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EXTRACTION OF TEAK TIMBER IN THE PYINMANA FOREST DIVISION, UPPER BURMA.

[*Contributed.*]

The following are some random notes made a few years ago on the subject of teak extraction in the Pyinmana Forest Division, Upper Burma. Much of the information was kindly supplied by the Assistants of the Bombay Burma Trading Corporation, Ltd., to whose timber these notes refer.

The Pyinmana teak forests, it may be mentioned, are situated on hilly country with flats of varying extent, partly on the outskirts of the hills and partly along the main streams. These streams, together with their feeders, form a network of export lines down which logs are floated individually until they reach the Sittang river, where they are made into rafts and rafted down to Rangoon, crossing over on the way from the Sittang to the Pegu river (Pozaungdaung creek) *via* the Pegu canal.

Felling, which is carried out chiefly in the rains, is done with saw and axe combined

Logging is done with cross-cut saws. Axes are used only in exceptionally difficult places, where sawing would not be possible. The timber is logged in such a way as to give as much first-class



Photo.-Mechi. Dept., Thomason College, Roorkee.

TEAK LOGS PLACED IN THE UPPER REACHES OF A FLOATING-STREAM
WAITING FOR THE NEXT FLOODS—PYINMANA, UPPER BURMA.

timber fit for the English market as possible : thus one English log and two bad logs are better than two medium logs and no English logs.

Dragging, which is done by elephants or buffaloes, is carried out in the rains and on to the end of the cold weather, as little as possible being done after the 15th March. The best season is the rains, the slippery state of the ground facilitating the work ; dragging is in many cases estimated to be three times as easy in the rains as it is at other seasons. To facilitate dragging it was formerly the custom to "snout" logs : this is not allowed now owing to the waste of timber involved, a slight trimming of the corner, to round off the sharpness, being found sufficient. Dragging is greatly facilitated by the construction of what might be termed "corduroy" dragging-paths (Bur. *dahlein-lan*). Billets of wood 4 to 6 inches in diameter are laid across the dragging-path, after the manner of railway sleepers, at distances of about $3\frac{1}{2}$ to 4 feet apart ; these billets are half sunk in the ground, and the logs slide over them with comparative ease.

Carting is substituted for dragging only if the distances are great, special timber carts (Bur. *gindeik*) being employed. Elephants being expensive, it is necessary to save them as much as possible by employing buffaloes for carting. If the distance is not more than 1 to $1\frac{1}{2}$ miles, dragging in the rains is usually found preferable to carting in the cold weather, the season when most of the carting is done.

Elephants can under present conditions of working, where the trees are scattered, drag from 40 to 125 logs from the stump to the floating-stream in a season. The elephants find their own feeding in the forest, and are not fed artificially until after February and then, only if they are working. The food they then receive is paddy.

Buffaloes as a rule drag smaller sized logs than elephants, but with the aid of the special corduroy dragging-paths described above large teak logs of as much as 4 tons are dragged by teams of 2 or 3 or even 4 pairs of buffaloes. The buffaloes are yoked together in pairs, the yokes being long poles 6 or 7 feet in

length. One pair pulls in front, the dragging-chain being fixed to a drag-hole (Bur. *napa*) cut in the top corner of the log. The dragging-chain is kept short, so that the buffaloes can slightly lift the front of the log. The rear pair of buffaloes, one on either side of the log, have their chain fastened either to another drag-hole at the rear top corner of the log, or to a wooden peg driven into the end of the log, at its centre. The intermediate pair or pairs, one animal of each pair on either side of the log, have their chains fixed to upright pegs driven tight into holes, 1 inch in diameter and about 3 inches deep, drilled into the log. In narrow places the rear pairs of buffaloes can be brought forward and harnessed in front of the leading pair. Buffaloes work best in the rains; they cannot stand hot dry weather, while on metalled roads their feet give out. Hence where carting is done they are employed only in the shade of the forest, the carts being taken over by bullocks where open country or metalled roads are reached.

Floating.—Where the floating-stream is very narrow the logs are placed in the direction of the stream; otherwise they may be placed in any position. Plate I shows a number of teak logs placed in the upper reaches of a floating-stream waiting for the floods of the next rains. The earliest rises usually occur in the middle of June; these, however, are not regular. September is the best floating month; August is generally not so good, there being frequent breaks in the rains. A rise of about 6 feet is sufficient to float the largest logs: anything above 12 feet is bad as the logs are apt to become stranded on the banks.

During the floating season gangs of elephants are kept in readiness along the streams waiting for rises, and as soon as these occur they go into the water and keep the logs in the stream, rolling or pushing them into the current whenever they show signs of standing. This work, known as *aunging*, is very necessary in order to prevent *taiks* or jams of logs, the removal of which, if they form, may be a difficult and dangerous operation.

Prevention of loss in transit.—During the cold weather, chiefly from December to February, elephants are sent down the streams

then nearly or totally dry, and logs stranded in the jungle and tall grass along the banks are searched for and rolled or pushed into the bed of the stream. This operation is technically known as "*auunging* drift," and timber left stranded in the streams after the floating season is over is known as "neaped timber." Plate II gives an idea of a typical floating-stream in December, with neaped logs lying in it. Fire-watchers patrol stretches of the streams in the dry season, to keep fire off the stranded logs. The chief danger of loss lies in the silting up of logs. These buried logs are sought for and dug up; if they have been buried for any length of time they require to be left for two years to dry before they will float again.

Rafting in the Sittang river.—The logs are collected and formed into rafts at the mouths of the floating-streams, where these enter the Sittang river. In small streams like the Yeni a chain of floating teak logs, or a fixed boom of pyinkado posts, will stop the logs. In the larger and more powerful streams, like the Yônbin, booms are not employed, since even if the posts holding them are not torn up the banks become eaten away by the current: in such cases the logs are collected singly by swimmers or men in dugouts. The Sittang rafts require to be narrow, in order to pass through the Pegu canal lock gates: they contain 40 to 60 logs, as compared with about 120 logs in an Irrawaddy raft. Three men accompany each raft. The rafting season lasts from the beginning of September to the middle of November, there being insufficient water in the river at other seasons.
