tinuity by creating a new form which will not cross with the old. They point out that a single colonizing polyploid individual can produce variation impossible to a solitary diploid, and so when there are sudden opportunities for colonization to occur, as after an ice-age, the new polyploid can step in and quickly acquire a large range from which its diploid parent is excluded. Evidence for this is provided by the two chromosome-races of valerian (*Valeriana officinalis*) studied by Skalinska[14]. The tetraploids ($2n = 28$) are limited to southern England south of a line from the Bristol Channel to the Wash, and roughly corresponding to the 62° F. July isotherm, while the octoploids ($2n = 56$) extend as far north as West Inverness. Within their common area, for example, Gloucestershire, the two chromosome-races are ecologically separated, tetraploids being confined to dry, limy or chalky habitats in hilly regions, while octoploids grow at lower altitudes in moist soil, along river sides and on ditch banks. Yet farther north, where octoploids alone occur and have spread after the ice retreated, there are variants which grow in both dry and wet places. In this instance an *old* tetraploid has behaved as a relative diploid.

There are three British chromosome-races of watercress (*Nasturtium officinale*), the species occurring in all vice-counties[11]. Manton[15] has separated them on morphological as well as cytological grounds. The diploid (*N. officinale* s. str., $2n = 32$) is an annual with bright green leaves while the tetraploid is the perennial winter watercress (*N. microphyllum*, $2n = 64$), recognized by its purplish-brown leaves in cold weather. Recent but still incomplete records of their distribution[16] suggest that the diploid tends to occur more in the western part of Britain while the tetraploid occurs more to the east; both species overlap in midland counties. Perhaps the diploid occurs in areas with higher mean annual rainfall than the tetraploids. On the other hand, the same records for the sterile triploid show an irregular but wider range of distribution from east to west; it may be absent where both parents occur and be present where both are absent. Field studies in Oxford have, however, failed to show ecological preferences between diploids and tetraploids[12].

Many other chromosome-races require investigation. For example, in Britain there are two closely related *Arum* species: *A. neglectum* ($2n = 63$) is a nonaploid confined to the south coast of England, while the common cuckoo-pint (*A. maculatum*, $2n = 56$ and 84) occurs throughout Britain with a sharp delimitation at latitude 56° N. Salisbury[17] has pointed out that probably the different species distribution is due to differences in times of leaf emergence. But we do not as yet know what kinds of distribution the two chromosome-races of *A. maculatum* have in relation to each other.

Investigations have also been made into the cyto-ecological relations of closely related species within a genus, members of which can still sometimes hybridize. Thus, Fitzpatrick[18] has established a relation between ploidy and normal habitats among British meadow-grasses (*Glyceria* spp.), all of which are morphologically distinct. The diploid species (*G. declinata*, $2n = 20$) is most drought-tolerant, living in dried-up ponds and cart ruts, while the two tetraploid species (*G. plicata* and *G. fluitans*, $2n = 40$) prefer wetter habitats such as ditches and stream edges. The hexaploid species, *G. maxima* ($2n = 60$), is a typical constituent of reed swamps[12].

The relation between chromosome-races and ecology can also be observed in Pteridophyta. For example, Manton[19] has found that in the common polyploidy fern (*Polypodium vulgare*) the diploid ($2n = 74$) usually occurs on limestone habitats in south-west England and in Yorkshire. This race, known as the variety *serratum*, has its dormant season in summer, putting out new fertile fronds in August or September, while the tetraploid ($2n = 148$) is earlier, producing new leaves in May and June. The hexaploid ($2n = 222$) is a large plant with thicker leaves and has an extended season from summer to autumn; it prefers moister climatic conditions, and is the commonest type in Ireland, Wales and south-west England and the only race on Jersey.

Where there are ecological differences between chromosome-races within a species the general trend becomes clear. Within the species, lower chromosome multiples prefer drier habitats and there is a progressive trend through intermediates to the highest polyploids, which prefer moist or wet habitats. Aneuploidy is not so important in this respect as polyploidy. It remains to be determined how this has come about, the actual physiological relationships involved, and whether the phenomenon is related to a change-over from sexual to apomictic or vegetative methods of reproduction which so often accompany higher polyploidy[2].

[1] Maude, P. F., *New Phytol.* Reprint No. 20 (1939). Rutland, J. P., *New Phytol.*, **40**, 210 (1941).
[2] Darlington, C. D., "Recent Advances in Cytology" (2nd ed.; Churchill, London, 1937).
[3] Stebbins, G. L., *Adv. in Genet.*, **1**, 403 (1947).
[4] Valentine, D. H., *New Phytol.*, **49**, 193 (1950).
[5] Hancock, B. L., *New Phytol.*, **41**, 70 (1942).
[6] Winge, Ø., *C.R. Carlsberg Lab.*, Ser. Physiol., **23**, 41 (1943).
[7] Lövkvist, B., *Hereditas*, **33**, 421 (1947).
[8] Lawrence, W. J. C., *Genetica*, **13**, 183 (1931).
[9] Howard, H. W., *Nature*, **161**, 277 (1948).
[10] Walters, S. M., *Watsonia*, **1**, 163 (1949).
[11] Druce, G. C., "The Comital Flora of the British Isles" (Buncle, Arbroath, 1932).
[12] Turrill, W. B., "British Plant Life" (Collins, London, 1948).
[13] Darlington, C. D., and Mather, K., "The Elements of Genetics" (Allen and Unwin, London, 1949).
[14] Skalinska, M., *J. Linn. Soc.* (Bot.), **53**, 159 (1947).
[15] Manton, I., *Z. indukt. Abstamm. u. VererbLehre*, **69**, 132 (1935).
[16] Howard, H. W., and Lyon, A. G., *Watsonia*, **1**, 228 (1950).
[17] Salisbury, E. J., *Quart. J. Roy. Met. Soc.*, **65**, 337 (1939).
[18] Fitzpatrick, J. M., *New Phytol.*, **45**, 137 (1946).
[19] Manton, I., "Problems of Cytology and Evolution in the Pteridophyta" (Cambridge University Press, 1950).

OBITUARIES

Prof. Cyril Batho

We regret to record the death of Prof. C. Batho, which occurred at his home in Birmingham on March 23, after an illness which had lasted some months. Prof. Batho retired only last year from the Beale chair of civil engineering in the University of Birmingham, and was afterwards accorded the title of emeritus professor.

Born in Liverpool on June 21, 1885, Dr. Batho was educated at Liverpool College and at the University of Liverpool, where he later spent some time in postgraduate research. He was appointed to a lectureship in civil engineering at McGill University in 1908 and thereafter spent two years in postgraduate study at Berlin and Charlottenburg, returning to McGill University in 1911 as assistant professor. In addition to his work at the University, he acted for a period as an assistant design engineer on the Quebec Bridge.

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Following the outbreak of the First World War in 1914, Prof. Batho became research officer to the Canadian Machine Gun Corps and, later, served as senior technical assistant at the Royal Aircraft Establishment, Farnborough. After spending a short time as lecturer at Trinity College, Cambridge, he returned to McGill University in 1919 as associate professor of applied mechanics and hydraulics. In 1924 he was appointed to the chair of civil engineering in the University of Birmingham, where he remained until his retirement in 1950.

Prof. Batho was responsible for a considerable amount of research dealing with reinforced concrete and various aspects of structural engineering, his main interest being in statically indeterminate structures and in riveted and other connexions. He was chairman of the Midland Association of Civil Engineers during 1932–34 and a member of the Steel Structures Research Committee from 1929 until 1936.

A bachelor and of a retiring disposition, Prof. Batho was a man of wide cultural interests. His devotion to music and the arts led him, in the years gone by, to pay numerous visits to Continental centres.

Prof. Giovanni Giorgi

On August 19 of last year the scientific world suffered a great loss by the accidental death, through drowning, of Prof. Giovanni Giorgi, of the University of Rome, widely known as the proposer and champion of the M.K.S. system of electrical units which bears his name.

Prof. Giorgi was born at Lucca on November 27, 1871, took his degree in engineering at Rome in 1893 and immediately devoted himself to the study of theoretical physics and mechanics. He explained his scheme of units in 1901 in a paper published in *Atti della Associazione Elettrotecnica Italiana*, and submitted three years later to the St. Louis Congress of the International Electrotechnical Commission. The Giorgi system was officially adopted by the Commission in 1935 : it is an extension of the practical system (amperes, volts, henries, farads, etc.) to include electric and magnetic fields. In Giorgi's words, "this will result in a great simplification of all practical calculations and of the learning of electrical theory in the schools. A great deal of waste of time and intellectual fatigue will be saved."

In 1903 Prof. Giorgi published an important paper on methods of studying and representing sinusoidal alternating currents, and he followed this by several papers on electrical transients. He gave a precise theoretical basis to Heaviside's operational calculus.

Giorgi was the author of more than three hundred and fifty papers on physical and mathematical subjects. All his writings are characterized by clarity of ideas, simplicity of exposition and elegance of expression.

We regret to announce the following deaths :

Dr. E. E. Day, formerly president of Cornell University, a distinguished economist and statistician, on March 23, aged sixty-seven.

Mr. G. E. Pearson, formerly chairman and governing director of the Wellcome Foundation, Ltd., on March 29, aged eighty-two.

NEWS and VIEWS

Mathematics at the Queen's University, Belfast : Prof. T. G. Room, F.R.S.

Prof. T. G. Room, of the University of Sydney, who has been appointed to the chair of pure mathematics at the Queen's University, Belfast, was educated at Alleyn's School and at St. John's College, Cambridge. He held an assistant lectureship in mathematics at the University of Liverpool during 1925–29, and was elected to a fellowship at St. John's College, Cambridge, in 1927. From 1929 he was a University lecturer in mathematics at Cambridge, until he was appointed to the chair of mathematics at Sydney in 1935. At Cambridge his geometrical powers developed under the guidance of Prof. H. F. Baker, and he soon began to make important contributions to the subject. Attracted by the synthetic methods of Reye, and interested in the incidence properties of geometrical configurations, he set out to discover generalizations, in higher space, of theorems such as that of the double-six of lines in the solid, and of the set of five associated lines in a four-fold. In this connexion he was naturally led to investigate the properties of projectively generated manifolds in higher space. In 1939 he published a classical treatise on the "Geometry of Determinantal Loci", giving a systematic account of the subject, of basic importance for further advances. The projective properties of these loci are established by a powerful use of synthetic methods, together with simple matrix algebra. This branch of geometry is by no means exhausted, and Prof. Room is still extending our knowledge in this field. Prof. Room was elected to the Royal Society in 1941.

Civil Engineering at Melbourne : Dr. A. J. Francis

Dr. A. J. Francis, who has been appointed to the chair of civil engineering in the University of Melbourne, is a graduate of the University of Birmingham, having taken a first-class honours degree in civil engineering in 1934 and afterwards the M.Sc. and Ph.D. degrees of that University. After graduation, Dr. Francis was appointed assistant engineer to the Worcestershire County Council and later joined the staff of John Mowlem and Co. During the last years of the Second World War he served with the Ministry of Home Security and the Admiralty. At the conclusion of the War he was appointed a lecturer in the Department of Civil Engineering in the University of Birmingham, a position which he held until his appointment to the Melbourne chair this year. Dr. Francis has specialized in structural research and has published a number of papers on the structural analysis of reinforced concrete, steel and light-alloy structures. He is married, with three sons, and takes a keen practical interest in music.

Physics Subdivision of the Atomic Energy Project, Canada : Dr. B. W. Sargent, M.B.E.

Dr. B. W. Sargent has been appointed assistant director in charge of the Physics Subdivision of the Atomic Energy Project, Chalk River, Canada, in succession to Dr. W. H. Watson, who last year was appointed head of the Physics Department, University of Toronto. Dr. Sargent has been associated with the Atomic Energy Project since its inception, and in 1945 worked on the heavy-water reactor pile, the first to be built in Canada. Since then, he has been

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