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1 October 1947

SUPPLEMENT TO "MODIFIED CYCLIC POLYMETRIC MOTION - 28 July 1947"

1. Variation.

One additional variation which may be introduced is illustrated in the following rules of motion.

a. CWL steps when CWL-1 has a newly arrived notch

($i = 1, \dots, m; i-1 = m$).

b. When no wheel has a newly arrived notch, all wheels step one

c. When all wheels have newly arrived notches, all wheels stand

for one encipherment.

If we let T = number of points in the course of the cycle for which Rule c. applies, and S = number of points in the course of the cycle for which Rule b. applies then the equations of motion become:

$$K r_i = N_{i-1} r_{i-1} - T + S$$

We notice that we have a set of equations similar to those of Paragraph 2 with $S - T$ replacing the S of those equations. The solution for $S - T$ proceeds just as it did in that paragraph. Clearly $L \gg S - T$ so that as before we have a guaranteed minimum. We may now introduce all sorts of variations of Rule c. just as we did for Rule b.

2. Generalization.

It is apparent from the role of S , R , and T in the equations that these same modifications can be introduced in the other "sanctified motions" such as delayed motion, generalized Enigma motion with non-consecutive notches, etc.

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Deputy Associate Director for Policy and Records

On 20/504/14 by MB

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