc.

Method of use: Applied to chronic wounds, ulcers, decomposing/rotten wounds, scaldings, etc., two or three times daily. Antibiotic ointments stay with the wound reasonably long and help to promote tissue growth. A disadvantage of the stickiness is that it easily attracts dust and dirt to the wound. After application, it helps if the wound can be covered with gauze.

Antibiotic spray. An antibiotic most often mixed with gentian violet. Sprays can be bought at any veterinary supply store or in any large market area. Brands include Alamycin spray, Tetravet aerosol, etc.

Method of use: Spray on chronic wounds (decomposing/rotten areas, ulcers, etc.) after cleaning.

Anti-insect powder. A mixture of insect-killing compounds and antibiotics that helps wounds to heal. Available at veterinary supply stores. The usual brand is Negasunt.

Method of use: Sprinkle the powder over the wound after having cleaned it and after having applied the primary medicine. The purpose is to prevent infestation from insects, particularly those that attempt to lay eggs in wounds.



2. Medicines for the skin and for muscles:

Inflammation-reducing medicines for the skin. Used after conditions such as damage from chemicals, insect bites, etc. Most often these are steroids applied topically, and most often they come mixed with antibiotics. Available at veterinary supply stores. Brands include Beta-Cream, Beta-Met [Betamethazone cream], etc.

Method of use: Rub inflammation reducers onto the affected area quite frequently because such medicines are absorbed into the skin very quickly.

Analgesics for muscles and tendons. Used for strains, sprains, swellings, etc. There are two types, ointments and oils. Brands include Voltarene ointment, Muay Oil, St. Luke Oil, etc.

Method of use: Rub into painful, swollen or inflamed muscles at least twice a day.

3. Eye medicines:

Eye drops. Liquid. Antibiotics are the most important ingredient. The advantages of eye drops are that it is easy to keep the eye clean and that results come faster than with ointments, usually in about two days. Can be bought at any pharmacy. Brands include Vanafen, Chloramphenicol, etc.

See Medicating eyes, page 103.

Method of use: Use on eyes that are weeping more than usual, eyes with pus, wounds of the cornea, etc. Apply hourly until the condition disappears.

Eye ointments. Ointments will stay in the eye longer than drops, but with the disadvantage that their stickiness attracts dirt, bits of grass, etc. Available in markets. Brands include Vanafen ointment, Tetracycline ointment, Kemicitin, etc.

Method of use: Use on eyes weeping more than usual, eyes with pus, wounds of the cornea, etc. Apply at least twice a day.

Warning: Never use eye drops or ointment that contain steroids in cases of an ulcerated cornea. Leave this for a veterinarian to treat.



4. Medicines to kill pain:

Pain relievers. Have the power to alleviate pain in suffering elephants. Brands include Daga, Nutamol, Paraset, Sara, Bayer aspirin.

Method of use: Grind the pills to a powder and dissolve in water and have the elephant drink or, alternatively, place the pills in ripe bananas or some other favourite food. For mature animals give about 40 to 60 pills at a time, once or twice a day until a veterinarian comes.

Warning: Aspirin and Daga have the power to irritate the stomach wall if administered on an empty stomach. Never give aspirin on an empty stomach.

Tools and equipment

There are two basic groups of tools and equipment, those required at an elephant camp with more than five elephants and those necessary when travelling with an elephant.

Equipment at an elephant camp

This equipment is used by mahouts both for medical care and also daily needs in routine camp life.

A plastic or metal **5-litre bucket** is necessary for bringing the elephant drinking water, for bathing the elephant, for cleaning wounds, for giving pellet foods, for unhusked rice, etc. There should be at least two buckets for each elephant. The buckets should be free of any bad smell and chemical contamination.

A **100-litre drum** is needed to hold drinking water for elephants when they are far from the watering site. The drum should be washed so it is clean and there is no smell. There should be 3-4 drums for every 5-10 elephants because some elephants are not willing to drink from the same vessel as other elephants, which the mahout should know.

Warning: If either the vessel or the water has a bad smell, the elephant is likely to be unwilling to drink it, such as tap water with chlorine or a vessel that has held petroleum products. The vessel must be washed thoroughly and left full of water until any smell has disappeared before using it to water elephants.



A **20-litre metal pail** or a tin with the top cut off used for boiling water and fomentations to reduce pain, swelling, and oedema.

A **pail for mixing insecticides** used to spray and kill insect parasites and for mixing germicides used to clean wounds and infected tusk cavities, and for sanitizing the floor of keeping sites. This pail should not be used for any other purpose.

A **thermometer** for taking temperatures of elephants that seem not well. (For method of use, see page 71.)

A **50 cc. plastic syringe**. For washing wounds or spraying wounds in situations where the elephant is not willing to have the wound handled. The syringe can be boiled and reused but it should never be cleaned or sterilized with an antiseptic. (See page 66 for the method of cleaning.) Such syringes can be used for all elephants so there should be 3 or 4 of them in a sizeable camp.

A **plastic syringe** with a capacity of 1 to 3 cc. to be used to apply eye drop medicine. The eye drop applicator can be re-used but it should be used for only one elephant. Keep it in a clean place.

Clean cloths of about 1 x 2 feet square. There should be 3 to 4 clean [sterile] cloths for each elephant. They are used for cleaning the skin, for cleaning skin around wounds, cleaning medical implements, stanching wounds, etc. Under some conditions such cloths might be used instead of gauze for wiping tears from the elephant's eyes or cleaning before applying eye drops. Use clean cloths only with one elephant.

The cloth used should be soft and highly water absorbent, such as terrycloth. Cloths should be boiled after each use for 15 minutes.

Small clear plastic bags of various sizes starting from 6 x 9 inches for holding syringes for injecting medicine and other implements in order to keep them clean and dust-free.

Large plastic garbage bags suitable for soaking foot wounds. Garbage bags are also suitable for storing implements.

Small plastic bags (6 X 9 inches) for holding and keeping various implements used in treating the elephant clean and dust-free.

Small garbage bags are excellent for soaking elephants' feet whenever they get infected.

Pliers for grabbing and pulling out nails, glass shards, stones, or other objects embedded in the elephant's foot.

Liquid soap, such as dishwashing detergent, for cleaning tools.



Equipment for a small camp and traveling

These objects are essential for situations that arise very quickly. It is difficult if you are caught without such implements for giving food and water and for treating the elephant immediately.

A **5-litre water pail** is essential for carrying and holding drinking water, for bathing, and for holding food such as unhusked rice.

A **10-litre water pail** with a secure lid for drinking water which the mahout must ensure is at hand at all times.

A **thermometer** for taking temperatures of elephants that seem not well.

Chains and U-bolts and other implements used to control the elephant, such as the hook, knife, and hobbles.

A **1 to 3 cc. plastic syringe** to apply eye drops. The syringe can be re-used but only for one elephant. Store in a clean place.

A **50 cc. plastic syringe**. For washing or spraying wounds when the elephant is not willing to have the wound handled. The syringe can be boiled and reused but it should never be cleaned with an antiseptic.

Small plastic bags (6 x 9 inches) for holding and keeping various implements used in treating the elephant clean and dust-free.

Garbage bags are excellent for soaking elephants' feet whenever they get infected.

Pliers for grabbing and pulling out nails, glass shards, stones, or other objects embedded in the elephant's foot.

Clean cloths, about 3 or 4 pieces, for cleaning the skin, for cleaning around wounds, and for stanching blood flow, etc. Sterilise all cloths after use by boiling for 15 minutes.

Medicines that should be at hand when travelling

- Medicines for treating fresh wounds, such as tincture of iodine or Povidone-iodine 1%.
- Medicines for treating abscesses and chronic wounds, such as Furazone ointment or Acriflavin solution.
- Insect repellent powder such as Negasunt.
- Eye ointment or eye drops, such as Vanafen or Kimicitin.
- Cream or ointment such as any Betamethazone cream.



Hygiene

Everybody knows that germs are tiny little organisms that bring illness and death. Nonetheless, when looking at the tools you are using, the place you are working, or even your own hands, it is all too easy to think, “They look clean, so they must be clean.”

Unfortunately, this is not so. A cloth or a knife that looks perfectly clean, without a speck of dirt, might contain many germs. Therefore, each and every time you do a treatment, you should meticulously clean and disinfect all of your tools and, as far as possible, the place where the treatment will occur. Sometimes the lack of spending five or ten minutes on hygiene can cause the death of an elephant worth hundreds of thousands of baht.

Hygiene for the care giver

The most important habit to keep when working with medical tools and with open wounds on the elephant is to be very careful that your hands are clean. Best is to wash them carefully with soap, dry them, and then wash them again. Also make sure that your fingernails are short and clean.

Cleaning medical implements

Most of the implements that are used with elephants are ordinary household items and therefore they are fairly easy to clean and to look after. You wash them with clean water and with soap (dishwashing detergent is fine), wipe them clean, and then store them in a tightly sealed container. Before they are used again, it is a good idea to wash them once more. The exceptions are syringes and the pail which is used to mix medicines for cleaning wounds. If they are not new, syringes without needles used for applying topical medicines should be washed with water alone.

Cloths are not clean unless boiled for 15 minutes and then carefully dried in the sun away from dust and other air-borne contamination. After boiling, store the clean dry cloths in plastic bags or some other sealed container.



Metal pails are expensive and noisy to use but are strong and can be sterilized with boiling water. Plastic pails are liable to break and are more difficult to keep clean.

Cleaning the stable

Most stables in Thailand consist of a hard-packed dirt floor covered by a grass roof. Tile or concrete floors are a rarity. The two types require a different method of cleaning.

Grass roof with packed dirt floor:

- It is best to gather newly-fallen dung very carefully, immediately if possible, and also to collect the scattered remains of food about one hour after the food was given.
- Areas where elephants urinate frequently will be damp and foul-smelling. The mahout should, if possible, change the chaining place, or use clean dirt or sand to spread over the surface.
- Stables with grass roofs should change the grass every 2-3 years. While changing, it is best to leave the earth exposed to the sun for 3-5 days so as to dry it out and to destroy some microbes.

Tile roof and concrete floor:

- Gather and collect dung upon its emergence and wash down urine immediately.
- Gather the remains of food and fodder one hour after it was given.
- Wash the floor twice a day, once in the morning and once in the afternoon.
- Wash the floor very carefully with a disinfectant (such as Dettol solution) at least once a month and even more often if infectious disease is present.

Disposal of waste

The waste that comes about from work and other activities of elephant camps requires appropriate disposal because waste may be a repository of infectious germs and toxins that can impact on elephants and humans health.



- Waste that derives from elephants and elephant-related activities:
- Dung should be collected daily, both in stables and environs, and then buried and covered. (At present the Thai Elephant Conservation Center, Lampang, collects elephant dung and turns it into fertilizer, paper, and, after fermentation, into biogas for domestic cooking.)
 - Garbage associated with related activities, such as trash deposited by tourists, should be carefully collected and buried or burned. Garbage that is hard to dispose of, such as glass bottles, soft drink cans, etc., should be separated and put in carefully sealed containers and left for municipal trash collectors, because such garbage degrades very slowly and will remain in the environment for a long time.
Warning: Sometimes elephants will accidentally eat garbage discarded by tourists, particularly plastic bags and candy wrappers, and then develop intestinal obstructions.
 - Garbage that carries germs usually comes from having treated sick elephants, such as old bandages, cotton wool and bodily discharges. Such garbage should be carefully separated and burned apart from other garbage. After incineration such waste should be buried at least one metre deep, but only after covering it with a layer of lime as another level of disinfectant. Syringes and needles should be gathered and taken away from the site as recommended by a veterinarian.
 - Waste water and water used when washing down floors should be released into the earth, which serves as a filter, at least 50 metres from any standing or running water. Facilities with sufficient funds should invest in equipment to treat waste water before it is released into any standing or running water.

Collecting samples for analysis

Collecting samples is very important, especially when an elephant is sick and the cause is unknown. Only a veterinarian can investigate and analyse and determine the cause, but many times it is impossible to find the cause because the veterinarian does not see the elephant when it is showing the signs of disease. Therefore the mahout, who is with the elephant all of the time, should be the person who helps by collecting samples for the veterinarian, in order to make the diagnosis quickly and with certainty. Improperly collected samples are a waste of time.



Collecting samples of parasites

Often elephants deposit **internal parasites** in their dung. The mahout should collect some parasites and then wash them in clean water and put them in a container filled with a 10 per cent formalin solution (one part formalin, nine parts water) or into alcohol. The parasites in formalin solution or alcohol will keep for a long time at ordinary temperatures. Make a label for the container which includes the name of the elephant, the date, the place, and the elephant's name and the name of the mahout or owner.

As for **external parasitic insects** (ticks, lice and other blood suckers) the mahout should collect some samples and simply put them in a plain container or one with formalin or alcohol exactly as with internal parasites. Place a label on the container with the parasites, recording the details as above but also including the part of the elephant where the parasites were collected.

Collecting faecal samples

Dung is a very good indicator of the health of elephants. The mahout must examine his elephant's dung every day. If he finds loose stool, bloody mucous, parasites, etc., then he should collect a sample and consult a veterinarian. This is done as follows:

- Get a bolus of fresh dung. (Do not use dung more than one hour old.) Take a sample the size of a chicken egg from the middle of the bolus.
- Put the sample in a clean plastic bag. Before sealing it, force as much air as possible out of the bag. Write down the elephant's name, the date, the place and your own name.
- Put the samples in another plastic bag with ice (or in an ice chest) and quickly take it to your veterinarian.

Determining health

Most mahouts know their own elephant very well. They know what it likes to eat and what it likes – and does not like – to do. A good mahout knows the month when his elephant usually falls into musth and knows its changes in mood. Such knowledge is very useful to the mahout and to



the elephant's owner in caring for the animal. But there is much other knowledge that a person in the process of becoming a mahout should study and learn. For example, what goes on inside the elephant's body? When it eats, where does the food go and what benefit does it have for the elephant? Or if the food is toxic, what effect will that have?

Thailand has nearly 3 000 domesticated elephants but there are not even twenty veterinarians who are expert in treating elephants. At the same time, there are over 3 000 mahouts and thus the profession of being a mahout has great value in conserving Thailand's elephants.

Indicators of good health

- The elephant shows constant movement as seen in flapping ears, sweeping tail, and using the trunk to throw dirt.
- The elephant constantly eats and is always ready to eat. The dung shows the food to be well chewed. The dung has no bad smell.
- The eyes are clear, bright and well lubricated. The inside of the mouth and the trunk, the tongue, and other soft tissues are a rich pink colour.
- The skin is thick but soft and feels moist. The skin right above the toe nails is moist.

Indicators of bad health

- The elephant is listless; the ears, tail, and trunk hardly move.
- The elephant is exhausted, as noticed by little movement and the end of the trunk being rested on the ground for long periods of time.
- The elephant stands, eyes closed, and frequently yawns.
- When bulls urinate, the penis does not emerge from the sheath.
- The elephant is agitated and sometimes goes to the ground and bellows. It uses the trunk to gather dirt and apply it to the affected area. It uses the trunk to blow air on the affected area.
- The elephant eats and drinks very little or not at all
- The eyes are dull, sunken, and with copious tears. There is a mucous-like discharge from the trunk. The skin is dry and stiff to touch.
- The inside of the mouth, the tongue, and the inside of the trunk are very pale or, alternatively, very muddy or bright red rather than the normal pink. The skin above the toe nails is dry.



Reviewing a sick elephant's recent history

The largest part of an elephant's life is eating, followed by drinking and sleeping. Therefore, a review of the animal's recent eating, drinking, and sleeping in the 3-5 days before it has shown symptoms must come from the mahout.

Feeding: If the elephant has been eating food that is difficult to digest, for example very long-fibered food (such as lianas, banana tree stalks, or palm fronds) that has not been cut to suitable lengths, the elephant can become constipated. Or if the elephant has been eating foods that can cause gas, such as maize [corn] or unhusked rice or wheat or cassava, the elephant can have dyspepsia. These conditions can cause an elephant to die in one to three days.

Drinking water: Illness can come if an elephant has been drinking water that was contaminated with chemicals, because it can be poisoned. Or an elephant might refuse to drink water because the mahout has changed the watering place.

Sleeping: If an elephant will not or does not sleep, it might be because of something wrong with a leg. Or it might be so ill that it will not go to the ground to sleep for fear of not being able to stand up again. If an elephant sleeps during the day, the elephant is exhausted, possibly because the sleeping area has been shifted, or there was a disturbance at the sleeping area, or because the animal was too ill to sleep properly.

Work: The recent work history of the elephant is also important. For example, if the elephant was dragging logs yesterday, extreme fatigue can be considered normal or that work might explain a soreness in a leg.

Using a thermometer

Many mahouts think that using a thermometer is a matter only for veterinarians but this is not so. Taking an elephant's temperature is as easy as measuring the air pressure in the tyres of a car. A thermometer, which you can buy in any store that sells human medicine, costs only 50-100 baht or about as much as a good tyre gage.



Many experienced mahouts feel that they can tell if there is a fever by feeling the elephant's exhalations. This can be a guide but is never as good as the results from a thermometer. Taking an elephant's temperature can save you a lot of time and money. If an animal looks a bit sick but has a normal temperature, you can usually wait a while to see if it goes away before you need to spend time and money for a veterinarian. If there is a fever, a thermometer will let you know very quickly and accurately that you must find a veterinarian, hopefully saving the life of your valuable elephant.

Method of use: Take the thermometer and shake it briskly to make the mercury inside to go low down in the tube. Then stick the hand holding the thermometer wrist-deep in the elephant's rectum; leave it in for one or two minutes while holding onto it, until it is as hot as it will get. If the elephant is struggling or writhing, the thermometer can be inserted into a just dropped bolus of dung. The normal temperature of an elephant ranges between 97.5° and 99° Fahrenheit and in Celsius between 36° and 37°. If the temperature is 100° F or over or 37.8° C or over, the elephant has a fever and you should call a veterinarian. After use, the thermometer should be washed well in a disinfectant solution.

The temperature should be taken at least twice a day, morning and evening. If the elephant is truly ill, you should do it more often. Write down the time and the temperature each time so that you can show it to the veterinarian. He might see a pattern that helps to diagnosis the illness (for example, normal in the morning but a fever in the afternoon).

Medicating orally

Giving medicine through the mouth is usually for pain relievers and restoratives. The elephant is different than other animals because it can use its trunk, which can be compared to a hand, to extract things that have been put in its mouth. If the elephant does not want to swallow the medicine it will pull or drag it out.

The most appropriate methods to give medicines to elephants:

- Put the medicine in food that the elephant especially likes, for example, ripe bananas or sticky tamarind.



- Especially for calves, grind up tablets to a fine powder and mix them in sweetened, condensed milk or fruit jam so as to hide the taste from the tongue.
- Grind up tablets to a fine powder and mix the powder with clean water, but you must dissolve it very vigorously because the elephant is likely to know about the medicine. Put the liquid in a bottle and hand feed it to the elephant a bit at a time until the desired amount has been consumed.

Medicating rectally

The most common substance administered rectally is water in cases of severe dehydration, most especially in case of tetanus. Before inserting the water you must with a hand remove as much dung as possible and then insert a garden hose. It is very important not to cause any injury to the rectum.

- Wash your hands very carefully. Make sure your fingernails are very short.
- As a lubricant, apply liquid soap or dishwashing detergent all over your hand and arm.
- As gently as possible, insert the hand and remove as much dung as possible.
- Insert the rubber hose, which must have its end smoothed off completely so there is no sharp edge.
- The water must be warm, very near the body temperature of the elephant.
- Turn on the water at an appropriate flow. You can feel boluses that are 'floating' and you should pull out as many of those as you possibly can. Sometimes when the water has entered, the elephant will defecate on its own.
- Give warm water until the elephant shows discomfort and then stop the flow of water and wait for 30 minutes. The arm must remain inside so as to plug the rectum.

Warning: Be sure to lather your arm each and every time you insert it in the rectum.

