

ploids by colchicine doubling. On the more practical side the cross between *Triticum vulgare* and *T. turgidum*, followed by back-crosses to each parent, has been investigated and has led to the breeding of *vulgare*-like forms with the high floret fertility of *turgidum* and of *turgidum*-like forms with shorter straw and earlier maturity.

Phylogenetic and taxonomic investigations in relation to plant breeding formed one of the topics of a discussion held during the conference. J. G. Hawkes reviewed the taxonomy of the relatives of the potato. He showed how studies of the kind pursued at Cambridge and elsewhere, on the classification, geographical and ecological distribution, economically useful characteristics, chromosome number and range of possible hybridization, form a necessary background for the plant breeder's work. J. M. Munro reviewed the work on wide crosses among the *Triticinae*. He outlined the relationships of certain species and genera in terms of genom-analysis and described briefly the two main methods of using colchicine to synthesize allopolyploids; the F_1 hybrid may be treated or the parents treated and the resulting forms with double chromosome number crossed to produce a fertile F_1 . From the plant-breeding point of view most interest lies in the work of re-synthesizing hexaploid wheats by crossing tetraploid wheats with *Aegilops squarrosa*, *caudata* and *speltoides*. Special attention is being paid to this aspect of the work at Cambridge, the ultimate aim being to introduce the synthesized hexaploids into the wheat-breeding programme.

T. J. Jenkin gave a brief account of the relationships within and between *Festuca* and *Lolium*. The general discussion brought out clearly the inter-relationship between cytogenetic and taxonomic work and the value of both to the breeder in providing him with a guide to the material at his disposal. There was some discussion on the naming of new allopolyploids in relation to the binomial system; it was generally agreed that it was desirable to use purely conventional names to indicate their origin and not to name them formally as new genera or species, at least unless and until they become established as more than purely experimental material.

This topic led naturally to the other subject selected for discussion—living collection of crop plants and their relatives. C. D. Darlington pointed out that we have inherited the needs which prompted the establishment of botanic gardens some 300 years ago, but that the existing botanic gardens no longer fulfil those needs. The provision of one garden to maintain a collection of the economic plants of temperate regions and their wild relatives and ancestors would greatly stimulate the improvement of crops. The staff should include cytologists and geneticists. P. S. Hudson recounted the more or less urgent resolutions which have been unanimously carried at a number of official and scientific conferences where this subject has been discussed. But the position, in fact, remains as it was: a few specialized collections exist in the British Empire, with no organised attempt to co-ordinate them, to extend them or to build up new ones. A lively debate followed in which the relative merits of special and general collections were discussed and the difficulty of maintaining collections at existing stations, unless special financial provision could be made, was stressed. A resolution was passed unanimously urging upon the Agricultural Research Council the

present need for the appointment of a collector whose main duty would be the assembly of collections of the type indicated.

The conference clearly fulfilled a long-felt need, and those attending expressed a desire to hold future conferences annually at the four stations in rotation and during the growing season. Even though many of the crops were disappointing owing to the severe and prolonged winter, late sowing and spring drought, the value of having the living material there for discussion was obvious.

OBITUARY

Sir Clive Forster-Cooper, F.R.S.

SIR CLIVE FORSTER-COOPER, director of the British Museum (Natural History), died on August 23. He was born in London in 1880, and was educated at Rugby and Trinity College, Cambridge. At Cambridge he became greatly interested in zoology, and in 1900 joined Stanley Gardiner's expedition to the Maldives and Laccadives. Shortly after his return, he joined the staff of the North Sea Fisheries Commission research establishment, spending a year in this service, largely at sea in a converted trawler. He then returned to Cambridge to take part in another expedition designed to enlarge our knowledge of the marine biology of the Seychelles.

Forster-Cooper might thus have devoted his life to the study of marine biology and of fisheries problems, but a meeting with Dr. C. W. Andrews of the British Museum, who had himself worked on marine biology at Christmas Island, introduced him to fossil mammals, and especially to the wonderful fauna of the Fayum. The problems presented by these materials, and the wide importance of fossil mammals in general, seized Forster-Cooper's imagination, and he joined Andrews in an expedition to the Fayum in 1907, learning in this way not only the technique of collecting fossil bones, but also the manner in which an expedition into a desert country could be conducted.

On his return from Egypt, Forster-Cooper felt it necessary to see something of the immense collections of fossil mammals in the American museums, collections incomparably more complete and satisfactory than any in Europe. He therefore spent a year in the American Museum of Natural History, working under H. F. Osborn, who for the rest of his life remained an intimate friend. In New York also he was associated with W. D. Matthew, W. K. Gregory, Barnum Brown and Walter Granger, the group of very able palaeontologists who, with Osborn, did very much to establish our knowledge of the history of mammals on a firm foundation; and by taking part in one of their expeditions to Wyoming, he added to his knowledge of collecting technique and to that of preparation.

On his return to Cambridge once more, Forster-Cooper was given the Balfour Studentship and made two arduous, dangerous and most successful expeditions to Baluchistan in 1910 and 1911, there collecting and afterwards preparing and describing the extraordinary rhinoceros *Baluchitherium*, the largest of all land mammals.

By this time Forster-Cooper had become an expert on all the processes of preparation of fossils, in plaster casting and other museum arts, and he had seen many great museums which were using new

methods of display intended to make their work more intelligible to the general public. Thus his appointment in 1914 as director of the Cambridge University Museum of Zoology was a natural one.

His appointment was immediately followed by the outbreak of war, and he spent the period until 1918 in work on malaria. On his return to Cambridge he completely reorganised the Zoology Museum, making it a well-designed teaching collection. At the same time he took some private pupils, who have since become distinguished zoologists, and gave many lectures, becoming University reader in vertebrates. But his activities in Cambridge soon widened out: he became a fellow and bursar of Trinity Hall, and when the accommodation of books and readers in the University library became an embarrassment to everyone, suggested that the only real solution was the radical one of moving the whole to a new and unencumbered site where it could be housed in a modern building designed for that purpose. Ultimately this plan was adopted, and Forster-Cooper, as chairman of the Buildings Syndicate, became responsible for its execution.

But his real interests remained in museum work, and in 1938 he was appointed director of the British Museum (Natural History). There he began to consider and design a new plan for the exhibition

galleries which would have made them far more valuable both to students and to the general public. But the advent of the War ended all possibility of putting these plans into effect. The whole staff of the Museum was devoted to packing up the vast collections and placing them in safety. For a long time Forster-Cooper actually lived in the Museum, which suffered much damage from bombs in 1940 and again in 1945. Thus the opportunity of which he would have made such good use came to him too late, and was immediately taken away.

Forster-Cooper had all the qualities of a great museum man. He was a good teacher, with many ideas about the exposition of facts and ideas in a museum. He had a very wide experience of the world, and of zoology. He had seen and considered critically very many great museums.

Most important of all was that he was a man of wide general culture, with a highly developed appreciation of pictures, prints and drawings. Indeed, he was himself an excellent draughtsman, who had painted good water-colours and etched some pleasant plates; and he could, with his own hands, carry out most museum operations.

He was a man of great personal charm, very modest and shy, unwilling to impose his own ideas on anyone.

D. M. S. WATSON

NEWS and VIEWS

Atomic Energy Control

A DISCUSSION of the present situation concerning the international control of atomic energy has recently been issued by the executive committee of the Association of Scientific Workers. The committee believes that on most of the issues concerned there is little difference between the points of view of the United States and the U.S.S.R., that "a start should be made by setting up an international control organ having powers on which there is immediate agreement", and that it would then be possible to find acceptable compromises on the remaining points of difference. It calls upon the British Government to make a more positive approach to the solution of these problems.

The area of agreement is stated to be as follows: "All countries are agreed on the urgent necessity of an international control scheme of some kind. All countries agree that when such a scheme is functioning no atomic weapons should be in the hands of any national authority. All agree that the international control authority should have its own rules of procedure and that there should be no right of veto in the day-to-day functioning of the authority. All agree that the international control authority should have its own inspection staff which should be chosen on an international principle and have full inspection rights in any establishment in any country concerned with obtaining atomic war materials and producing atomic materials and atomic energy. All agree that the international control authority should be empowered to conduct special investigation on cases when it is suspected that illicit material is being produced, and that it should be given facilities by the State concerned to conduct the necessary investigations. All agree that the international control authority must have the positive functions of operating research establishments staffed by its

own qualified international personnel so that it will keep abreast of the latest scientific developments in the field of atomic energy." Although the statement suggests lines of compromise on several contentious aspects of the problem, it does not attempt to show how the points of agreement could provide a practical basis for an international organ before the points of disagreement are resolved.

Controlled Fast Neutron Chain Reaction

It has been announced that a "fast fission pile" is in operation at the Los Alamos Laboratory of the United States Atomic Energy Commission. Instead of using natural uranium, in which a chain reaction can be maintained only with the aid of a 'moderator' that brings the energies of most of the neutrons into the thermal region, this pile employs plutonium and has no moderator, the reaction being maintained (as in the atomic bomb) by fast neutrons. It may be explained that the possibility of controlling such a pile arises from a time lag between the fission process and the emission of the small but appreciable proportion of the neutrons that come from the radioactive products of fission. The pile will be a valuable source of fast neutrons for experimental purposes.

Literature on Atomic Physics

IN the April-May issue of the *Bulletin of Atomic Scientists* the editors present a new section which, it is intended, will contain information concerning articles and books of interest on atomic energy. The first contribution is a bibliography surveying the literature now available. M. C. Leikend, who is consultant in science on the staff of the Library of Congress, has compiled a bibliography which covers the period March 1, 1946-February 1, 1947, and which is printed, by permission of the Library of Congress, on pages 127-35 of the *Bulletin*. The