A STANDARD INTERNATIONAL NOTATION

for

SYSTEMS OF TAPPING HEVEA

BY

EVAN GUEST

Summary

Details are given of the new standard international symbols to represent tapping systems, together with examples of their use. (A full discussion of the reasons for introducing this standard notation, and of other related questions, forms the subject of the preceding Communication (No. 239)).

The Standard Notation

It is proposed to introduce a standard notation to describe tersely and explicitly the various systems of tapping rubber trees. The notation consists of a set of symbols which should be used in regular sequence to define respectively:

    (1) the number of cuts tapped on each tree at each tapping,

    (2) the length of each cut,

    (3) the type of cut,

    (4) the frequency of tapping

and, in periodic systems,

    (5) the lengths of the periods of tapping and rest.

In addition, a figure denoting

    (6) the relative intensity of the system

should accompany the standard symbols.

    Special symbols are also provided for insertion when it is desired to indicate

    (7) change-over systems of tapping.

(1) Number and (2) Length of Cuts

To be expressed in the form of a fraction:

    (a) the numerator to denote the number of cuts tapped on each tree at each tapping

and (b) the denominator to denote the horizontal length of each cut expressed as a fraction of a full circumference (that is: 2 for $\frac{1}{2}$ circumference, 4 for $\frac{1}{4}$ etc.).

Examples :

> $\frac{1}{2}$, 1/3 or $\frac{1}{4}$ = *one cut on half, third or quarter circumference,*
> 1/1 = *one full-circumference cut,*
> 2/2 or 2/4 = *two cuts, each on half* or quarter circumference*
> *and* 4/2 = *four half-circumference cuts.*

(3) Type of Cut

Only two types of cut are in common use at the present day, the spiral and the V cut.

To be designated by the capital letters
> S = spiral cut
> and V = V cut.

Where the type of cut is unrecorded these symbols can be omitted without affecting the remainder of the notation. The type of cut may not be of great importance, but should generally be recorded.

(4) Frequency of Tapping

To be expressed in terms of the daily interval between tappings, thus (in small letters) :
> d = daily,
> a.d. or 2d = alternate-daily (= every second day),
> 3d = every third day,
> 4d = every fourth day

and so on.

To describe possible systems with tapping two or more times daily, the symbols dd, ddd etc. can be used, if required.

(5) Length of Periods of Tapping and Rest in Periodic Systems

To be expressed by two numbers denoting respectively the periods of continuous tapping (at the stated frequency) and of rest, followed by either the small letter
> d = days,
> w = weeks
> or m = months

to indicate the unit in which the period is reckoned.

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* Can also be written in full, if desired, as $\frac{1}{2} + \frac{1}{2}$ ($= \dfrac{1 + 1}{2} = 2/2$).

For further refinements, see under "Some Amplifications" (p. 168).

Examples:

20/20d	=	twenty days' tapping followed by twenty days' rest,			
6/3w	=	six weeks'	„	„	„ three weeks' „
12/4m	=	twelve months' „	„	„ four months' „
8/2m	=	eight	„	„	„ two months' „
3/1½m	=	three	„	„	„ one-and-a-half months' rest.

The former symbols A.B., A.B.C. etc., indicating the number of sections into which an area is subdivided for periodic tapping, should be omitted. They can be deduced from the periods of tapping and rest. Thus, on the old Malayan notation, the above examples would represent A.B., A.B.C., A.B.C.D., A B.C.D.E and A.B.C. systems respectively. The reasons for abandoning these symbols are that they have been applied differently in Malaya, Ceylon and the N.E.I : they are clumsy, redundant and ambiguous. Even as general terms they are better replaced by the more precise conception of intensity described below.

(6) Relative Intensity of Tapping

To be expressed as the percentage of the intensity on the ½a.d. system (reckoned over an equal tapping period and, in periodic systems, covering a full cycle of tapping and rest).

Examples:

Tapping system	Percentage of area		Percentage of trees tapped per day (= column 3, divided by the "frequency")	Total length of cut per tree (as fraction of circumference)	Mean percentage of total circumference tapped per day (= column 4 x column 5)	Relative intensity (expressed as percentage of ½a.d)
	rest-ing	in tap-ping				
1	2	3	4	5	6	7
½S,a.d.	nil	100	50	½	25.0	100
1/3S,a.d.	nil	100	50	⅓	16.7	67
½V,3d.	nil	100	33	½	16.7	67
½S,a.d.	nil	100	50	¼	12.5	50
1/1S,4d.	nil	100	25	1	25.0	100
½S,a.d,6/3m.	33	67	33	½	16.7	67
2/2V,3d,3/3m	50	50	17	1	16.7	67
½S,d,20/20d.	50	50	50	½	25.0	100

For tabulation with yield records *absolute* intensity is a more valuable index than relative. Absolute intensity can be reckoned as the product of

the length of each cut and the total number of individual incisions (tappings), thus expressing the aggregate length of incision in full circumference units*. In the standard notation, however, *relative* intensity is the better scale against which the severities of different tapping systems can be compared at a glance.

(7) Change-over Systems

To be designated by the insertion of special symbols *in brackets*.

Since these are systems of tapping commonly practised in Ceylon (and sometimes in the Netherlands East Indies), but not hitherto in Malaya, details of change-over symbols have been deferred to the special section on p. 169. Change-over systems are distinguished by a rhythmic alternation or rotation of tapping on successive panels at intervals of from one day to a year, in contrast to ordinary "straight" tapping on which each panel is completely tapped out before the cut is turned over to the next. Those not interested in the change-over notation may skip the final section of this article.

Some Examples of the Full Notation

The symbols explained above should always be used in the same sequence, thus :—

(1) $\frac{1}{2}$V,a.d,100% = a half-V cut tapped alternate-daily.

(2) 1/3S,a.d,67% = a third-spiral cut tapped alternate-daily.

(3) $\frac{1}{2}$S,a.d,12/6m,67% = a half-spiral cut tapped alternate-daily, for twelve months, followed by six months' rest. (One of the common A.B.C. systems on the old notation in Malaya).

(4) 1/3S,d,40/20d,89% = a third-spiral cut tapped daily for forty days, followed by twenty days' rest. (Also an A.B.C. system on the old notation, but with daily instead of a.d. tapping and a shorter cut. Note the difference in intensities of examples (3) and (4), ignored on the old notation).

(5) $\frac{1}{2}$S,3d,12/4m,50% = a half-spiral cut tapped every third day for twelve months, followed by four months' rest. (An A.B.C.D. system on the old Malayan notation).

(6) 2/2S,4d,100% = two half-spiral cuts tapped every fourth day. (The "Double Four" system).

(7) 2/2V,3d,5/5m,67% = two half-V cuts tapped every third day for five months, followed by five months' rest. (One of the "Sunderland" systems).

(8) 2/2V,3d,15/10w,80% = two half-V cuts tapped every third day for fifteen weeks, followed by ten weeks' rest.

* For further details of *absolute intensity*, see p. 150 in the preceding article (Communication 239).

(A rather more intensive modification of the Sunderland system. On the old Malayan notation this could be described as an A.B.C.D.E. system with two out of the five sections always resting).

(9) 1/1S,3d,3/1m,100% = a full-spiral cut tapped every third day for three months, followed by one month's rest.

(10) 1/1V,4d,100% = a full-circumference extended - V cut tapped every fourth day.

(11) ½S,d,1/1m,12/6m,67% = a half-spiral cut tapped daily alternate-monthly for twelve months, followed by six months' rest. (A system sometimes used in Sumatra: showing how a periodic system within a periodic system can be symbolised on the standard notation).

(12) 4/2V,a.d,400% = four half-V cuts tapped alternate-daily. (An example of a system used in slaughter tapping).

Some Amplifications of the Notation

Sufficient examples are quoted above to show that the standard notation can cover all or nearly all the tapping systems in common use. For those who wish to extend it and discriminate between some of the more intricate variations of multiple-cut systems, further refinements can be devised. A simple convention is also proposed to distinguish the " change-over systems " of Ceylon from ordinary systems of continuous tapping.

Multiple-cut Systems

Where it is particularly desired to indicate the position of the cuts in a double-cut or multiple-cut system, the fractions denoting individual cuts can be written in full, using the following conventional signs:

/ (stroke) = cuts in echelon on adjacent panels,
+ (plus) =   „   on opposite sides of the tree,
and – (minus) =   „   superimposed one above the other on the same panel.

Examples:

¼/¼S,a.d,100% = *two quarter-spiral cuts in echelon tapped alternate· daily (This could be simplified to 2/4S,a.d.),*

¼+¼S,a.d,100% = *two quarter-spiral cuts on opposite panels tapped alternate-daily. (Also = 2/4S,a.d.),*

½—½V,a.d,200% = *two half-V superimposed cuts tapped alternate-daily (= 2/2V,a.d. — a form of slaughter tapping)*

and ½—½+½—½V,a.d,400% = *four half-V cuts (two superimposed on each of the two opposite panels), tapped alternate-daily (=4/2V,a.d. — a more drastic form of slaughter tapping).*

Change-Over Systems

To be indicated by the insertion of special symbols placed *in brackets* immediately after the notation of frequency; these special symbols to denote the number of alternating panels per cut and the length of the period tapped on each panel (at the stated frequency), in the form shown below:

(2 × 6m) = change-over system with two panels tapped alternatively, each for a six-monthly period at a time.

(3 × 3m) = change-over system with three panels tapped in rotation, each for a three-monthly period at a time.

Examples:

(1) ½S,a.d,(2x6m),100% = *change-over system: continuous alternate-daily tapping on a half-spiral cut on the trees, but with tapping periods of six months on each of two alternating panels.*

(2) ½S,a.d,(2x2d),100% = *as (1) above, but with tapping periods of only two days (at the stated frequency) on each of the two alternating panels—that is, with alternate tappings on alternate panels.*

(3) 1/3S,a.d,(3x6m),67% = *change-over system: continuous alternate-daily tapping on a third-spiral cut on the trees, but with three panels tapped in rotation, each for a six-monthly period at a time.*

(4) ½S,a d,(2x2d),6/3m,67% = *periodic change-over system: alternate-daily periodic tapping on a half-spiral cut on the trees, with periods of six months' tapping and three months' rest and with alternate tappings on alternate panels, as in (2) above.*

(5) ½S,a d,(2x6m),6/3m,67% = *as (4) above on the trees, but with tapping periods of six months on each of the two alternating panels.*

(6) ½S,d,(2x2w),2/2w,100% = *daily periodic tapping on a half-spiral cut on the trees, with fortnightly periods of tapping and rest, and with alternate tapping periods on alternate panels.*

(7) 2/2S,a.d,(2x2d),200% = *double-cut change-over system: continuous alternate-daily tapping on two half-spiral cuts on the trees, but with alternate tappings on two pairs of alternating cuts—that is a system with four cuts on the trees of which only two are tapped at a time, such as is sometimes used in slaughter tapping.*

Note that in each of the above examples the main part of the formula, outside the brackets, is unaffected by the change-over symbols within The numerator of the initial fraction still denotes the number of cuts tapped on each tree at each tapping, not necessarily the total number of "active" cuts on each tree during any given period. The total number of cuts on the change-over system is indicated by the product of the first number inside the bracket and the numerator of the initial fraction in the formula. Thus in examples (1), (2), (4), (5) and (6) there are two cuts, and in example (3) three cuts, of which only one is tapped at a time, while in example (7) there are four cuts which are tapped in pairs at a time.

Note also that the period given within the bracket is the length of the period *tapped* on each panel *at the stated frequency* and in periodic systems does not necessarily coincide with the interval between changes of panel. Reference to example (6) will make this clear; the change of panel takes place every four weeks, of which two constitute a resting period—hence the system is expressed by (2x2w), not by (2x4w). But compare example (4) which is written (2x2d), not (2xld), since with alternate-daily frequency a two-day period denotes a single tapping.

Kuala Lumpur

8th September, 1939