

a period of transition in which traditional culture must suffer modification, has suggested lines on which development will bring about the least dislocation and can most effectively be brought under an enlightened control.

Petrol from Coal

THOSE who have maintained that the successful production of petrol from coal would prove of incalculable benefit to our long languishing coal industry will derive much satisfaction from a reply given in the House of Commons on May 17. Mr. Mitcheson asked the Secretary for Mines if he could furnish an estimate of the increased consumption of coal in Great Britain which has resulted from the imposition of a duty on fuel oil. The Secretary for Mines (Mr. Ernest Brown), in reply, said: "Official information is not available. But a short time ago I received a deputation from the Coal Utilisation Council and other bodies, which furnished detailed information, collected by various trade organisations. This showed that, in terms of coal, there had been conversions from oil to coal and coal products, and business retained which it was stated would, but for the tax, have been lost to home produced fuels, representing an annual rate of consumption of over 600,000 tons."

Sexual Selection in the Pheasant

THE Zoological Society of London has just received a noteworthy addition to its Gardens in a pair of Rheinhardt's Argus pheasants (*Rheinhardtius ocellata*), for this is one of the rarest of the pheasant tribe. Those who are interested in problems of sexual selection will find these birds well worth thoughtful study, for they present a striking contrast with the commoner and better known Argus pheasant (*Argusianus*). This bird occupied a prominent place in Darwin's "Descent of Man", on account of the enormous development of the secondary wing-feathers, the like of which is seen in no other bird. These feathers are also remarkable for their ornamentation, which consists of a series of ocelli which, as Darwin pointed out, when they are displayed in the courtship attitude, look like a series of balls lying within a cup-shaped socket, while the primaries are marked by a pattern of indescribable beauty. The wings of Rheinhardt's pheasant lack any form of ornament, and in shape conform to the usual type of pheasant wing. The tail feathers, however, are prodigiously long and marked by a pattern of considerable beauty. This striking difference in the secondary sexual characters in these two birds is puzzling. Nothing seems to be known of the nature of the display of *Rheinhardtius* in its amorous moods. It is to be hoped, therefore, that the new arrivals will greatly enlighten us on this point. The display of the wings in the Argus pheasant is unique, the two wings being widely spread so as to form an enormous circular fan completely concealing the rest of the body. It affords an unanswerable argument to those who hold that birds in 'display' are not conscious of their finery.

Mathematics and Cosmic Research

IN a lecture entitled "World-Gravitation by Kinematic Methods" given by Prof. E. A. Milne before the London Mathematical Society on May 17, his hearers had the thrilling experience of seeing a possible model of the universe constructed before their eyes by a simple, but wholly brilliant, application of apparently trivial mathematical methods. Starting with Newtonian time, Prof. Milne envisaged the behaviour of a set of particles of which the description given by an observer placed at any one of them would be the same as that given by an observer placed at any other. The hypothesis leads to certain functional and differential equations from the solution of which Prof. Milne deduced a statistical model of extreme elegance. The astonishing result was obtained that in a given volume of the observer's space there are particles the velocity of which is arbitrarily near that of light. On this, Prof. Milne showed how a theory of cosmic rays and obscuring matter in interstellar space could be based. The striking simplicity of the method and the far-reaching character of its interpretations open up a new vista of possibilities for cosmic research.

Demonstration of Television

ON May 15 a demonstration of the use of the cathode ray tube in television reception was given before the Electrical Association for Women at the showrooms of the Edison Swan Electric Co. Ltd., London. After a very clear and non-technical exposition of the basic principles had been given, the B.B.C. 30-line transmission was received. The results obtained suggested that the cathode ray tube is capable of giving as good an image as the limitations of the transmission will permit. There was very little flicker, owing to the large afterglow of the fluorescent material of the screen. The latter was of the usual type giving a green image; the use of white fluorescent screens is not considered desirable at the low picture frequency at present in use, as the afterglow with these is much less. The scanning is accomplished by means of two small oscillators giving voltages of saw-tooth wave-form and appropriate frequencies which are applied to the two pairs of deflecting plates; the incoming signals hold these oscillators in synchronism with the transmitter and also modulate the intensity of the electron beam. Difficulty was experienced in keeping the picture steady during the demonstration, but this was attributable to the exceptionally bad local reception conditions. It was stated that in normal circumstances the controls need not be touched during the whole transmission period of half an hour. The advantages claimed for the cathode ray tube are that it is noiseless, that signals of good headphone strength only are required to operate it, and that by the alteration of a few minor circuit components it can be easily adapted to suit transmissions of different numbers of lines and picture ratios. The last point is important in view of the uncertainty in the future development of television. Suitable tubes can now be marketed at six guineas and this price could be