It has definitely been decided to go for two bank bombes for the four wheel problems.

This will mean that 18 enigmas will be available on each bank, and it will be possible to make use of subsidiary chains to increase the strength of menus.

[four lines crossed out]

It seems that there is now a distinction between four types of bombe.

(1) High Speed Bombe.
Produced entirely by Keene and recording stops.
(2) Super High Speed Bombe.
Same as above , but with Wynn Williams attachment.
(3) High Speed Mammoth.
Produced entirely by Keene and recording only stories, i.e. stops which involve no contradictions.
(4) Super High Speed Mammoth.
Same as above but with Wynn Williams attachment.

In conjunction with these an analyser is being developed by Flowers. The first analyser will just test stops for contradictions, and information will have to be fed in by hand.

Later on a card feed is to be fitted. It is also clear that eventually the analysis will have to
(1) apply the Clarke selection test to stories.
(2) apply a test to letter pairings of the crib which do not occur on the menu, allowing for turn over.
In addition it may be necessary to use a machine of the Quagger type to run tapes on fairly short stretches of a message.

Arrangements for (1) are already in hand, and there should be no difficulty about (2) if we do not try to allow for {an option ?}

It seems probable that the first HSB may have to work with a display panel, and we shall have to restrict ourselves to menus which give a sufficiently small number of stops.

Gang punch recordingwill increase the allowable number of stops, but may not be much use until the analyser can take cards. If HSM can be developed, the recording problem will be much easier, as only stories will have to be dealt with.

SHSB will obviously not be able to take such strong menus as HSB, because of the recording difficulty, and this may be a serious disadvantage. SHSB would probably need a vast number of valves, and may not be a possibility.

With SHSB it would be [useful ?] to run cribs somewhat on the Hoppity principle, and by running 13 menus one after another one seems w.w. {worth while ?}

Double Input

With 18 enigmas it will often be possible to use a subsidiary chain long enough to make double input worth while. It will be an advantage on HSB to have a second set of running relays associated with each bank, so that we can insist on the occurance of a straight on a subsidiary chain. It would also be an advantage to record the significant letter on the subsidiary chain, so that the analyser may make use of it.

Unfortunately there will probably be an appreciable chance of getting two straights on the subsidiary chain.

It will also ba an advantage to have a second input for each bank of HSM, but it will probably not be possible to attempt instantaneous testing on the second chain because of the danger of getting two straights. In fact the Mammoth principle can only be applied to the first chain, and only contradictions among the stecker of letters of the first chain will be spotted by HSM.

On the other hand, although simultaneous instantanious testing of straights on both chains will not be advisable, the second input will prevent the machine from recording a story which is not accompanied by a straight on the second chain.

Special use of second input

It may sometimes happen that menus with four or five closures can be produced, which do not need a diagonal board. These could be run on a small number of enigmas with one of the double input sets of relays,leaving enough enigmas to run two banks with the two diagonal boards.

Recording of HSM

It may be difficult to gang punch the complete set of staecker found by HSM. If so the analyser will still be needed to print out the stecker to find the turn over and to apply the clarke test.

When subsidiary chain are included in a menu for HSM, only the stecker of letters of the main chain will be investigated by the instantaneous testing device, so the stecker of letters on the subsidiary chains could not be recorded unless they occur on the main chain. Thus the analyser will certainly be needed to get full value out of subsidiary chains.

It would however be helpful, if HSM could record the significant letters on a subsidiary chain.

Note on HSM

WE shall have to make a 25/1 assumption on the main chain, and this will be all right. The Mammoth principle enables a straight to be tested instantaniously provided it is not on the current entry line. For straights on the current entry line the HSM must record and the analyser must test. Thus HSM will record

a) All stories

b) All straights on current entry lines (about 1/26 total {computed ?} number of straights).

Note on double input

In many cases there may be two simultaneous straights on the second input, and it may be impossible to record both. It would not be very serious if neither was recorded. There would then be three cases.

Suppose there is a straight on the main chain.

Then

1) If no straight on second chain nothing happens
2) If one straight on second chain, significant letters of both chains are recorded.
3) If two (or more) straights on second chain, the significant letter on first chain only is recorded.

Application to 3 wheel problems

It is clearlydesirable that the high speed machines should be applicable to 3 wheel problems.

We cannot make use of super fast wheels, because they are permanently wired to 4th drum. Could it be arranged that Uncle Walter boards could replace the connections to super fast wheels and that the bombe could be used as a 3 wheel machine ?

Wheel changing.

With 8 machines available we may be able to arrange that the fast wheels are never changed. Could Keene use his new multi-wheel drums in the slow position to save wheel changing ?

Or (   )   (   ) slow stage.