

drying at 20° C., 70 per cent relative humidity, and at 60° C., 70 per cent relative humidity, differ appreciably in their properties. Tensile tests on the films after subsequent conditioning at different relative humidities showed that those prepared at 20° C. were stronger than those prepared at 60° C. At low humidities they were also rather more extensible before rupture occurred, but at high relative humidities the 60° C. films became very extensible. At 85 per cent relative humidity their extension at rupture was 129 per cent compared with 23.8 per cent for the 20° C. films. Further experiments showed rate of drying, and the moisture content left in the film at the conclusion of drying, to be of minor importance compared with the temperature of drying. With the guidance of X-ray diffraction results, a theory has been put forward attributing the differences to differing degrees of crystallinity in the films.

The discussion on Mr. Bradbury's paper was opened by Dr. Conmar Robinson, who made use of results on optical rotation and diffusion to put forward an alternative explanation based on two configurations of the gelatin chain. The high-temperature form is presumed folded, with internal hydrogen bonding, whereas in the low-temperature form intermolecular hydrogen bonds occur. Mr. A. G. Ward described results of dilute-solution viscosity measurements on gelatin solutions at 25° C. and 10° C. There appears to be no change in shape in the isolated molecules with temperature, although a slow aggregation occurs.

The final paper was given by Mr. R. A. G. Knight, of the Forest Products Research Laboratory, Princes Risborough, with the subject "Glue Testing at Risborough". Mr. Knight outlined the development of testing procedure and made clear the basic principle of choosing test conditions related to those which the glued joints or plywood are required to withstand in practice. The importance of both plywood and glued joints for the aircraft industry during the Second World War placed great emphasis on behaviour under full exposure to the weather, since aircraft were often parked for months on end in the open. The way in which the Forest Products Research Laboratory drew on the experience of the glue-manufacturing and wood-working and -using industries was described.

## MAKERERE COLLEGE: THE UNIVERSITY COLLEGE OF EAST AFRICA

IN 1922, the Uganda Government opened a technical college at Makerere, one of the royal hills of the Kabakas of Buganda just outside Kampala. In 1924 a Government medical school and teachers' training course were also started at Makerere. Gradually all trades courses at the technical college were passed over to a neighbouring institution, and agricultural and veterinary courses took their place; a school certificate course was also developed. By 1937 the College had developed a corporate life of its own and, in that year, the De la Warr Commission recommended that Makerere should develop into a centre of higher education for East Africa; this had long been the wish of the founders of Makerere. From this time the College was to cease to be a Government institution and was to possess an

independent Council composed of representatives from all the East African Territories whose Governments jointly made themselves responsible for its finances\*.

As secondary schools developed in other parts of East Africa, the academic standards at Makerere quickly rose and, in 1945, the Asquith Commission on Higher Education in the Colonies confirmed that the College should press forward towards university college status. In 1949 it was announced that the College had entered into special relationship with the University of London, and the way was therefore opened for degree courses at Makerere.

The path was now clear for a programme of rapid expansion. On the recommendation of the Inter-University Council for Higher Education in the Colonies, early in 1950 the British Government promised the College £1,100,000 from the Colonial Development and Welfare Fund towards a programme of building development, and the East African Governments quickly responded by guaranteeing annual grants for a five-years development scheme totalling annually approximately four times their previous contributions. The programme already embarked on aims at raising numbers in steps from the present 240 students to 630 students and some 85 members of staff by 1955. The new medical school buildings, opened by the Secretary of State for the Colonies in May 1951, are already in use. The first of the new men's halls of residence, providing accommodation for 180 students, is now complete and was occupied at the opening of the new session in March 1952. An arts faculty building and a new physics laboratory building is also about to be brought into use. A start has been made on the first new women's hall of residence, further staff houses and a science workshop. Other buildings now at the drawing or planning stage include a new chemistry laboratory building, an agriculture block, a second men's hall of residence, a library which it is hoped will provide for the eventual needs of a university of some 2,000 students, and the adaptation of a number of existing buildings to provide further accommodation for biology and satisfactory premises for an enlarged school of art.

Makerere was started for Africans, and by force of numbers it will inevitably and rightly always remain predominantly an African college. The College's Charter, however, laid it down that it was to be open to all the peoples of East Africa. In 1951 the College Council determined that with the opening of new accommodation a start should be made in this direction. It was decided that, for the coming year's entry, six places should be reserved for qualified non-Africans; in fact, an English candidate has already been offered a place for the coming year, and there are a number of Indian candidates. The one stipulation made in admitting members of all races as well as of all religious persuasions is that all should share the common residential life.

The qualification demanded for consideration for admission is the possession of the Cambridge School Certificate (Overseas) with three credits. In practice there are already many more qualified candidates for admission than can be taken. As schools develop in number and quality the matriculation standard will be raised.

The admission problem for girls is far harder than that for boys. Though Uganda and Zanzibar have full girls' secondary schools, neither the first girls'

\* *Universities Review*, 24, No. 2.

school in Kenya nor the first in Tanganyika has yet reached a School Certificate form, though both are due to do so within the next two years. Meanwhile, only a few girls have qualified for matriculation through predominantly boys' schools. Most of the women accepted for Makerere under "Special Entry" conditions have had some years teaching experience in primary schools, and, though they often find it a hard struggle to survive academically, some of them develop during their life at the College a hitherto hidden maturity. The whole question of the College's contribution to women's education is at present being studied with the help of an advisory committee of persons engaged in this sphere in the territories.

Like the sister Colonial university colleges, Makerere is in special relationship with the University of London so far as its courses for the B.A. and B.Sc. degrees are concerned. The College takes the initiative in putting forward its own proposals for syllabuses which it submits to the relevant Boards of Study of the University. The process of negotiation up to the final stages is carried through informally between opposite numbers. Similarly, the College examiners submit the first drafts of the Intermediate and Final degree papers and do the first marking of the scripts, which are then sent by air mail to the University of London examiners for the final determination of results. It is too soon to assess the full potentialities of the scheme.

If Makerere is to serve East Africa's needs as a university it will also have to become a centre of research. A start has been made. There are two research schemes for which the College has taken responsibility but which are separately financed from Colonial Development funds—the East African Institute of Social Research under the directorship of Dr. Audrey Richards, and a scheme to investigate malnutrition and anaemia under Prof. Eric Holmes, the head of the College's physiology department.

The most critical problem at Makerere is the recruitment of staff. Not only will Makerere have to find men and women with the necessary specialized qualifications to teach at university-level, but among them those who are willing to offer their experience and skill and adapt them to the teaching problems and the opportunities of an African university college.

## STATISTICS FOR COLONIAL AGRICULTURE

IN January 1947 the Agricultural Economics Research Institute of the University of Oxford was asked to undertake a review of the organization and methodology of agricultural statistics in Colonial territories, in the light of reports received from the various Colonial Administrations.

The report, prepared by Mr. K. E. Hunt of the Institute\*, opens with a useful selection of statistical series for first study, followed by a programme, in broad outline, for obtaining such data, first of all on a small (village) scale, with later developments either more intensive or more extensive. The first section concludes with a suggested set of definitions of terms used in agricultural statistics. Succeeding sections

\* Statistics for Colonial Agriculture—Report on the Organisation of Recording and Estimating. Colonial Research Publications No. 11. H.M.S.O.) 7s. 6d. net.

deal in more detail with techniques appropriate to the various kinds of information sought. A glance at the 'contents' gives some idea of the comprehensive nature of the review. There are sections on village studies (3), extensive surveys (4), crop yield and production estimation (7), crop production forecasting (8), mixed crops (9), tree crops (10), land utilization (11), livestock populations and output (12), and two sections on marketing and distribution. With the more intractable problems of the later sections, the detail is naturally less. Under these headings many other important practical topics, such as recording technique, approach to selected communities, sample selection, correction of bias in eye estimation, crop cutting techniques, etc., are discussed.

Various methods and the results of much valuable experience both in office and field—in preparation, planning, inauguration, execution, analysis and reporting—are thus brought together. By clearly defining the main features in each of these situations, whether difficulties, possible approaches or points to consider, and including actual examples, the report makes most informative and stimulating reading. Many suggestions will need but slight modification to suit the locality. Matters, more of experience than principle, such as preparation of schedules and questionnaires, measuring areas, tabulation, analysis and records are dealt with in the appendixes.

The extremes of excessive detail but limited application and of discussions in abstract general terms are alike avoided; instead, principles are described in homely terms, statistical refinements not being considered necessary at the present. This publication will surely do much to satisfy a long-felt need.

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## ABORIGINAL RAIN-MAKERS

IN many parts of Australia droughts have an appalling effect upon the sources of food of an aboriginal tribe, and it is not surprising to know that both the black and the white man have sought to stimulate Nature to greater generosity with her life-giving rains. The ways in which they seek to induce rain are described by Frederick D. McCarthy in the *Australian Museum Magazine* (10, No. 8).

The aborigines desire rain at specific times both for individual and for group or collective purposes. A man attempts to create a storm or shower to obliterate footsteps when eloping with a woman, or, if he is a criminal, escaping the vengeance of his victim's friends. The making of rain, however, becomes a serious matter when it is organized by a local group whose reason may be the overwhelming one of survival in a drought-stricken land, or the desire to carry out important seasonal ceremonies upon which the life-giving power of the community depends; a local group may wish to punish another one by sending storms to spoil their hunting and fishing.

The rites are usually performed during the day; but the Yaroinga of Queensland have one method in which special songs are sung during the night. The rain-maker uses his deep knowledge of local weather conditions as a guide and performs his rites in seasons and at times when rain can reasonably be expected; as a result his efforts are often rewarded with success. In many tribes the rites may be performed by one individual; but as a rule there are