

23 February 1943

Dear Gray,

In order to let you have a reminder of what we ought to have discussed though we scarcely got so far, on Friday, I am sending you a preliminary memorandum giving my own ideas for the Department of Genetics, both in the immediate period of preparation during the war and more vaguely, for the period of reconstruction which ought to follow. I am sending a copy to Dean and would let Huxley have a copy if you think this would be any use.

Yours sincerely,

February 1943

GENETICS DEPARTMENT AT CAMBRIDGE

Preliminary Memorandum

The adequate reconstruction of the Department of Genetics must be postponed for the duration of the war. On the return of peace a large number of persons having scientific interests will be released and in search of peace-time employment. It will be necessary to make, during this short transition-period, appointments on which the future of the Department will depend for many years.

In what follows I shall regard the war-period as one of preparation during which a framework can be set up ready for the period of reconstruction to follow.

INSTRUCTION

The teaching of Genetics seems to depend, more even than that of most biological subjects, on demonstration, i.e. on familiarising the eye with visible distinctions to be seen both in living animals and plants and in prepared museum material, and associating what is seen with the conceptual framework of genetic formulae, the mechanical manipulation of which, though essential, is in reality a small part of what is to be learned. I suggest that students must have had frequent experience of classifying for themselves both living material and preserved specimens, and of making the graphical tests or more elaborate calculations which are needed when any question in doubt has to be decided.

I understand that it is proposed that undergraduate teaching in

in the Schools of Botany and Agriculture, and perhaps of Zoology, is to be carried out by the members of these Departments. Subject to such contact as could be maintained by a terminal conference of those teaching Genetics in different Departments, I believe such an arrangement might work well, especially if for purposes of advanced teaching subjects allied to Genetics but requiring special techniques such as (a) Cytology, (b) Field Experimentation, were assigned as the special care of the Schools of Botany and Agriculture. With respect to Zoology, the same might be said of the contacts of Genetics with Embryology and Developmental techniques.

CENTRAL RESEARCH ACTIVITIES

With these deductions the task of building up the Department of Genetics, though still considerable is materially lightened. The central condition upon which it must be based is that the Professor shall be capably equipped for undertaking from time to time any special research project in Animal, Plant, or Human Genetics which he may regard as of special importance for the advancement of the subject or for the instruction of advanced students. Normally several such projects will be running concurrently, as has been the case in my present Department, since each will take anything from two to ten years to reach fruition.

MINIMAL EQUIPMENT

I think this activity must be centred in a Field Laboratory rather than in the central building in the town. The latter might

possibly work for a statistical laboratory, though even here I believe that physical separation would be found to be injurious. This seems to be at present ^{the most} considerable difficulty to the organization of an effective department. A small greenhouse and garden-land, say three-quarters of an acre, within the competence of a single gardener, would meet the minimal requirement for work with plants, a minimum which need not, I think, be exceeded so long as cordial relations are maintained with institutions such as the John Innes at Merton and the School of Botany at Cambridge.

Convenient to the plots for plant genetics I should like to keep dog-pens or kennels and a room for my mouse-colony, with working-space for dealing with records and preparations, skins, transparencies, etc., accruing from the genetic material.

I believe that the greater part of the breeding work both with mice and dogs, for the war-period ought to be devoted to production of adequate specimens for exhibition. Textbook statements are inadequate and misleading to a startling degree. The breeding technique needed to secure specimens showing unifactorial differences has seldom been conscientiously applied, and whenever reliable material is brought into existence it is found partially to modify commonly-accepted statements, especially with respect to Dominance. During the war-period I think that animals other than dogs or mice should be kept only with a view to giving experience in their culture or management, or in furtherance of some project connected with the war. Quantitatively I could carry on with pens for about half-a-dozen bitches and something like two hundred mouse-cages.

MEDICAL GENETICS

During my time as Galton Professor, the Galton Laboratory had attached by the generosity of the Rockefeller Foundation a group engaged in the study of Serology with a view to its central importance in Human Genetics. This unit is still in existence working for the duration under the Medical Research Council, and has been cordially co-operating in the genetical work of my Department during this period. It is now located in the Department of Pathology at Cambridge. For the duration, of course, it cannot be freed for purely genetical research, but I believe Mr Taylor would welcome the formal association of his unit with the genetical department of the University. It could perhaps usefully be called upon to assist with the teaching of Medical Genetics.

IMMEDIATE REQUIREMENTS

Without knowing what is at present available for field Laboratory, Animal Houses, Pens, etc., I cannot estimate the immediate capital expenditure required, though within the programme set out above this should at the moment be quite moderate. The current running expenses in this connexion should not exceed £300 per annum. In respect of initial salaries I could keep my initial budget down to £600 a year owing to the fact that the Agricultural Research Council is now supporting workers in my Department from funds independent both of the Galton Laboratory and of Cambridge University. I am therefore able to put down £250 as part salary to a Secretary and Statistician, by name Mr K. Williams; £250 for Mrs Holt as Assistant Geneticist; and £100 for Laboratory assistance, for which for the present we shall have to use very young children. This does not include a gardener who must be secured whenever possible.

Capital Expenditure will also accrue as opportunity permits in respect of calculating machines. I presume that the Department of Genetics now possesses none, and the necessity for this item may therefore have escaped attention. Five hundred pounds at least should be set aside so as to be free to snap up a bargain if any secondhand machines can be located. I shall endeavour to obtain the temporary use of machines now in the Walton Laboratory, so long as they are not required for other purposes, but of course University College is under no obligation to let me borrow them.

DEFERRED APPOINTMENT

With respect to the period of reconstruction, the only suggestion I should wish to make now is that an extremely active and intelligent Secretary (or Librarian or Curator) will be necessary at this period and that Miss B. Schafer, formerly Librarian at the John Innes Institution, could, I believe, be attracted by such a post on the expiry of her present war work.