

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 chiff-chaff 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 hyphae 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.

The author solves the problem by introducing polynomials orthogonal in an extended sense, in which a quadratic expression replaces the usual sum of squares. The desired solution is then obtained with comparative theoretical ease. The practical application, though straightforward, is naturally rather tedious. R. GRANT: Physiology of reproduction in the ewe. (1) Observations on Scottish lowland sheep; together with an analysis of the influences of internal and external factors upon the oestrous cycle. The hormonal conditions governing the cycle are discussed. Inter-oestrum is regarded as a period of luteal activity. (2) Changes in the vagina and cervix: a description of the macroscopic and microscopic changes in these organs during the complete reproductive cycle, and a discussion of their hormonal basis and significance.

PARIS

Academy of Sciences, October 23 (*C.R.*, 197, 877-952). A. DEMOULIN: The R and T transformations. LEON POMEY: An application of the theory of unicursal involutions to cubics and to quartics. FINIKOFF: The pairs of surfaces the asymptotes of which correspond and which, at corresponding points, have the same Wilczynski directrices. CLAUDE CHEVALLEY and RENE DE POSSEL: A theorem on completely additive functions of ensembles. J. KARAMATA: Theorems of Tauberian nature. RAPHAËL SALEM: Fourier's series. G. CERF: Partial differential equations with two variables of the form $F[G(z)] = 0$. D. MICHNEVITCH: The structure of partial differential equations of the first order with one unknown function. S. NIKITINE: A principle of diminution of the resistance to the advance of a body in a fluid. L. SACKMANN: The evolution of the regimes of flow between parallel glass walls as a function of the distance between them. D. RIABOUCHINSKY: The phenomena of striation of the limiting layer. V. VOLKOVISKY: Aerodynamic spectra at supersonic velocities. CH. BERTAUD: Researches on the movement of the A stars. ALBERT NODON: The terrestrial repercussions of the variations of solar activity. The active foci, detected by electrical and magnetic observations and barely visible, must be regarded as causing the greater part of the electrical, magnetic and atmospheric disturbances. NICOLAS KRYLOFF and NICOLAS BOGOLIUBOFF: Some general properties of resonances in non-linear mechanics. ANDRE EGAL: A new method of measuring the flow of fluids by the application of thermoelectric phenomena. The cold junctions of a series of thermocouples are in thermal contact with the tube containing the fluid in motion, whilst the hot junctions are heated to a controlled temperature. The variation of the thermoelectric potential is a function of the rate of flow of the fluid. H. R. CRANE, C. C. LAURITSEN and A. SOLTAN: A new artificial source of electrons. Lithium chloride and beryllium were bombarded with a mixture of light and heavy hydrogen ions containing 5 per cent of the latter, and also with hydrogen ions from ordinary water: curves are given showing the disintegration of the lithium and of the beryllium by the hydrogen ions as a function of the accelerating voltage. JEAN THIBAUD: Study of the physical properties of the positron. W. SCHUMACHER: The mechanical effects observed in the sudden superheating of lead azide in a vacuum. Mercury fulminate and lead azide behave differently when suddenly heated in a vacuum: the former disintegrates without

explosion, the latter explodes. JACQUES LEFOL: The hydrated calcium aluminates. Curves are given showing the loss of water as a function of the temperature of calcium aluminates prepared in different ways. D. LIBERMANN: The preparation of the salts of trioxotriarylsulphonium. D. IVANOFF and I. PAOUNOFF: A new complex organomagnesium derivative, β -magnesium-phenylacetonitrile. In the study of the reaction between benzyl cyanide and the magnesium compound $RMgX$, the formation of the compound $PhCH(CN)MgX$ was proved indirectly by treating with carbon dioxide and separating the acid $PhCH(CN)CO_2H$. ED. SAURIN: The marine Lias and Trias of north-eastern Cambodia and f Darlac. P. FALLOT and L. DONCIEUX: The Flysch of the Spanish Rif. J. JUNG and A. JEANNET: The geology of the Kafan-Kouh (Persia) chain. J. CUVILLIER: The presence of *Orbitolites complanatus* in the layers of passage from the middle Eocene to the upper Eocene in Egypt. J. RAYMOND: The kinesis of the ascus of *Pyronema confluens*. PHILIPPE HAGENE: The production of heat by the contact of dry earth with water. MAURICE QUENDIAC: The localisation of the tannic substances in the ligneous tissue of the chestnut tree. J. BRANAS and J. DULAC: The mode of action of cupric mixtures at the moment of their use. FERNAND MERCIER and L. J. MERCIER: The combinations of sparteine and the cyclic substituted barbituric acids. Description of the preparation and properties of sparteine ethylphenylbarbiturate and methylphenylbarbiturate. Only the neutral compounds are well defined, the neutral ethylphenylbarbiturate of sparteine being the most stable. G. ROUSSEL and MME. Z. GRUZEWSKA: The iron in the liver of the foetus of the calf. The existence of reserve iron and the variations in foetal livers in the course of foetal life are confirmed. LÉON BINET and JEAN PAUTRAT: The plasmatic phosphatase in cases of pulmonary tuberculosis. Phosphatase, the ferment concerned in processes of calcification, is clearly shown to be present in increased proportions in patients affected with fibrous pulmonary tuberculosis. ERWIN CHARGAFF: The carotinoids of bacteria. CH. DHERE: The fluorescence spectra of hypericine and of mycoporphyrine. These two pigments give identical fluorescent spectra: it has been shown previously (H. Fischer and R. Hess) that their absorption spectra are also identical. V. CHORINE and R. GILLIER: The mechanism of Henry's reaction in malarial infection.

MELBOURNE

Royal Society of Victoria, September 14. WALTER HANKS: The Tertiary sands and older basalt of Coburg, Pascoe Vale and Campbellfield: The older basalts of the area are described and the Tertiary sands are separated into pre-older basaltic leaf-beds and Lower Pliocene beds. Localities from which fossils have been secured are recorded. The alterations in drainage from older basaltic times through newer basaltic times are discussed. HELEN T. PATERSON: Notes on some Tertiary leaves from Pascoe Vale: Leaf-bearing clays in the Moonsee Ponds Creek containing plant remains of the 'brush' type of vegetation, together with forms resembling eucalypts and Banksias. The determinations include the genera *Nothofagus*, *Ficonium*, *Magnolia*, *Lomatia*, *Nephelites*, *Pomaderris*, *Bombax*, *Eucalyptus*, *Angophora* and *Cordia*. These impressions resemble types of leaves recorded from Narracan and Berwick in a similar pre-older basaltic series.