

contacts have been made. Notably, the Division learned that P E P (Political and Economic Planning) proposed to prepare a report on the organization of research in Great Britain, but was hampered by lack of funds to start the work. The Council of the Association, at the instance of the Divisional Committee, voted £100 as salary for the research worker appointed by P E P to collect the factual material. This enabled the work to proceed immediately, pending the acquisition of funds to maintain the inquiry from other sources. The necessary support has since been obtained from the Leverhulme Trustees, who have made available sufficient funds to carry on the inquiry until the autumn of 1940. The Division is represented on the committee supervising the work and will be associated with the report to be published in due course.

Some of the topics submitted to the Division for attention were referred to sections of the Association, and as a result several discussions and papers were arranged for the Dundee meeting.

A number of sub-committees have been appointed to deal with specific aspects of the Division's activities. One of these is considering the desirability of supplementing existing national research organizations whether in normal circumstances or in times of emergency. With the view of ascertaining details concerning systems of controlling and distributing grants in aid of research in other countries, an inquiry was directed to correspondents in the United States, France, Belgium, Holland, Denmark and the Dominions. Memoranda have been prepared by Prof. A. C. G. Egerton, and by Prof. J. D. Bernal and Dr. Julian Huxley, respectively, dealing with expenditure of public funds on research and discussing the question of a Research Co-ordination Council.

The sub-committee on nutrition and agriculture was responsible for a meeting at Reading to discuss

milk in its nutritional and allied aspects. A resolution put forward from this meeting to the Council of the Association runs as follows:

"In view of the proved danger of the spread of epidemic and other diseases by the consumption of raw milk, of the efficiency of controlled pasteurisation in abolishing this danger and of the slight damage to the nutritive and other properties of milk caused by effective pasteurisation, it is essential for the national health that it be made compulsory in all urban areas with a population of 20,000 or more to pasteurise effectively all milk before sale to consumers to ensure its safety and to assist in securing that increase in the *per capita* consumption of liquid milk which is essential for improvement in the national level of nutrition." The Council, after consideration and consultation with the Nutrition Sub-Committee, considered it desirable that before taking any action on this resolution, a factual report on the whole question of the pasteurisation and sterilization of milk should be procured, and steps are being taken to do this.

Other sub-committees have been appointed to consider the economic requirements of nations, the influence of scientific and technical developments on industry, and on social psychology.

A Finance Sub-Committee made a recommendation to the Council of the Association that consideration should be given to the desirability of an appeal for funds to (a) private individuals and firms, (b) trusts at home, (c) trusts abroad, (d) H.M. Government. The Council adopted this recommendation, with the provision that of these possible sources, the first-named should be first explored.

Meetings arranged by the Division were held during the past year at the University of Reading, in London at the Royal Institution, and at the University of Manchester.

RADIO EXHIBITION, OLYMPIA

THE exhibition of radio apparatus organized annually by the Radio Manufacturers' Association was opened at Olympia on August 23 and is remaining open each weekday until September 2. This year's exhibition was conspicuous for the greatly increased attention and interest devoted to television receivers and also to several somewhat novel features which had a strong appeal to the more technically minded members of the public.

As regards the general display of sound broadcasting receivers, no fresh and outstanding change in technical design was in evidence this year. The large variety of models shown indicated that manufacturers have devoted attention for once to a steady improvement in efficiency and reliability, and the listener who is more concerned with service than with novelty may be assured that he can buy a new set with complete confidence. Most manufacturers now supply some form of 'push-button' tuning selection as part of one of their standard designs. A notable increase in the number and variety of portable receivers shows that there is a maintained demand for this type, and an innovation this year is the portable receiver operated entirely from dry batteries. This is the result of the introduction during the past

year of new types of valves with a very low filament current consumption, so that a complete receiver may be operated under normal average conditions for several months, without changing or re-charging batteries.

It was in the field of television that the most marked change was evident in this year's exhibition of receivers. Most manufacturers' are now in a position to supply several types of television receivers, and these range from the table model with a small although very clear picture, up to an imposing cabinet model with a picture size about 24 in. × 18 in. In all cases frequent daily demonstrations were given on the manufacturers' stands, while, in addition, a specially arranged 'television avenue' enabled the visitor to inspect some fifty different models in operation on the same programme and so judge their relative merits. Considering that, so far, television reception is limited in Great Britain to the programmes radiated from the one station at Alexandra Palace, the prospective purchaser of a receiver was very well catered for at the exhibition.

Among the conspicuous features of the layout of this year's show were the uniform flat-roofed stands, and also the models of Broadcasting House and the

Alexandra Palace tower at opposite ends of the main hall. The B.B.C. provided several technical exhibits, including a television studio and control room in operation. A sound-recording van, complete with studio and associated apparatus, a motor-car fitted up for film recording purposes, and the 80-ft. telescopic aerial of the mobile television unit were also part of the display provided by the B.B.C. The Post Office demonstrated apparatus used for short-wave radio telegraph and telephone purposes, and illustrated the various stages in the dispatch and receipt of telegrams. Other novel features included technical exhibits by the radio departments of the services, such as field equipment as used by the Royal Corps of Signals, a replica of the wireless office of a destroyer by the Royal Navy, and a layout of the various electrical and radio equipment of aircraft by the Royal Air Force. An interesting and popular feature on the stand of the latter service was a 'link trainer', designed to represent the cockpit of a modern aircraft. It contains all the controls and equipment of a real cockpit, and with it all conditions of flying can be simulated on the ground. The exhibit was used to demonstrate the manner in which

a pilot may fly in fog or at night, navigating entirely with the aid of wireless instruments receiving signals from beacons on the ground.

Reverting to the manufacture and production of ordinary broadcasting receivers, a number of firms had contributed to the model factory which was set up in the exhibition. Various stages in the assembly and production of receivers or their components were shown in full operation under normal factory conditions. In addition, the various stages in the assembly of several manufacturers' standard receivers were shown on a rotating drum model in continuous operation. This section of the exhibition was designed not only to interest the technical enthusiast but also as an attempt to induce the ordinary listener to learn something of the internal construction and mode of operation of his receiving set.

Altogether, the exhibition demonstrated a successful attempt on the part of the organizers to make a wider appeal to the broadcast listening public, and it was extremely unfortunate that it was held during a period of such acute international tension.

R. L. S.-R.

DENTITION OF AUSTRALOPITHECUS (PLESIANTHROPUS)

A COMPARATIVE and phylogenetic study of the dentition of the extinct South African man-ape *Australopithecus (Plesianthropus) transvaalensis* Broom has been made by W. K. Gregory and Milo Hellman, who visited South Africa in 1938 at the invitation of Dr. Robert Broom and Prof. Raymond Dart to examine the evidence at first hand for this purpose (*Annals of the Transvaal Museum*, 19, 4; 1939).

One of the most astounding features of the type *A. transvaalensis* is the combination of a natural braincase, which is somewhat smaller than that of a large gorilla, with a dentition of almost human appearance. According to the experience of palæontologists the material available, though insufficient to satisfy statistical requirements, is adequate for determining the systematic position of *Plesianthropus* among the higher primates; and it is affirmed with Broom that in South Africa there once lived apes which had almost become men.

In the female *Plesianthropus* the premaxillary prognathism is much more pronounced than in the *Ramapithecus* from the Siwalik Hills, though the latter is a much smaller and more delicately built form. As compared with *Sinanthropus* the premaxillo-maxillary regions of *Plesianthropus* are more prognathous. Likewise in the lower jaw, the available evidence indicates that the forepart of the jaw in *Paranthropus* was shorter and more retracted than in the apes, and was approaching the stage of *Sinanthropus*. In this respect *Paranthropus* was structurally intermediate between the existing apes and primitive man. The excessive thickness of this jaw and the extreme flattening of the facial plate are unique characters, which though by no means excluding *Paranthropus* from the dryopithecine stock, are conspicuous differences from *Sinanthropus*

and other hominids, and tend to justify Dr. Broom's choice of the name *Paranthropus* as indicating a side branch of the pre-human stock.

Turning to the evidence of the teeth themselves, the upper central incisor of *Plesianthropus* is unknown, but indications point to a derivation from certain conditions present in Siwalik dryopithecines, and from this stage the *Sinanthropus*-Mongoloid series (with extreme shovel-shaped first and second incisors) is derivable merely by further emphasis in the same direction. In modern man further emphasis of the method of growth produces peg-like crowns, while an emphasis on the basal swelling sometimes produces results observable in Palæanthropic man and some modern apes. Hence in respect to the stage of evolution of the upper permanent incisors *Plesianthropus* was intermediate between the ancestral dryopithecine stock and the primitive palæanthropic man; and it was more primitive than most modern anthropoid apes.

In regard to the canines *Plesianthropus*, starting from a primitive dryopithecine stage, was again approaching human conditions in the form and relations of its upper and lower canines. The small size of the canine teeth favours the conclusion that the small size of the canines in modern man is due to a secondary reduction. The lower canines are closer to *Sinanthropus* than to *Sivapithecus*. The edge-to-edge bite of upper to lower canines is again a primitive hominid condition, though occurring occasionally in old, very much worn, ape teeth.

In all the features of the premolars *Plesianthropus* was again intermediate between the primitive dryopithecus and the early human stage. Its upper premolars are more primitive than those of *Sinanthropus* in having lower, less taurodont, crowns and divergent buccal and lingual roots.