
Dear Albert,

I am sure you will be wondering why on earth I have not written to you, particularly as I mentioned in our telephone conversation that I had hoped to get a letter to you almost immediately.

May I commence by thanking you for your letter of 20th July advising me of the decisions communicated to you from Latin America about the use of oral vaccine, and secondly for the extremely detailed document on the planning for elimination of polio, which I received on the 11th.

Your cable of the 10th was also of value in advising us that Hank's solution used as a diluent under the conditions reported did not appear to have a deleterious effect on vaccine potency.

On referring back to Ferguson's memo, handed out in Lyon I note that he makes reference to suitable flavouring in the Connaught Laboratory vaccine containing the 53% sucrose. Like yourself, I have been unable to find any evidence of the vehicle in which the sucrose is dissolved.

It will be difficult for you to appreciate the tremendous pressure at which we are working at Beckenham at the present time. Holidays are being cancelled left, right and centre in an effort to meet the British Government's requirements, but at the same time we are up against a policy so widely adopted now, of individual suppliers of such things as cartons, labels, etc. completely closing their factories for two weeks with consequent difficulties in obtaining supplies from them by a dead-line.
I find it very difficult to refrain from heated comment on the programme proposed by the British Government and although I have been very vocal in this respect, I am continuously reminded that the job of our organisation is to provide material on demand or requisition from Government authorities and that it would be improper for a commercial organisation to attempt to usurp the function of the Ministry and its expert advisers.

I am sure that the same arguments will occur to you as those which I have used frequently and I therefore do not propose to detail them in this letter. In case you have not been advised of the situation, the broad outline is that the British Government are intending to use a trivalent vaccine of the oral type to be used, at this time, as a replacement programme for Salk vaccine. Accordingly, three doses of trivalent vaccine will be given to each individual recipient on the Salk schedule. The vaccine will be administered by clinics or individual doctors as was done with the Salk programme.

At this time, it is not the intention to employ the vaccine for an eradication campaign or to use it correctly for monovalent sequential feeding in spite of the fact that each recipient of the trivalent vaccine will turn up three times for his course.

Inherent in this Government scheme is the necessity for supplying vaccine in unit dose containers or, (in the largest pack which they will accept) a container of 25 dose capacity. The titre of the vaccine to be used is $10^{5.5}$ TCID$_{50}$ of each type.

The Government have refused to accept glass containers for the vaccine and, for very obvious reasons by virtue of the pack employed, will only accept vaccine diluted ready for use.

We have been given an almost impossible time schedule to comply with and experimental work on the keeping properties of the vaccine in the type of container in which it is required, have to be carried out pari passu with the filling out programme.

Since, at the moment, no mass campaign is envisaged, the Government would like a guarantee that the diluted vaccine will maintain its potency for a period of at least one month when kept at a temperature of $4^\circ C$. 
Apart from the complexities of the filling and labelling operation, and provision of suitable outer and inner packs, we are faced with a possibility of shift working for 24 hours a day in order to comply with U.K. Government demands by the agreed time.

It seems a little ironical that at this moment, when the country is in serious financial difficulties plus shortage of vaccine, we should be faced with a programme involving the use of three times as much vaccine as necessary and at greatly enhanced costs by virtue of the unrealistic demands for the presentation which the Government have requested. However, as I have been firmly advised, this is none of my business!

As regards Brazil, you will probably know that they will commence their immunisation campaign with our vaccine in Petropolis on the 28th of this month. After a preliminary try-out in this small area they are proposing to start a full scale immunisation campaign in Rio de Janeiro using a trivalent vaccine at $10^5.3$ on September 4th.

Supplies of vaccine to the end of the year have been scheduled at monthly intervals and I understand it is the intention of the Brazilian Government to tackle San Paulo immediately after Rio, and thereafter to extend their campaign into the hinterland.

I have still not had an opportunity to peruse your detailed report on Latin America, so do not know whether this fits in with your proposals.

At the moment, as far as I know, no enquiries have been received for supplies of vaccine from either Argentina or Chile, but Uruguay have called for tenders for an insignificant quantity of vaccine.

I am not sure of the position in Uruguay, but understand that we have probably failed to secure this contract by virtue of the refusal of the Health Authorities in Uruguay to accept the official release certificate of the British Ministry of Health as being adequate evidence that the vaccine has been tested by an independent authority.

I understand that a good deal of acrimony has arisen with Haemoderivate who went to the extent of accusing us of sharp practice for selling vaccine at such a cheap rate in Latin America. They have also
advised the Uruguayan Government that the vaccine they are offering conforms with the Minimum Regulations of the U.S.A. National Institutes of Health and with the regulations of the Swiss Government. It is known that they have received a manufacturing licence from the Department of Health of the U.S.A., but I find it very difficult to credit that they have in fact complied with the last U.S.A. Minimal Requirements of which we have a copy here, since I was completely unaware of Hemoderivate having carried out 15 clinical trials in the U.S.A.

As regards your query of the extent to which we would be able to supply vaccine that might be immediately required by Latin American countries, I think we are in a very strong position at the present time and are confident of meeting all demands that might arise within the future.

I remember you saying that you had decided to devote one further year, namely 1961, to continue taking an active part in promoting the use of your vaccine throughout the world and judging from what I have learnt of your activities in this year to date, you must be feeling thoroughly exhausted and will welcome January 1st, 1962, if you carry out your resolution. All in all, your campaign over the recent years now appears to have been crowned with the success which it rightly deserves, and it is some small comfort to us, who are currently engaged in the multitudinous problems of manufacture and distribution, to know that we are carrying on with the good work which you initiated. It has been an uphill struggle for you and will continue to be so with us for some time.

In conclusion, may I say that we are obtaining some results which could have practical importance, in the experiments conducted to determine the keeping qualities of the vaccine in different diluents at various temperatures. Replicate experiments have not yet been put up and these must of necessity be delayed to enable us to carry on with routine work on current production lots, but, when the opportunity presents itself, these experiments will be repeated, and if confirmed, I am sure the results will be of great interest to you.

Present indications are that while there is considerable latitude in the diluents which may be used, providing the vaccine is kept at -20°C., and to a lesser degree at 4°C., very peculiar results
are obtained with different diluents once the vaccine has been removed from the cold and exposed, in the one instance to $4^\circ$C. and in both instances at room temperature for varying periods of time.

Thanking you for your continued co-operation and for so kindly sending me reprints of the Cincinnati Programme Effectiveness Report, and with all good wishes to your family,

Yours most sincerely,

C. Lyn Greening