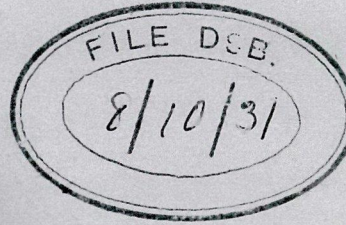


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Folio 16



8/10/31

FROM: QE2., D.S.B.

DATE: 8th July, 1959

TO: Head of "M" Division, G.C.H.Q. (Attention M23)

Dear *Mr Bruce*

INFUSE

Trevor Robinson having left last month for Long Range Weapons Establishment, I hope I will be able to continue his correspondence with you on the Colored-Infuse Project, so that you will be well informed on the modifications and troubles on our machine. I must say how grateful we are here for the immense help we have had from you in the last few years, and in particular the recent correspondence from Chester Kingsley on the core store has been of very great value; of this I will say more later.

2. Staff

Our permanent technical staff on Infuse at the moment is:

Engineer	Robin Bailey
Snr. Technical Officer	Douglas Singleton
Technical Officer	Rob Robson

A technician is being also employed in a temporary capacity and we are waiting on the appointment of a further Technical Officer.

Phillip Grouse, a programmer, has and continues to be of immense technical assistance with the many problems on the machine. With this very small technical staff, I think you can appreciate that it is impossible to do all the necessary jobs which we should be doing, both in keeping the machine running and in carrying out the many developmental projects. We have virtually no back up staff or workshop facilities, so almost everything we want we have to make ourselves or have it made by some outside organisation.

3. Core Store

I will not say much about this at the moment as Mr. Ferrin has just arrived back from G.C.H.Q. and we have not discussed the store with him.

A copy of a letter from Peter Swift to Trevor is enclosed, for your information. My only comment at the moment on this letter being that the difference in price between a 6 Bit and a 20 Bit store is remarkably small, and more than likely the 20 Bit would be the better proposition.

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#### 4. Plugboards

This project is held up mainly because of lack of staff to carry out the very large amount of wiring required; however, arrangements are in hand to get the loan of two wiring men from the P.M.G. Dept.

Our trial scheme using three racks of the machine, with the bunched wiring passing out at the back of each chassis through 50-way plugs, then via semi-bunched (partly fanned) wiring to the plugboard, has proved satisfactory. It is intended to go ahead with this scheme, with slight modifications. A further three racks will be wired, this time using no fanning strips along the backs of the racks, but using 50-way p.v.c. sheathed cable. If this proves satisfactory then the machine will be wired this way.

#### 5. Monthly Reports

Enclosed with this letter will be found copies of an Infuse Engineering Report. These it is hoped will come out monthly, and will often only show some of the smaller problems that have occurred (but nevertheless very time consuming) and should give you some idea of some of our current jobs and difficulties.

#### 6. Power Amplifiers

There has been quite some deterioration in our power amplifier waveforms of late, mainly associated with the type 82 transformers.

It has been found that clock pulses in many cases have tended to sag, a fault which in many cases is cured by replacing the tube (although the old one by tube tester standards is quite alright). Sometimes, however, particularly if the transformer is heavily loaded, even a new tube does not cure the trouble, so a new transformer has to be used. This replacement although often curing the trouble does not seem to be the complete answer, as we are beginning to feel that the actual transformer characteristics are altering.

Because of the large number of transformers that would need replacing we have decided as an interim measure to remove part of the transformer load, when the transformer feeds circuits within only one particular chassis. This has been done on the Modular Adders, where there are a very large number of internal distributions; it is hoped that this will cure our frequently recurring troubles with these chassis.

#### 7. Drum Write Chasses

These continue to give trouble, and it is intended to modify our address triggers in a similar way to yours so that they will operate at C6.5 instead of C4 as at present. Our main trouble with this modification will be locating the extra components.



A certain amount of interaction between the coaxial cables from the write power amplifiers, and nearby unterminated cables has been found. When the cables from the drum trolley to the machines were in use then they were terminated with the 1.5K ohms resistor across the write power amplifier output transformer secondary; i.e. cables which were unused were therefore unterminated, and it was found that stray pickup did occur under these conditions. To overcome this trouble the 1.5K resistive loads have been removed from the power amplifier output transformer secondaries, and have been placed across the coaxial cables at their termination at the drum trolley; this has cured the trouble.

8. Drum Synchronising Track

Recently we had occasion to rewrite a new 3328 synchronising track. A note on the method is attached.

9. Drum

We have been having trouble with our drum of late. The reason is rather obscure, and could possibly be due to drum eccentricity or poor bearings.

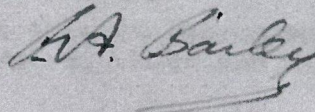
Our spare drum is quite good and we may eventually put it back into service. If it became necessary to have the present drum overhauled, would it be possible for you to arrange for this with Ferrantis?

10. Logical and Schematic Drawings

Many of our original sets of drawings are now worn out and need replacing and in many cases amending.

It would be highly desirable for us to be able to produce print ourselves, and have our own master tracings so that we could incorporate our own amendments. Would it be possible for you to send us transparent copies of our drawings, similar to the ones we have of the Modular Adder? If so, it will save our Draftsman much time.

Yours sincerely,



Distribution:

M23	2	copies
W65	1	"
Suko	1	"
File	1	"
QE	1	"
QE2	1	"