

Cinquante signes

Kneil's Knumberphile Knight



mai 04, 2019

Hello Seqfans,

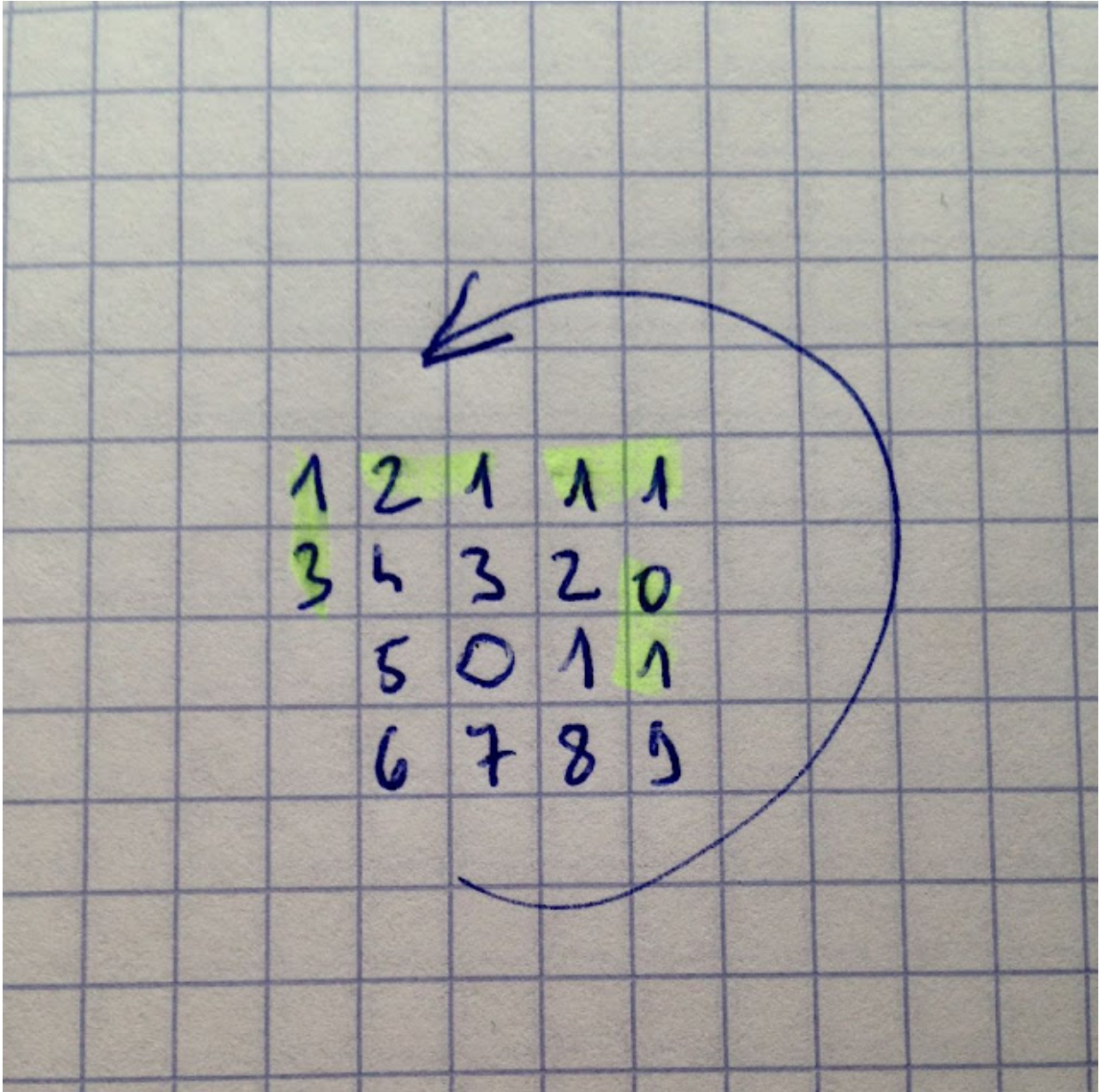
Remember this wonderful [Numberphile video](#) by Neil ("The trapped knight"):

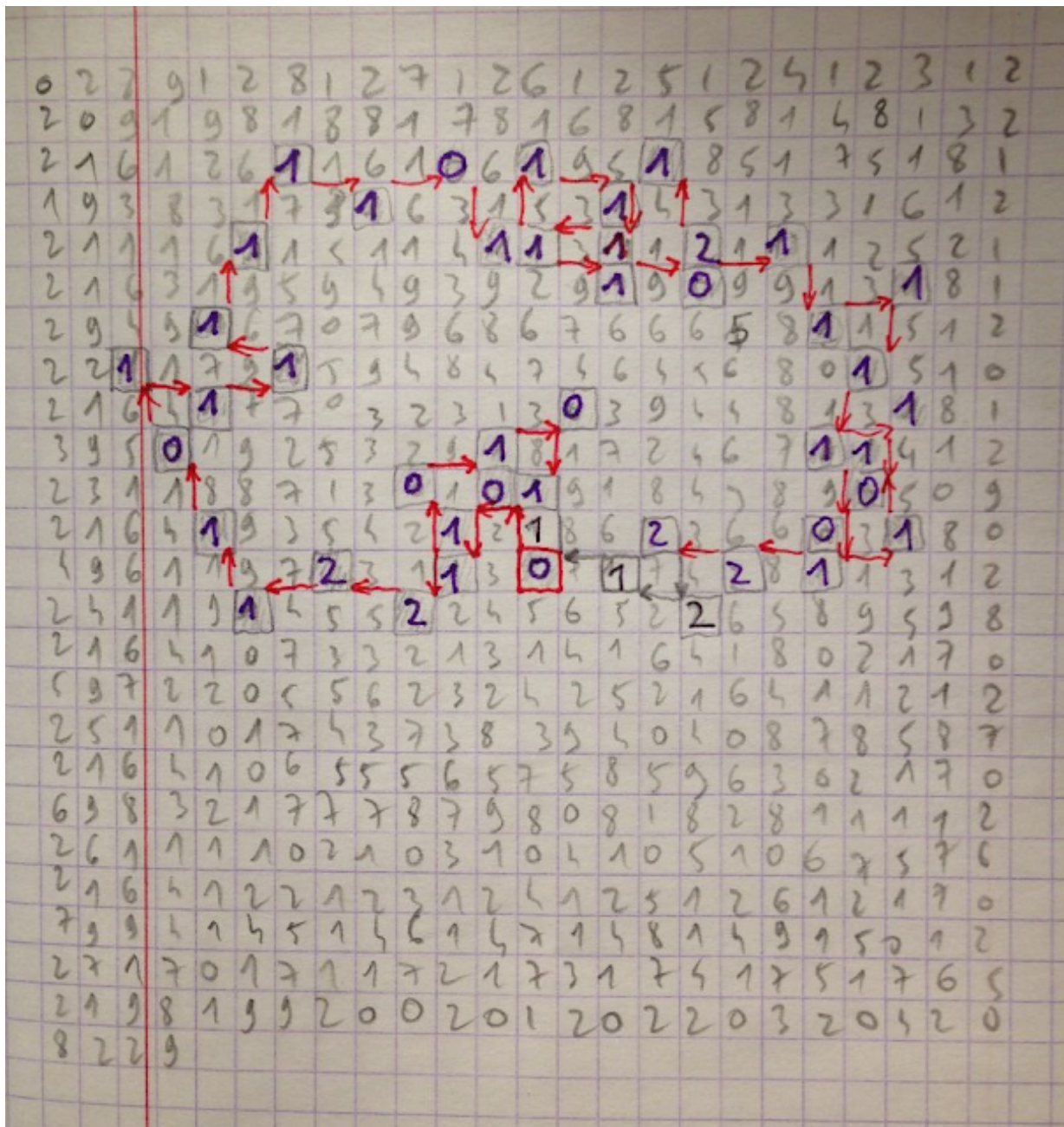


Neil's spiral to number the infinite grid starts like this:



My spiral starts with zero (no importance) and extends itself counterclockwise (like Neil's) but with only one digit per cell (important):





In this variant, the Knight must always jump on the smallest available digit (and, like Neil's Knight, not on a cell previously visited).

When the Knight has a choice, always jump to the cell closest to the starting 0 (zero).

And if there is still a choice (between two cells), jump to the rightmost one (from the point of view of the Knight).

Could someone help me in computing/drawing my Knight's journey?

But most important: will my Knight beat Neil's one – and get trapped later?

;-)

Best,
É.

P.-S.

How many 0s,1s, 2s... 9s have been visited before the trap?

Will the Knight ever jump on a 9?

Update, May 6, 00:20 (Brussels time)

Got this answer by **Luca Petrone** on *SeqFan* -- many thanks, **Luca!**

Dear Eric,

I simulated your variant of knight journey. The knight gets trapped after 1378 moves.

And this are the number of visit to each number :

0	288
1	457
2	227
3	171
4	107
5	59
6	36
7	17
8	8
9	8

Hope someone can check my values!

Regards,

Luca Petrone

Update, May 8, 22:00 (Brussels time)

Well, **Luca** checked again his values – and sent me this (with 2 beautiful illustrations): – many thanks again, **Luca!**

Pardon, Éric

but there was a bug in my code, and actually your knight was even poorer, getting trapped after 581 moves.

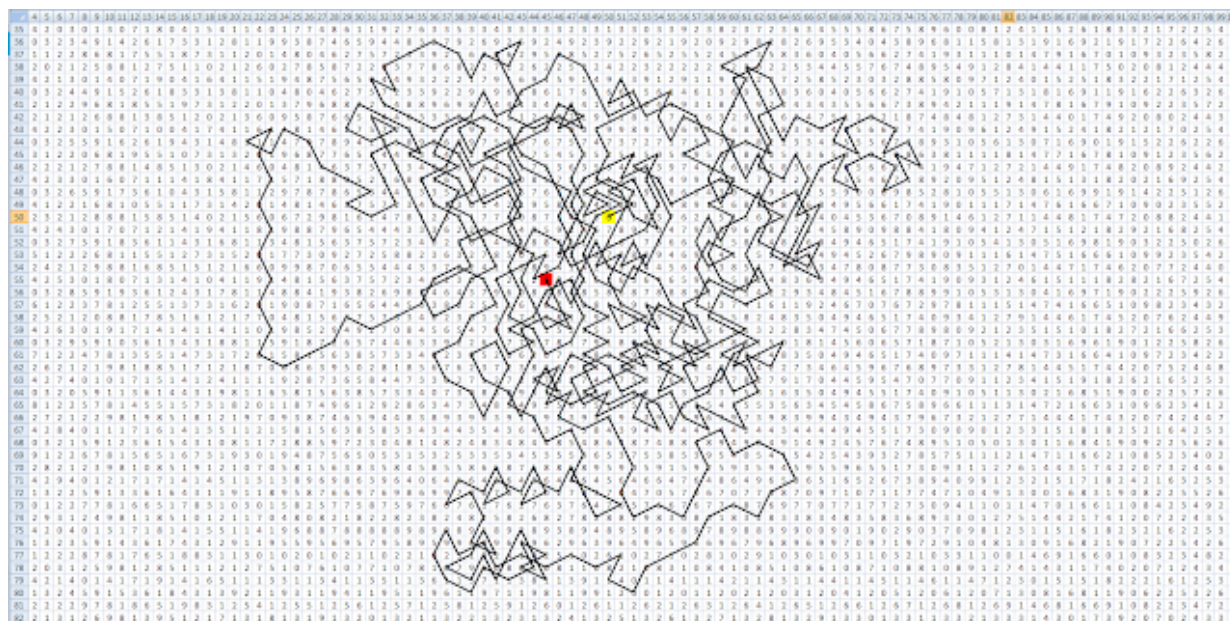
Anyhow, if you choose leftermost instead of rightermost, you have a better solution, getting trapped after 1217 moves.

Neil is always the best!

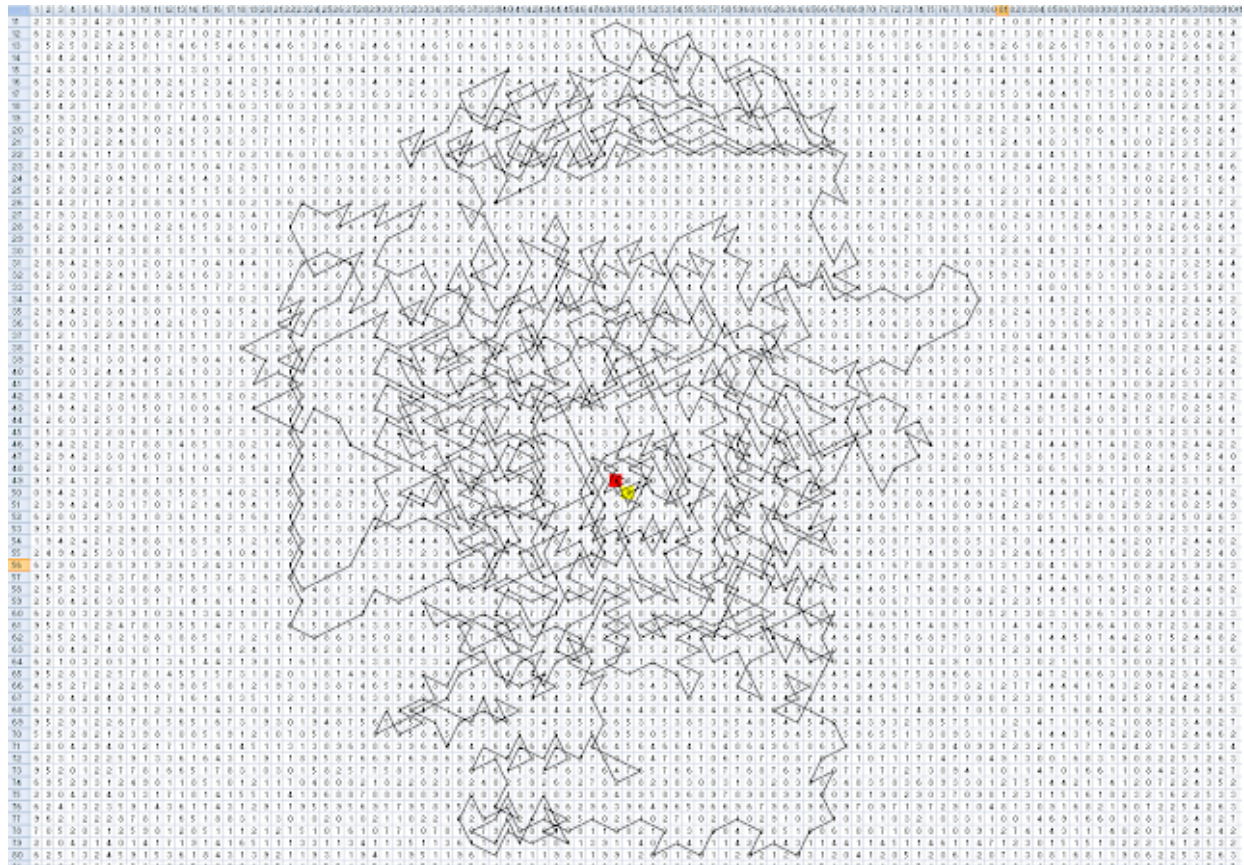
If you want, I can send you picture of the path (*yes, please!-*)

Goodbye

Luca



(rightermost = 581 jumps)



(leftmost = 1217 jumps)

- #0 = 212
- #1 = 388
- #2 = 256
- #3 = 182
- #4 = 90
- #5 = 45
- #6 = 27
- #7 = 9
- #8 = 6
- #9 = 2

Update, October 22nd, 2019

The above sequence is now <https://oeis.org/A326413>.

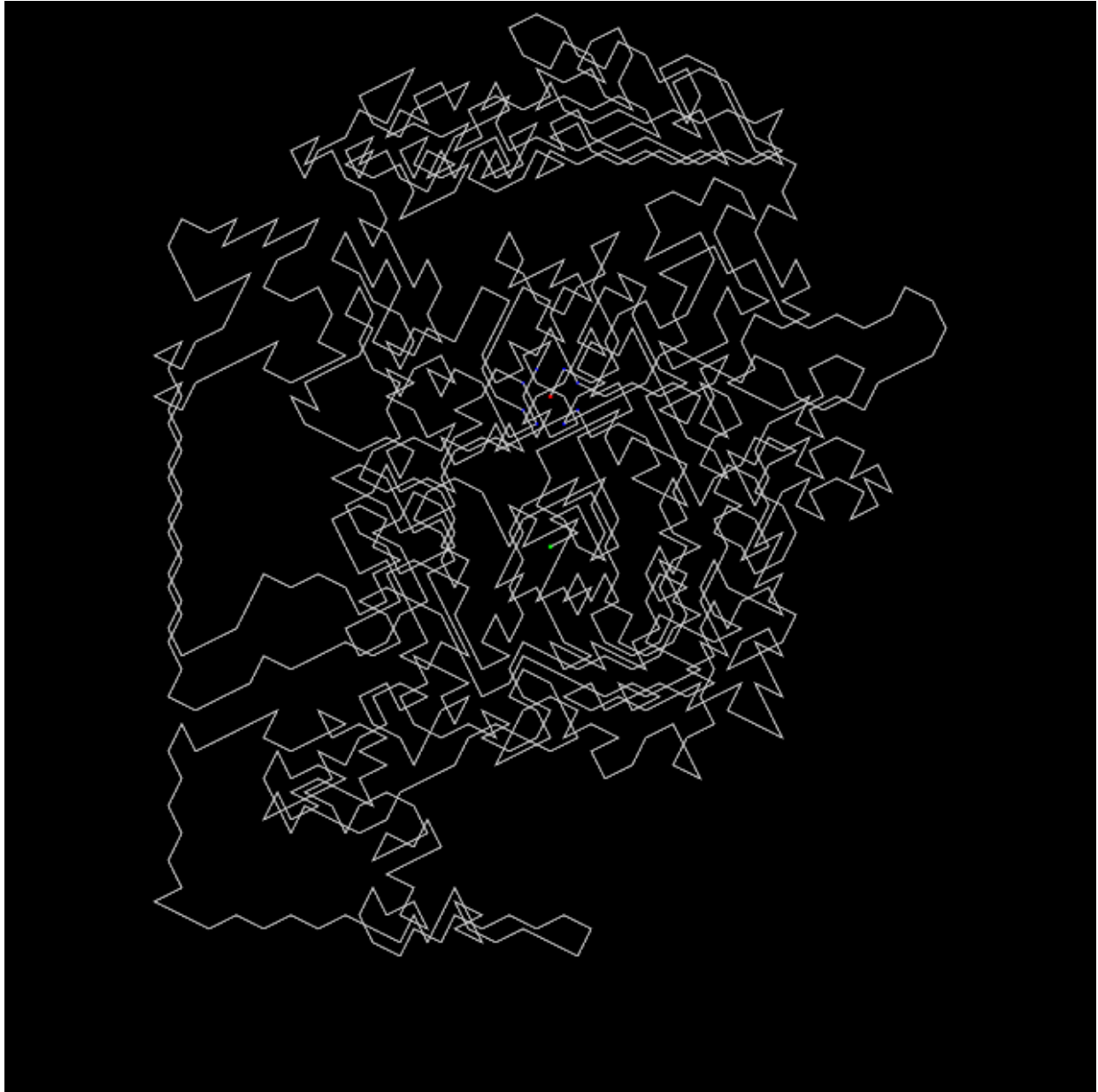
We have also this sequence (OEIS, here), with a little difference in selecting a path when

two squares are "equivalent". Here is the comment by **Scott R. Shannon**:

> This sequence uses the same board numbering as [A326413](#), and like that sequence, if the next step encounters two or more squares with the same square number, it then chooses the square which is the closest to the original 0-squared origin. But if two or more squares are found which also have the same distance to the origin, then the square which was first drawn in the spiral numbering is chosen i.e. the smallest standard spiral numbered square as per [A316667](#).

The sequence is finite. After 1069 steps a square with the number 9 (standard spiral number = 473) is visited, after which all neighboring squares have been visited.

Scott's nice "black" image is commented below (see the difference with **Luca's** picture, above? The "nose" is the same ;-)



> Image showing the 1069 steps of the knight's path. The green dot is the first square with number 0 and the red dot the last 1070th square with number 9. The later is surrounded by blue dots to show the eight occupied squares (click to enlarge).

Scott has added two more sequences to the OEIS, on the same topic, with beautiful pictures: <https://oeis.org/A326922> and <https://oeis.org/A326931>

Maximilian Hasler has published his own (clever) variation [here](#).

Bravo to all!



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A square for three (chess)

juin 22, 2024



(English translation after the French text) Voici cinq problèmes d'échecs disjoints : a) combien faut-il de coups au minimum pour que trois pions soient capturés sur la même case ? b) trois tours c) trois c ...

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Le tripalin se présente

avril 11, 2024



Un tripalin est constitué de trois images. Chaque image illustre un substantif. Accolés, ces trois substantifs forment une chaîne palindromique. Laquelle nous vous invitons à trouver. Exer ...

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Some strings au cinéma Galeries

juillet 19, 2024

Lettre ouverte au cinéma Galeries Bonsoir à tous, Je viens de voir pour la seconde fois chez vous le beau film de Léos Carax (la première fois c'était le 26 juin en présence du réalisateur, au BRIFF). Apparus à l'écran aujourd'hui, avant la projection propre ...

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