ROW-CODED*** KNOTS FOLLOWING A THK SHADOW

(shadow = cordage route and no nature of crossing given)

said by Schaake & Turner « regular knot s»

*** I strongly object to this myopic nomenclature.
It is attached to Schaake horizontal mandrel reference but will become a 'column-coding" for a vertical (frequent and mine in particular) cylinder frame of reference.

It has **never** seem to me a good idea to use frame of reference dependent nomenclature.
This is building a huge entry door for misunderstanding.

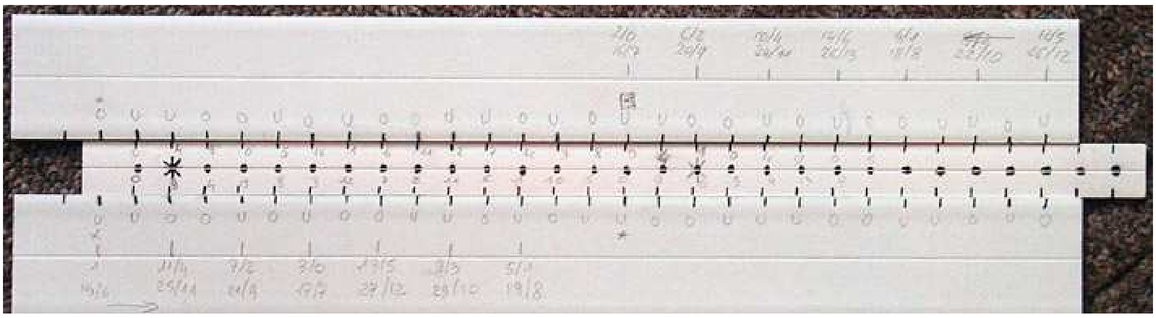
Inter-Bight coded is much better as it goes for row-coded (mandrel) and column-coded (cylinder)
Parallel-Bight coded is much better as it goes for column-coded (mandrel and row-coded (cylinder)

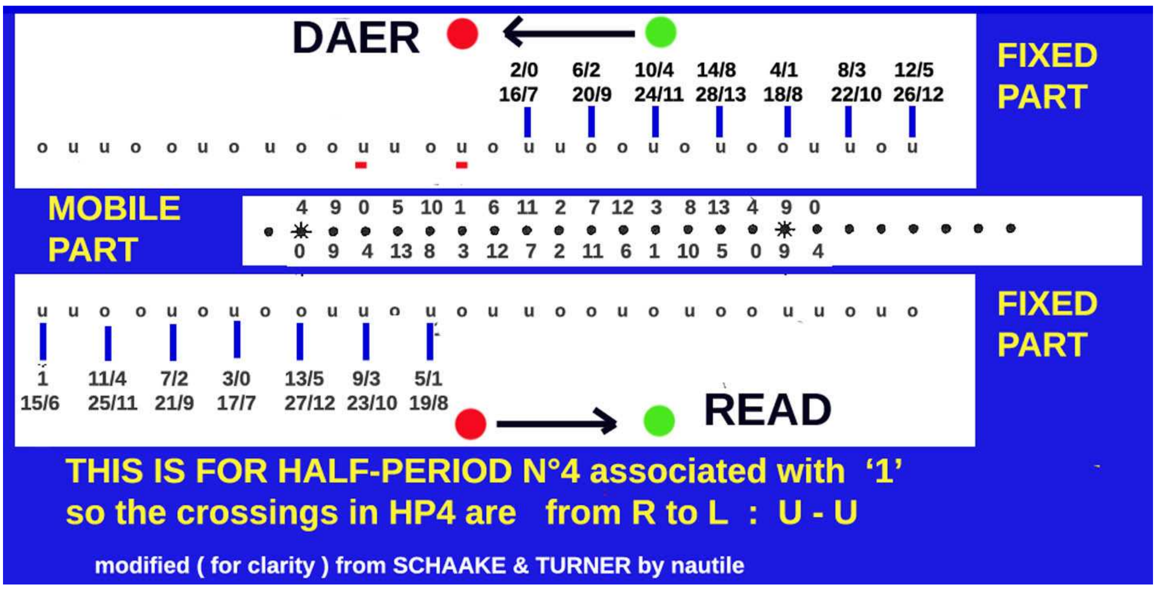
Better look at my pages on httt://charles.hamel.free.fr/knots-and-cordages for explanation on THK or NOT THK and SHADOW or cordage route and many other notions such as frame of reference.

CAVEAT : the **HP-RPL** code, the making of the PVC slide-rule are mine alone but the **BRILLIANT IDEA OF THE SLIDE-RULE IS SCHAAKE & TURNER ALONE.**

User-Tip : better be used to the SCHK program that do the ROW-AND-COLUMN coded and COLUMN-CODED or even HALL's book and the Algorithm before tackling this one.
This present one is some steps above SCHK and several stairs cases above this present program will be the one tackling so called PINEAPPLE or better said STANDARD HERRRINGBONE-PINEAPPLE (nested bight knot of which they are but only one type !)

My personal slide rule :
From this idea (I modified Schaake's illustration to gain clarity for the not abstract minded.) :





The UPPER FIXED part is to be “**DAER**” or READ FROM **RIGHT** TO **LEFT** (RIGHT BIGHT RIM on mandrel or BOTTOM RIM on cylinder when starting at those rims)

The LOWER FIXED part is to be **READ** AS USUAL FOR US FROM **LEFT** TO **RIGHT**.

The numbers on the mobile part are the bight algorithms. (DO NOT enter more than 26 BIGHT , more than 25 LEAD in the program)
On this mobile part are several marks : round points and TWO stars

Between the two stars there are (limits included) L-1 marks.
So the right side star is at **L**th position
The round mark on the left of the left side star is a BIGHT RIM (left / bottom) and the round mark immediately adjacent to the right of the right side star is the other BIGHT RIM (right / top).

The sliding part is used in this way : Use HALF-PERIOD NUMBER TO “ALIGN” on half-period being studied and BIGHT NUMBER TO READ THE CROSSINGS RETAINED for it.
The sequence of code for the crossing to be entered is THE CROSSINGS AS SEEN IN THE FINISHED KNOT FOLLOWING THE VECTOR (arrow : so from the start bight rim to the arrival on the other bight rim at the end of the first half-period) Spart-Wend along the FIRST HALF-PERIOD.

For **ODD** half-periods : use the lower fixed part, the left side star is then aligned with the vertical blue line corresponding to the half-period studied (0 1 2 3 …..2B) and bight-number ex (1 / or 1/-1____27/12___14/6…)
READING is from **LEFT** TO **RIGHT**
Using the bight-number (ex : the 12 in **27/12**) read the nature of crossings and RETAIN **ONLY** THE ONE corresponding to bight number as read under the marks **BEING LESS OR EQUAL** to the ‘12’ and stop at the next star.
So 27th half period gives : **O U O U O U U O O U O U O O U** or O-U-O-U-O-U2-O2- U-O-U-O2-U

For the **EVEN** half-periods : use the upper fixed part, the right side star is aligned with the vertical blue line corresponding to the half-period considered.
GNIDAER (reading) is from **RIGHT** TO **LEFT** there
Using the Bight number you note the crossing corresponding to the bight number written just above the marks on the mobile part so for 12/5 (the 12th half-period with bight-number 5) you note, going **TO** the **LEFT** till the left side star, all the crossings that correspond to bight number **LESS OR EQUAL** to 5 so 5, 4 , 3 , 2 , 1 , 0
That is **O O O O U O O** or O4-U-02

In fact the REPEAT is the number of “move” for alignment of the mobile part for each series of EVEN and ODD half-periods.

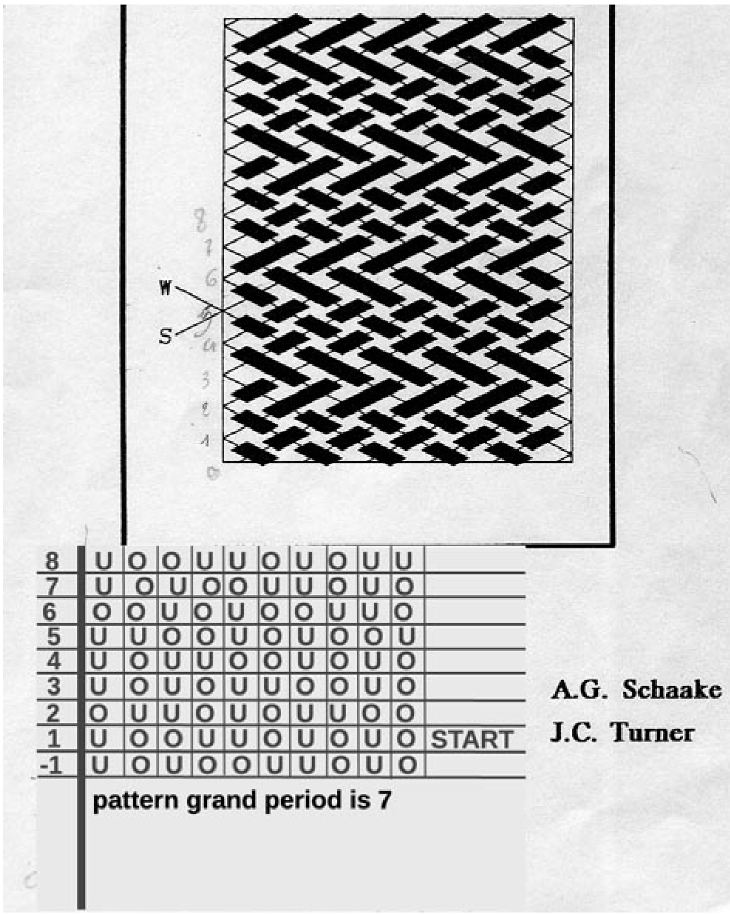
There is :
--- one only round mark on the left of the left side star
--- on the right side of the right side star there are Twice the Repeat less one (2 * REP – 1) round dots.
You mark the right side star with pencil.
All the other round and star marks are with permanent ink.

Above / Under this line of marks and starting at a star mark you have to inscribe :
UNDER and from **LEFT** TO **RIGHT** beginning at the **left side star** is the cyclic Bight sequence
ABOVE and from **RIGHT** TO **LEFT** beginning at the **right side star** is the complementary cyclic Bight sequence
They are built in exactly the same manner as in the Column-coded knot.

The 7 (NUMBER OF REPEAT in fact) **BLUE VERTICAL LINES** on each fixed part correspond to the REPEAT of 7 (change with each knot)

The (Bight / Repeat) row of number x/y are == (half-cycle number / Bight number)
The REPEAT is simply read from the diagram of the knot, it is not computed by the program:
Staring at the left side star (second mark from the beginning of the line of marks) and under **EVERY TWO STEPS** **from the very first left mark** progressing from **LEFT** TO **RIGHT** a vertical line is drawn
Staring at the right side star and under every two step from this star progressing **LEFT** TO **RIGHT** a vertical line is drawn

Because the best program I know (http://data.oreilly.com/jallwine/knots/) can manage 'only' Column-coded and Row-AND-Column code knots I decided to write a program in HP-RPL to be run on HP48 calculator on one of the emulator for the afore said.(EMU48 for Windows and E48 for Mac).



The easy part with Columns (at least, can be Row AND Columns) coded knot is that the pattern of crossings along the cordage route being a constant it is simple to work how to read it depending on the even of odd half-period considered.
BUT in row-coded the pattern is changing because it obey a Grand Pattern Period which is the REPEAT.
You may not use / and \ and have to use (as I did with the Column-coded on my program) O-U (symbolised by digit 1 and 0)

It has been at least 6 years since I last coded in HP-RPL but I wrote so many statistical applications, and epidemiology simulations with my much loved HP48G and later HP48GX for years that it came back rather astonishingly quickly.
Code is ugly as I wrote it (not to be recommended mind you) mostly directly on the keyboard while deciphering Schaake & Turner idea and had only a bit of tweaking to do but a rather extensive period of testing to be sure.

DO NOT ATTEMPT TO RUN ANY OTHER PROGRAM THAT THE FOLLOWING TWO
before you are well acquainted with the HP48G(X) or its emulator (I will not answer any question that have its answer in one of HP USER MANUAL that I have given for download. You may run without risking damages run NET and NET2 that are cleaning all the used variables. It is best to clean before closing down.

IN THE SCHR (for Schaake-Row) FOLDER :

PGR will give you **all that is necessary to « write » your slide rule.**

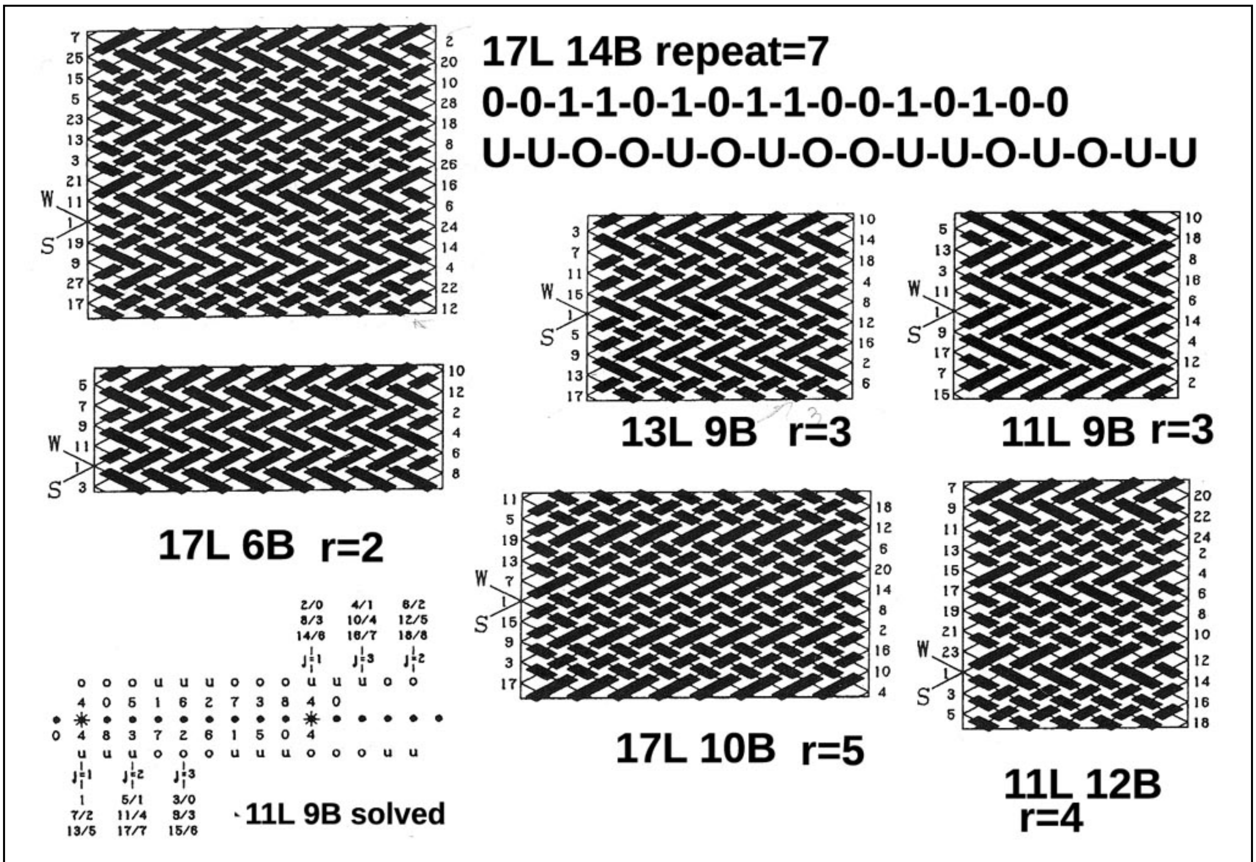
You will still have to make a slide-rule with PVC strips (cheap –relatively) or with paper if you like.
The black marks are made with permanent marker and the rest is made with pencil so as to be erased as it change with each knot
Here illustrated is the case of the 14L 10 B with a PATTERN GRAND PERIOD OF 7

Program puts the results on the STACK and in the order shown on the slide rule

PGR2 will give you **the coding of crossings for each half-period.**

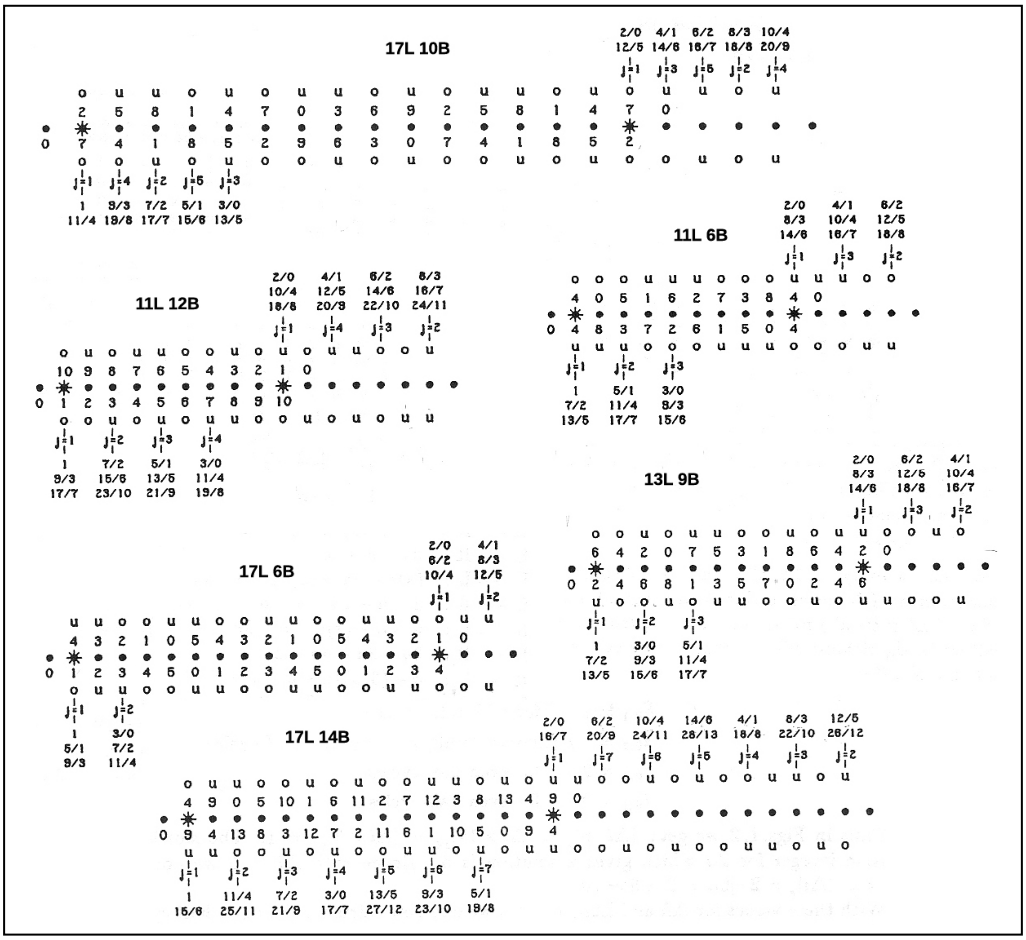
In case of doubt consult the User Tips for the SCHK program and the HP user' manualS that come in three flavours (simple – normal-detailed : 3 types)
Results are put on the STACK

Now some 6 examples by SCHAAKE & TURNER for you to work out with this program.(which has been verifier to give exactly the same results as Schaake & Turner si it is "guaranteed" at least for those knots ! ;-)



(From SCHAAKE & TURNER)

The results (once again pillage from Schaake & Turner ! so as to assure user of a valid way to control this program) are :



17L 10B

1. L $\longrightarrow$ R : free run .
2. $(i=0)$ R $\longrightarrow$ L : $(s)u$.
3. $(i=0)$ L $\longrightarrow$ R : o .
4. $(i=1)$ R $\longrightarrow$ L : $(s,1,s)3u$.
5. $(i=1)$ L $\longrightarrow$ R : $o-u-o$.
6. $(i=2)$ R $\longrightarrow$ L : $o-(s)u-2o-(s)u$.
7. $(i=2)$ L $\longrightarrow$ R : $2u-o-2u$.
8. $(i=3)$ R $\longrightarrow$ L : $u-(1,s)2o-2u-o$.
9. $(i=3)$ L $\longrightarrow$ R : $2o-u-3o$.
10. $(i=4)$ R $\longrightarrow$ L : $(s)o-3u-(1,s)2o-2u$.
11. $(i=4)$ L $\longrightarrow$ R : $o-u-2o-u-o-u-o$.
12. $(i=5)$ R $\longrightarrow$ L : $u-o-(s)u-o-3u-o-(s)u-o$.
13. $(i=5)$ L $\longrightarrow$ R : $3o-2u-4o-u$.
14. $(i=6)$ R $\longrightarrow$ L : $o-(3,s)4u-o-u-o-3u$.
15. $(i=6)$ L $\longrightarrow$ R : $u-o-u-3o-2u-o-u-o$.
16. $(i=7)$ R $\longrightarrow$ L : $(s,1)2u-2o-u-o-u-o-(s,1)2u-2o-u$.
17. $(i=7)$ L $\longrightarrow$ R : $u-o-u-o-2u-2o-u-o-u-o-u$.
18. $(i=8)$ R $\longrightarrow$ L : $o-2u-(s)o-u-o-u-o-u-o-2u-(s)o-u-o$.
19. $(i=8)$ L $\longrightarrow$ R : $o-u-o-u-3o-u-2o-u-o-u-2o$.
20. $(i=9)$ R $\longrightarrow$ L : $u-o-2u-o-u-(s)o-2u-o-u-o-2u-o-u$.

17L 6B

1.		$\mathrm{L} \longrightarrow \mathrm{R}$:	free run .
2.	$(i=0)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(s)o-(s)u$.
3.	$(i=0)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$o-u$.
4.	$(i=1)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(s,1)2u-(s,1)2o-(s)u$.
5.	$(i=1)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$o-2u-2o$.
6.	$(i=2)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(1,s,1)3o-(1,s,1)3u-(1,s)2o$.
7.	$(i=2)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$u-3o-3u-o$.
8.	$(i=3)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$2u-(s)o-u-2o-(s)u-o-2u-(s)o$.
9.	$(i=3)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$o-4u-4o-2u$.
10.	$(i=4)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$2o-(1,s)2u-o-2u-(1,s)2o-u-2o-(1,s)2u$.
11.	$(i=4)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$u-2o-u-2o-2u-o-2u-2o-u$.
12.	$(i=5)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$2u-2o-(s,1)2u-2o-2u-(s,1)2o-2u-2o$.

11L 12B

1.		$\mathrm{L} \longrightarrow \mathrm{R}$:	free run .
2.	$(i=0)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	free run .
3.	$(i=0)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	free run .
4.	$(i=1)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(s)u$.
5.	$(i=1)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	u .
6.	$(i=2)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$o-(s)u$.
7.	$(i=2)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$u-o$.
8.	$(i=3)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$u-(1,s)2o$.
9.	$(i=3)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$2o-u$.
10.	$(i=4)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$u-o-u-(s)o$.
11.	$(i=4)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$2u-2o$.
12.	$(i=5)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$u-o-u-o-(s)u$.
13.	$(i=5)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$u-o-2u-o$.
14.	$(i=6)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$o-2u-o-u-(s)o$.
15.	$(i=6)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$u-o-u-o-2u$.
16.	$(i=7)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$u-2o-2u-o-(s)u$.
17.	$(i=7)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$2o-u-o-u-o-u$.
18.	$(i=8)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$u-o-u-2o-2u-(s)o$.
19.	$(i=8)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$2u-2o-u-o-u-o$.
20.	$(i=9)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$u-o-u-o-u-2o-(1,s)2u$.
21.	$(i=9)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$u-o-2u-2o-u-o-u$.
22.	$(i=10)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$o-2u-o-u-o-u-2o-(s)u$.
23.	$(i=10)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$u-o-u-o-2u-2o-u-o$.
24.	$(i=11)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$u-2o-2u-o-u-o-u-o$.

11L 9B

1.		$\mathrm{L} \longrightarrow \mathrm{R}$:	free run .
2.	$(i=0)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(s)o$.
3.	$(i=0)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	u .
4.	$(i=1)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(s,1)2u$.
5.	$(i=1)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$u-o$.
6.	$(i=2)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(s)u-o-u$.
7.	$(i=2)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$o-2u$.
8.	$(i=3)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(s)o-2u-o$.
9.	$(i=3)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$2u-o-u$.
10.	$(i=4)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(s,1)2u-o-2u-(s)o$.
11.	$(i=4)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$u-o-2u-2o$.
12.	$(i=5)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$o-2u-(1,s)2o-2u$.
13.	$(i=5)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$2u-o-3u-o$.
14.	$(i=6)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$u-o-(1,s,1)3u-3o$.
15.	$(i=6)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$o-2u-3o-2u$.
16.	$(i=7)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$2u-(s,2)3o-3u-o$.
17.	$(i=7)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$u-2o-3u-3o$.
18.	$(i=8)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(1,s)2o-3u-3o-2u$.

17L 14B

1.		$\mathrm{L} \longrightarrow \mathrm{R}$:	free run .
2.	$(i=0)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(s)u$.
3.	$(i=0)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	o .
4.	$(i=1)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(s,1)2u$.
5.	$(i=1)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$2o$.
6.	$(i=2)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(s,1)2u-o$.
7.	$(i=2)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$o-u-o$.
8.	$(i=3)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(s)u-o-u-o$.
9.	$(i=3)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$u-o-2u$.
10.	$(i=4)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(s)o-u-(3,s)4o$.
11.	$(i=4)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$o-4u-o$.
12.	$(i=5)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$4o-(s)u-2o$.
13.	$(i=5)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$5u-o-u$.
14.	$(i=6)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(3,s)4o-u-3o$.
15.	$(i=6)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$2u-o-3u-o-u$.
16.	$(i=7)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$o-u-(s,2)3o-u-o-u-o$.
17.	$(i=7)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$o-2u-o-u-o-u-2o$.
18.	$(i=8)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(1,s)2o-u-o-u-o-3u-o$.
19.	$(i=8)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$o-u-o-u-3o-u-2o$.
20.	$(i=9)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$(s)o-u-o-3u-o-2u-(1,s)2o-u$.
21.	$(i=9)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$u-3o-u-2o-u-2o-u-o$.
22.	$(i=10)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$2u-o-2u-o-2u-(s)o-u-o-2u$.
23.	$(i=10)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$u-2o-u-3o-u-2o-2u-o$.
24.	$(i=11)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$u-o-3u-o-(s,1)2u-2o-u-o-u-o$.
25.	$(i=11)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$3o-u-o-2u-o-u-o-2u-2o$.
26.	$(i=12)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$u-o-u-(1,s)2o-u-o-u-2o-2u-o-u-o$.
27.	$(i=12)$	$\mathrm{L} \longrightarrow \mathrm{R}$:	$o-u-o-u-o-2u-2o-u-o-u-2o-u$.
28.	$(i=13)$	$\mathrm{R} \longrightarrow \mathrm{L}$:	$u-o-(s)u-2o-2u-o-u-o-2u-2o-u-o$.