

NOTE ON THE A.R.C. RESEARCH GROUP

R.E. FRANKLIN 5th October, 1955.

Within the last 4 months I have written 2 reports on the progress of the research of the A.R.C. group and the future requirements of the group. Apart from the fact that it is agreed that money for a new X-ray tube will be applied for at the October meeting of the A.R.C., no action has so far been taken on any of the points raised in these reports. In the present note, only those points requiring most urgent action are mentioned. Our other needs, described in the previous reports are, however, no less pressing than before.

The points discussed here are:-

1. The future of the group.
2. An immediate request for a Spinco centrifuge as well as a Hilger X-ray tube.
3. Provision for Dr. Klug to join the group in October 1956.

1. The future of the group

The present arrangement is due to end on 31st December, 1957. It is desirable that plans should be made as soon as possible to enable the work to be continued either in London or Cambridge after that date. These two possibilities were discussed with Sir William Slater on 29th September.

a. London. Sir William Slater made it clear that the present arrangement cannot continue indefinitely. It seems that in order for the group to continue to work in Birkbeck College it would be

necessary to establish us as a new A.R.C. Unit. This Sir William thought would be difficult to achieve, though perhaps not impossible.

If the group continues as a Unit in Birkbeck it will be necessary to make separate arrangements for biochemical work. However, some such arrangement must in any case be made to enable the work of the next two years to be carried out.

The advantage of continuing to work in the Birkbeck College Crystallography Laboratory is the wide range of crystallographic apparatus, workshop facilities, etc. available. The disadvantage is the shortage of space, which may well become more acute.

b. Cambridge. Sir William Slater suggested that the work might be transferred to Dr. Kenneth Smith's Unit in Cambridge. This possibility should be considered only if:-

1). Sufficient time be allowed to prepare the move. Since this would involve duplication of a substantial part of the equipment of this laboratory, about 2 years would be necessary

ii). Provision be made for establishing in Cambridge a group not smaller than that at present engaged on the A.R.C. research programme. This would mean at least 8 people in all.

Such a group might consist of:

R.E. Franklin; A. Klug; 2-3 research students;
1 computing assistant; 1 skilled instrument maker
1 skilled technician; 1 laboratory assistant;
and secretarial assistance.

These points will now be considered separately.

1). Time required for preparing move to Cambridge. Of the large amount of apparatus at present used for the A.R.C. research programme, only a negligibly small amount is the property of the

A.R.C. One X-ray tube is the property of this laboratory, another of the Coal Board. Four different types of X-ray camera are in use. All were designed and three were made in this laboratory. The fourth was made in an outside workshop, and took 12 months to make. It is therefore not certain, even if 2 years' preparation for the move were allowed, that we should be as well equipped after that time as we are now.

ii). Necessity for establishing a group in Cambridge.

X-ray diffraction studies of this highly specialised kind require a diversity of specialised apparatus, the greater part of which is not available commercially. The range of apparatus required is such that it can be neither maintained nor fully utilised by a group consisting of only 2 or 3 people. This is, of course, why no virus laboratory in the world has yet undertaken its own X-ray diffraction work. While light-scattering, sedimentation studies and other physico-chemical techniques are practised in many biological institutes, it is generally recognised that X-ray diffraction studies of biological materials require the installation of a substantial physical laboratory.

A group such as that suggested above might be accommodated in 1 large X-ray room, 1 large laboratory for microscope work and preparation, 1 computing room, 1 office, (or the equivalent in smaller rooms), and 1 workshop.

2. The Spinco Centrifuge

The reasons why we need a Spinco centrifuge urgently have been fully set out in previous reports. It is no exaggeration to say that

if a Spino were available in our laboratory the amount of work which we could undertake would be doubled immediately. We therefore wish to apply for this at the A.R.C. meeting this month.

3. Dr. Klug

Although Dr. Klug's appointment with the A.R.C. is not required till next October, his position is such that he must make decisions very shortly about other future possibilities. It is therefore important that a decision be made.