

Dr. Dyson will deliver his presidential address entitled "Education for Life". A joint conference on "The Failure of Modern Science Teaching to Develop an Adequate Cultural Background to Life" will be held on January 4, when the principal speakers will be Prof. Julian Huxley, Mr. St. John Ervine and Sir Arnold Wilson. Among the lectures to be given before the large number of societies and associations taking part in the Conference are "Experimental Work on Heredity", by Dame Helen Gwynne-Vaughan (School Nature Study Union), and "Biology and the School Curriculum", by G. W. Olive (British Social Hygiene Council—Educational Advisory Board). Further information can be obtained from the Conference Secretary, 29 Gordon Square, London, W.C.1.

THE thirty-fourth annual meeting of the Science Masters' Association will be held in the Chemistry Department of the Imperial College of Science and Technology, South Kensington, London, on January 2-5; evening meetings will be held at King's College of Household and Social Science, Campden Hill Road, London. The following lectures have been provisionally arranged: H. T. Tizard, "Science and the Industrial Depression"; Prof. E. N. da C. Andrade, "New Experimental Work in Sound"; Prof. H. V. A. Briscoe, "Valency"; Dr. Allan Ferguson, "Some of London's Contributions to Science"; Mr. J. Ramsbottom, "Fungi"; Prof. A. Brammall, "Geochemistry applied to the Genetic Study of 'Hybrid' Rock Types"; Dr. H. Spencer Jones, "The Structure of the Universe"; Prof. R. A. Fisher, "Adaptations and Mutations"; Mr. H. Harle, "Polarisation of Light and its Applications to Photoelasticity". A discussion on School Certificate science will be held. It is also proposed to make a special feature of the exhibition of members' apparatus; in the event of a member not being able to attend the meeting, apparatus may be sent to the Secretary. Further information can be obtained from Mr. H. G. Lambert, Shirley Corner, Boden Road, Hall Green, Birmingham.

THE modern universities' shortcomings have been discussed in a series of articles in recent issues of the *Universities Review*. In the October issue there is an article entitled "Suggestions for a Reformed University Curriculum" based on the assumption that the aim of university education is to further human welfare by equipping the best minds for effective intervention in the philosophical and practical problems of to-day, that university studies ought to be fitted into schemes framed in accordance with this aim, and that inasmuch as they are turning out year by year large numbers of graduates who are quite uneducated, the universities are failing deplorably in their mission. On the science side, all undergraduates should receive, it is contended, a general scientific education, either a natural philosophy course, humanised by, for example, work in the history and philosophy of science and by such co-ordination as the linking up of mathematics with statistical science and economics, or a biological course treated with definite reference to fundamental modern problems. Specialised study should be permitted only after graduation and should in every case be "the activity of a mature mind stimulated by a real desire to know" instead of, as happens too often, "amassing a deal of useless information that will be promptly and rightly buried in the recesses of the university library".

Calendar of Nature Topics

December Frosts

December, the first month of winter, is often traditionally associated with frosts. Actually, in England, December is not so cold as either January or February, the average temperature at Greenwich over a period of 90 years having been just above 40° F., while the historic frosts of the seventeenth to nineteenth centuries did not usually begin until January. The most notable exception was the intensely cold month of December 1879 in western Europe. In the British Isles the chief characteristic of December is the frequency of rain, which, at most places, is greater than in any other month, though the actual amounts which fall may be less than in October or August. In the French Revolutionary Calendar of 1793, the period November 21–December 20 was the month *Frimaire*, but this refers rather to the formation of hoar-frost on the ground at night than to the occurrence of temperatures persistently below freezing point. In December, the air still contains a large amount of water vapour, while clear calm nights are cold enough for the ground to fall below 32° F., and under these conditions the deposits of hoar frost may be heavier than they are later in the winter when the temperature is lower.

Halcyon Days

In Virgil's "Georgics", Book 1, appears a reference to the fourteen halcyon days, which he describes as beginning on December 11. The legend relates to the myth that the lovers Ceyx and Alcyone were changed into kingfishers or halcyons by the gods for their presumption. Kingfishers were formerly supposed to construct nests floating on the sea, and their breeding time is near the winter solstice. Hence from about seven days before to seven days after the solstice, through the influence of Aeolus the wind god, father of Alcyone, all gales were hushed and the sea calmed so that the lovers' floating nest might not be injured by the waves or carried out to sea. The wind data for examining this belief are not readily available, but while periods of fine weather sometimes occur in the Mediterranean in winter, it is unlikely that they are especially frequent during the legendary period. 'Halcyon days' was later extended to include any period of fine calm weather.

Seasonal Variations in Tropical Animals

In a general way, it appears to be true that sexual rhythms associated with the seasons, such as are familiar in temperate regions, do not occur amongst tropical animals. Nevertheless, the seemingly uniform tropical breeding season has, at any rate in cases which have been carefully investigated, an indication of minor cycles not definitely associated with temperature. The case of the common toad of southern Asia (*Bufo melanostictus*) has been investigated by Gordon Alexander by morphological methods (*Univ. Colorado Bull.*, 33, 195; 1933). It has been suggested that in certain areas November marks an increase in sexual activity, while Boulenger and Flower state that in the Malay Peninsula the breeding season is in March and April. Alexander dissected the gonads of sixty-eight specimens from Bangkok, and examined externally several hundreds of individuals from China; he found that the ovary weight was greatest in November; that although the breeding season extended through all the months

of the year with the possible exception of October, a larger number of breeding females occurred from November to January, and that a secondary period of heightened breeding activity occurred during March and April.

Late Stay of British Migrant Birds

The Phenological Committee of the Royal Meteorological Society, which has just presented its forty-third annual report, the annual phenological reports of the *Irish Naturalists' Journal*, and local reports, such as those of the Yorkshire Naturalists' Union, have added to knowledge of the dates of arrival and departure of British migrant birds. Every year a number of abnormally late migrants, especially cuckoos and swallows, are reported, while the chiffchaff and other warblers have been recorded wintering in England. The 12 years' average Royal Meteorological Society record for the last call of the cuckoo is June 28, but the dates of departure of young cuckoos seem more difficult to collect. A specimen of the year in the Natural History Museum was shot in Cheshire on December 26, 1928; another was recorded in Devonshire on December 23, 1913; in Wiltshire, specimens on December 3, 1916 and 1921; and in 1925, one from Kent on January 5. November cuckoos and swallows occur frequently, though the 35-years' average date for the last swallow in the Royal Meteorological Society records is October 5. *British Birds* recorded a swallow from Hartford, Cheshire, on December 4 and 5, 1929. Out of 341 observers' dates for the last swallow in Britain in 1932, 11 were November records (Phenological Report, 1932); out of 361 records for 1931, 7 were November dates, and of 282 records for 1930, 18 were November dates.

The European Wolf

One of the features of the winter in villages in eastern France, Russia and other parts of Europe is the appearance of wolves from their forest habitats during severe weather. In Europe, the wolf has disappeared from the British Isles and central and northern Germany within comparatively recent historical times. Wolves were abundant in Yorkshire in the reign of Richard II, and in Ireland during Cromwell's time. Harting ("Extinct British Mammals") gives evidence to show that wolves were not exterminated in England until close on the fifteenth century, and in Scotland about 1743, while Sir J. E. Tennant gives the last Irish record so late as 1766, in Co. Kerry, and Richardson, 1770. There were sufficient wolves in Cheshire in 1302 to trouble the deer forests and necessitate the construction of special traps (*Proc. Hist. Soc. Lancs and Cheshire*, 43-44). An ancient tax made the subdued Welshmen deliver annually, instead of money, 300 wolves' heads to the king, and in four years the country was said to have become comparatively free from wolves.

With the exception of the antarctic wolf of the Falkland Islands (*Canis antarcticus*), true wolves are restricted to the northern hemisphere, and in Europe there is, as in American wolves, a marked variation in colour: those of the northern regions being lighter than those of the southern, blackish wolves being not uncommon in Spain. In the winter invasions of European villages, human lives are sometimes taken; in 1875, 161 persons were killed by wolves in Russia (Lydekker). Merriam has described a small pack sometimes killing hundreds of deer in the Adirondack region.

Societies and Academies

EDINBURGH

Royal Society, Nov. 6, 1933. A. GRAHAM: Cruciform muscle of lamellibranchs. In bivalves belonging to the families Tellinidae, Semelidae, Asaphidae, Donacidae and some Solenidae, there occurs a special cross-shaped muscle linking the two pallial edges at the base of the inhalent siphon, regarded by its discoverer, von Ihering, as an accessory adductor. It is now shown that in association with each half of the cross is a ciliated pit, beneath which lies a small ganglion. Contraction of the muscle draws water into the pits and the whole acts as a water-testing apparatus. On the basis of their possession of this organ, the Solecurtinæ are removed from the Solenidae and made a new family. A. G. NICHOLLS: Developmental stages of *Euchaeta norvegica*, Boeck. This includes a description of all the stages in the development of this large marine copepod, which is found in the deep waters of the Firth of Clyde. The young stages were reared in the laboratory and later stages were taken from the plankton. A. P. ORR: Weight and chemical composition of *Euchaeta norvegica*, Boeck. This animal has a high proportion of fat and is potentially a rich food for fish. The adult females are very much heavier than the males, which are about the same weight as males and females in the pre-adult stage. IVAN M. LAMB: Morphology and cytology of *Puccinia Prostii*, Moug. This is a micro-form occurring on *Tulipa* sp. The dikaryophase is initiated at the base of the bases of the teleutospore fundaments by cell fusions and nuclear migrations. The diploid hyphæ thus formed are 5-6 cells long and their terminal cells form the teleutospores; nuclear fusion takes place in the latter. During nuclear division a spindle is formed but no individual chromosomes were distinguished. Teleutospores kept under favourable conditions failed to germinate in the spring and it is suggested that in Great Britain the rust spreads solely by a systemic mycelium. T. NICOL: Reproductive system in the guinea pig: *post partum* repair of the uterus and the associated appearances in the ovaries. Variation in the rate of repair of the endometrium after parturition is analysed. It is shown that repair in a normal animal not re-impregnated was completed in $4\frac{1}{2}$ - $6\frac{1}{2}$ days *post partum*; if impregnation had occurred, repair was accelerated, the acceleration not being due apparently to ovarian conditions, but probably to the presence of the fertilised ovum. In animals in which normal ovulation had not occurred, *post partum* repair was delayed. The examination of the associated ovaries led to the conclusion that the delay was due to the absence of young corpora lutea, the possibility of failure of action of the pituitary hormones not being ignored. A. C. ATKEN: (1) Fitting polynomials to weighted data by least squares. (2) Fitting polynomials to data with weighted and correlated errors. These papers conclude the author's work on passing polynomial curves as near as possible to given points by least squares. The first paper follows the lead of Tchebycheff up to the point of obtaining a set of equations involving moments of data and moments of weights. For solving these equations the author suggests a new scheme by which the desired polynomials and residual errors are produced by a uniform repetitive process, well suited to practical work. The final paper undertakes the more difficult question of correlated errors. Here the principle of least squares must be extended.