ample, the type of training) seem to be the most important.

Prof. L. S. Penrose (Galton Laboratory, University College, London) demonstrated in his paper on "Mutation and Parental Age" that human material may in certain cases yield results superior to those usually obtained from experimental animals. The spontaneous mutation-rates of a number of ('dominant') human genes have been estimated by direct observation of freshly arising cases, that is, of abnormal children born of normal parents. In other cases, an indirect method has been used which is based on the supposition that elimination by selection of a gene with deleterious effects must be balanced by newly arising mutations, the overall frequency of the condition remaining approximately constant.

Additional information about possible causes of mutations has now been obtained from a consideration of parental age. For example, if a certain gene is particularly sensitive to ionizing radiation to which parents are exposed throughout their lives, mutations at that locus will be proportional to parental age such that the trait will be twice as common among offspring of parents aged forty as among those with parents aged twenty years. Looked at in another way, the parents of children carrying newly mutated genes will be older than the average parent. Some evidence (unfortunately from maternal ages only) of an increase of mutation-rate with age comes from microphthalmia, and there is less complete evidence of an effect of both paternal and maternal age in the case of epiloia and retinoblastoma. The incidence of achondroplasia (born of normal parents and hence presumably due to a new mutation) depends strikingly on the age of the father, but there seems to be little or no effect of the age of the mother; in the latter case, a possible interpretation is that, while the epiloia locus is sensitive to natural radiation, the achondroplasia locus is sensitive to agencies specially active at some stage in cell division, perhaps chemical mutagens. The relative absence of cell division in the female germ track, as compared with the male germ track, would explain the lack of independent maternal effects. The dependence or otherwise of mutation-rate on parental age thus affords some information on possible causes of 'spontaneous' mutations not so far obtainable from data on spontaneous mutations in animals.

The concluding paper, by Dr. C. O. Carter (secretary, Eugenics Society), dealt with "Genetics and Child Health". In recent years, deaths from diseases of childhood due to environmental causes (mainly infections) have declined sharply. As a result, the groups of diseases mainly or partly due to genetical causes loom much larger. An indication of the changes in relative importance is given by the cause of death in two hundred consecutive children undergoing post-mortem investigation in a children's hospital in each of the years 1914 and 1954. The group of diseases caused by environment was more than two-thirds of the whole in 1914, but less than one-seventh in 1954; the group of diseases mainly genetical in origin was only one-fiftieth of the whole in 1914 but one-eighth in 1954; diseases of mixed causation were less than one-seventh of the whole in 1914, but more than a quarter in 1954, while diseases of unknown causation rose from less than a quarter in 1914 to nearly a half in 1954.

Looking to the future, Dr. Carter believes that, while the environmentally caused group of diseases will continue to fall, the diseases of mixed origin will

probably be only slightly reduced by environmental measures. Reduction in the proportion of children born with genes predisposing to these disorders can only be achieved by reducing the average number of generations through which disadvantageous gene mutations can persist in the population. At the moment, such mutations are tending to last longer as new methods of treatment keep those affected alive to an age at which they can bear children. Probably the most ethically correct way of bringing about a reduction in the average number of generations a mutation persists is to enlist the co-operation of parents who are unlucky enough to carry major disadvantageous mutations, in planning to keep the number of their children below replacement-rate.

OBITUARIES

Prof. J. C. Flugel

PROF. JOHN CARL FLUGEL died suddenly at his home in London on August 6. He was one of the few survivors of the small band of British psychologists who received their training at Oxford under William McDougall. McDougall's views on the nature of mind and the way psychological questions should be approached influenced nearly all that Flugel wrote; yet he himself succeeded in developing a wholly original attitude.

His earliest researches were carried out in the laboratory at Oxford, and dealt with such practical problems as intelligence testing, visual adaptation at night, the measurement of mental fatigue and the causes of the oscillations of attention. After his appointment as lecturer at University College, London, he remained for many years in charge of the experimental work in the Department of Psychology. His chief interest, however, lay in the deeper problems such as in those days were relegated to the somewhat dubious regions of psychoanalytic study and psychical research. He was the first professional psychologist to make a serious examination of Freud's early theories. These he endeavoured to re-interpret in terms of current British psychology. Thus, while the medical profession still looked askance at the novel and extravagant doctrines of the Freudian School, he did much to popularize their chief conclusions by recasting them in a more acceptable form. The outcome was a series of papers on psycho-analytical topics which appeared in various scientific journals, and were later collected and re-issued in book form.

Of his larger works, the first was "The Psycho-analytic Study of the Family" (1921), which attracted immediate attention. The most popular was probably his "Psychology of Clothes" (1930). "A Hundred Years of Psychology" (1933) presents an admirable historical review of the development of psychology from 1833 to the date of publication, and is still read as a regular text-book. The lucid style, the flashes of humour, the widespread sympathy and tolerance which distinguish all his writings were also a marked feature of his personal teaching, and endeared him to numerous students who came to his classes from all over the world.

In 1929 Flugel was made assistant professor, and retained this post until his retirement in 1944. A good deal of his time was spent in practical psycho-analytical work with patients and normal persons; and the results led to many valuable contributions to psychological and psychiatric theory. The more

important were embodied in his books on "Men and their Motives" (1934) and "Man, Morals, and Society" (1945). He served for some time as honorary secretary of the International Psychoanalytic Association; and in 1948 was elected chairman of the programme committee of the International Congress on Mental Health. Two years later he was appointed president of Section J (Psychology) of the British Association.

To the end of his life Flugel continued to give regular lectures at University College and to take an active part in the work of the British Psychological Society and its numerous committees. But his abiding work lies in his fruitful attempts to synthesize Freudian psychoanalysis with the orthodox tenets of British psychology as taught by Ward, Stout and McDougall.

CYRIL BURT

Mr. Philip Lyle

PHILIP LYLE, who died on July 15, was the elder son of the late John Lyle, of Weybridge, and grandson of Abram Lyle, the founder of the sugar-refining company which was later amalgamated with Henry Tate and Sons to form Tate and Lyle, Ltd. He was born on November 26, 1885, and was educated at Rugby, in Switzerland and at University College, London. He later applied himself to statistical mathematics, which he put to very good use in the sugar industry.

As a director of Tate and Lyle, first at Plaistow refinery, Philip Lyle participated in raising the low thermal efficiency, poor scientific control and low output of the refinery until it held one of the foremost positions in the world. He paid special attention to losses incurred in sugar refining and consequently to methods of sugar analysis. In 1947 he was responsible for broadening the Company's outlook towards research and enlarging its research activities. As chairman of the Research and Development Committee he was invaluable in guidance and judgment.

Mr. Lyle's own scientific contributions were best known in refinery circles; but a few exceptions include "Heat of Solution of Sucrose", which explained discrepancies in heat balances in refineries. The "Sugar Industry" and "Constructions of Nomograms for use in Statistics" appeared in the *Journal of the Royal Statistical Society and Applied Statistics*, respectively. He was a notable member of both the Royal Statistical Society and its Industrial Applications Section, being one of the two secretaries and editors of the former and on the Editorial Committee of the latter. In 1944 he published "Regression Analysis of Production Costs and Factory Operations".

Philip Lyle was a director of the West Indies Sugar Co. of Jamaica, and Caroni, Ltd., of Trinidad. He made a special study of statistical treatment of agronomical problems. He was also a director of Colonial Yeast, Ltd., which had been founded by the Sugar Commission to produce cheap protein and vitamins (Thayesen's *Torula utilis*) needed in the Caribbean, from surplus cane molasses. The product could not find a market there or elsewhere, and the project was abandoned; but his faith in the necessity for protein production to supply under-nourished peoples was unflinching, and he read a paper on the subject before the Nutrition Society in 1950.

The Sugar Reorganization Act, 1936, was responsible for formation of Research Committees A and B, of which he was a member. The programme for B was largely that put forward by him and was adopted in part by the Colonial Research Committee. Other pro-

posals were chemical research into by-product utilization and sucro-chemistry, which were implemented at the University of Birmingham under Sir Norman Haworth and later Prof. L. F. Wiggins. Physico-chemical research at the University of Bristol was financed first by the Commission and later by Tate and Lyle and the British Sugar Corporation.

Among unpublished work which has nevertheless been widely adopted and utilized is his "Analysis of Sugar Grists", in which he showed that the normal frequency curves allowed grists to be expressed in terms of mean aperture and coefficient of variation.

So much for his interests and work. What of the man? To meet Philip Lyle was to like him. To know him was to admire, respect and love him. His encouraging manner, his friendly approach, his sunny smile (the same to people in all walks of life) made everyone his friend, and effort on his behalf a pleasure; Browning might have altered the lettering of "Pippa passes". He leaves a widow, a daughter, two sons, one of whom is following in his footsteps, several grandchildren and innumerable friends.

H. C. S. DE WHALLEY

Sir Francis McClean

FRANK MCCLEAN was best known to the outside world as the great patron of aviation and the founder of amateur and naval flying in Great Britain. Born on February 1, 1876, and educated at Charterhouse, Clifton and Coopers Hill, he served with the Public Works Department in India during 1898-1902. After flying in two Gordon-Bennett balloon races in 1907-8, he flew with Wilbur Wright at Le Mans in the latter year. He bought land in the Isle of Sheppey for his early flying experiences on heavier-than-air machines and lent aircraft to the Admiralty so that naval officers could learn to fly. After some pioneering work in submarine photography, he caused some sensation by flying up the Thames in a seaplane, passing between the upper and lower parts of the Tower Bridge and under London Bridge. He joined the R.N.A.S. on the outbreak of the First World War, served on Channel patrol and then became chief instructor at Eastchurch. When the R.A.F. was formed he took a commission, but resigned in 1919.

McClean's other great interest lay in astronomy; in this he was influenced by his father, Dr. Frank McClean. He organized two eclipse expeditions, to Flint Island in 1908 and to Port Davey in Tasmania in 1910. He also joined an expedition led by Sir Norman Lockyer to Vavau Island in 1911. He was a joint founder of the Norman Lockyer Observatory on Salcombe Hill, Sidmouth, serving under his friend, Sir Richard Gregory, on its council. The Frank McClean Dome and the twin telescope and sidereal clock which it houses bear further witness to his generosity. His 21-in. siderostat, bought for his eclipse expeditions, was presented by him to the Cambridge Observatories. With his brothers, he was a generous benefactor also to the Coins and Manuscripts Departments of the Fitzwilliam Museum, Cambridge. Other social activities are reflected in his holding the office of High Sheriff of Oxfordshire in 1932 and the presidency of the Royal Aero Club for two spells. He was the senior member of the Royal Astronomical Society Club, and was much loved by a wide circle of friends in flying and astronomical circles. He died on August 11 after a long illness, leaving a widow and two daughters.

F. J. M. STRATTON