

those who had been led to one mis-step by unfortunate environmental circumstances: and he stated further that only the fate of the former type was predetermined by heredity.

From the results of these various studies of twins, which have helped and are helping to solve the problem of what Galton called Nature versus nurture, it can be seen that no simple answer can be given. The functions and values of heredity and environment are completely interwoven, and are not, as has been asserted by some people, intrinsically antagonistic. They vary in relative importance in regard to specific and general traits; but it can be said that, while both heredity and environment contribute to intelligence and the physical qualities of an individual, the contribution of heredity is several times that of environment. Education and training vary in relative importance in relation to the hereditary type with which they are dealing; the more intelligent the individual, the more potent the educational and general environmental influence. Environment tends to become more important as heredity becomes higher and more complicated.

Plato said that "Environment is most effective when it operates on complex nature". The forms of behaviour which constitute the adjustment of the individual to his environment at a complex level of performance are affected both by the original nature of the individual and by his environment and are not the sole product of either.

¹ Newman, H. H., Freeman, F. N., and Holzinger, K. J., "Twins: a Study of Heredity and Environment" (University of Chicago Press, 1936), 86.

² Galton, F., "Inquiries into Human Faculty and its Development" (New York: Macmillan and Co., 1883), 216-242.

³ Thorndike, E. J., "Measurement of Twins". Archives of Philosophy, Psychology and Scientific Methods, No. 1 (September 1905), 1-64.

⁴ Merriman, C., "The Intellectual Resemblance of Twins", Psychological Monographs, Vol. 33, No. 5 (Princeton, N.J.: Psychological Review Co., 1924).

⁵ Wingfield, A. H., "Twins and Orphans: the Inheritance of Intelligence" (London and Toronto: J. M. Dent and Sons, Ltd., 1928).

⁶ Hogben, L., "Genetic Principles in Medicine and Social Science" (London: Williams and Norgate, 1931).

⁷ Rosanoff, A. J., Handy, L. M., Plessett, I. R., and Brush, S., "The Etiology of so-called Schizophrenic Psychoses", *Amer. J. Psychiatry*, 140, 247 (September 1934), 247-286.

⁸ See ref. 1.

⁹ Ref. 1, p. 93.

¹⁰ Ref. 1, p. 250.

¹¹ Ref. 1, p. 191.

¹² Lange, J., "Crime as Destiny", translated by Charlotte Haldane (1931).

OBITUARIES

Sir James Morton

SIR JAMES MORTON, who died at the age of seventy-six at Dalton Hall, Carlisle, on August 22, represented in his own person the happy combination of dye-user and dye-maker that has played so large a part in the renaissance of the dyestuffs industry in Great Britain since 1914.

Sir James was the second son of the late Mr. Alexander Morton of Gowan Bank, Darvel, Ayrshire, and was educated at the village school of Darvel and at Ayr Academy. He became the chairman of Morton Sundour Fabrics, Ltd., Carlisle, and the Standfast Dyers and Printers, Ltd., Lancaster, and a delegate director of the Dyestuffs Group of Imperial Chemical Industries, Ltd.

His attention was first directed to the problem of fabrics fast to light when he went to Carlisle in 1920 with a branch of the Ayrshire works which had been manufacturing furnishing fabrics for some thirty or forty years. The story of the development which led to the founding of the Morton Sundour Fabrics Ltd., from his first experimental exposures conducted in his greenhouse at Penrith at that time, has been graphically told by him in his monograph "Fast Dyeing and Dyes". However slight its claims as a serious historical study, this brochure illustrates to the full the energy, enthusiasm and determination which were such important factors in his success and for which he will long be remembered. His exposures at Penrith and his continental journeys led him ultimately to a range of colours which on certain types of fabrics could be guaranteed against fading from sunlight or ordinary washing. This position was reached in the summer of 1904, and in the autumn of that year guaranteed goods were first announced and sold by Messrs. Liberty in London, for which the trade mark 'Sundour' was afterwards invented. A chemical side to the business for these new developments in dyeing was then started at Carlisle, and by 1914 the Sundour factory had become the largest side of the business.

Sir James' continued interest in the dyeing side of the business is shown by a number of patents he took out in the post-war years, but the cessation of supplies of fast vat dyes, particularly of the indanthrene colours, at the outbreak of war in 1914, led him to take up the manufacture of these dyes himself. He thought that by manufacturing a blue and a yellow, by reverting to some of the dyes used in his first fast dyes, it would be possible to maintain a limited range of Sundour goods. He succeeded in tracing the synthesis of indanthrene blue and yellow far enough to find that both were derived from 2-aminoanthraquinone, which is itself obtained from sodium anthraquinone-2-sulphonate or the silver salt, an intermediate product in the manufacture of alizarin. The determination with which he pursued this objective, overcoming not merely the chemical difficulties of the syntheses but also those presented by plant and raw materials, in the course of which he founded Solway Dyes, Ltd., and later Scottish Dyes, Ltd., was largely responsible for the award to him in 1929 of the Faraday Centennial Medal on the recommendation of the Royal Society, the Royal Society of Arts and the Royal Institution "for signal service rendered to chemical science and industry in this country by developing and extending manufacture of anthracene dyes and more recently by extending their application to silk and wool". In 1929 he was also awarded the Medal of the Royal Society of Arts for his lecture on "Fast Dyeing and Dyes" already mentioned. This and his address on dyes and textiles in Britain (1930) given at the British Association meeting at Bristol in September of that year, like his monograph "To Young Weavers", find a fitting place in the literature of the dyestuffs industry.

Morton was knighted in June 1936 for his services to the dye and colour industries. He was a member of the Dyestuffs Industry Development Committee during 1921-34 and of the Committee on New Industrial Development, 1931-32. He was awarded the honorary degree of LL.D. by the University of St. Andrews in 1930 and was a fellow of the Royal Society of Edinburgh as well as an associate of the Manchester College of Technology.

He took a close interest in social welfare work connected with his Company, and in starting the branch at Carlisle bought Murrell Hill House and its grounds as a place of recreation for his work-people. He took a close interest in the Territorial Army and in the earlier Volunteers, and during the War of 1914-18 was actively concerned in the organization and supervision of munitions-making in the Carlisle area. He had made a close study of native textiles of many countries, of which he had a valuable private collection, and was proud of the fact that he was himself a weaver and a master of that ancient craft.

R. BRIGHTMAN.

Mrs. Arthur Strong, C.B.E.

MANY visitors to Rome, as well as colleagues and friends in Great Britain, will miss the wide learning, generous disposal of it, and impressive presence of the former assistant director of the British School of Archaeology in Rome, Mrs. Arthur Strong, whose death in Rome on September 16 has been reported. Eugénie Sellers was brought up in France, and obtained honours in the Classical Tripos at Cambridge, from Girton College. In the intervals of travel in Germany, Italy and Greece, she gave university extension lectures on Greek sculpture, and conducted classes in the British Museum. In 1892 she published an excellent translation of Schuchhardt's "Schliemann's Excavations" brought up to date by an epilogue from Walter Leaf. Coming under the influence of Furtwängler, she translated also his "Meisterwerke der griechischen Plastik" (1895), a more ambitious and difficult task; and with her friend, Miss Jex Blake, she published a translation and useful commentary on Pliny's chapters on ancient art (1896). Her marriage in 1897 to the orientalist, S. Arthur Strong, librarian of the House of Lords, gave her access to the great British sculpture galleries, and on his early death in 1904 she succeeded him as librarian of Chatsworth and made valuable use of the collections there, especially the gems and the archaeological drawings. During these years her tastes and judgment were maturing in a revision of current opinions about the relation of Roman art to Greek. As before, she found congenial utterance first in her translation of Wickhoff's "Roman Art" (1900) but later in her own "Roman Sculpture from Augustus to Constantine" (1908), the main positions in which she restated and illustrated in her chapters on "Roman Art" in the "Cambridge Ancient History".

Mrs. Strong had long been accustomed to spend much time in Rome, and was a valued helper in the early days of the British School of Archaeology there. Under the directorship of Henry Stuart Jones (1903-5) the School undertook, as a collaborated task, a "Catalogue of the Sculpture" in the public collections of the city, which she knew so well, and she took an active part in the preparation of it. In 1909, when Thomas Ashby became director, Mrs. Strong was appointed assistant director, and held office until 1925. It was a strong combination, for while both knew Rome and Italy intimately, it was from quite different points of view: both were inspiring teachers and given to hospitality; the School attracted students, and prospered. Unfortunately, the war years 1914-18 broke up the genial society of archaeologists; Ashby went to war duty, Mrs. Strong found other use for her abilities. But the chance discovery in 1917 of a subterranean

basilica outside the Porta Maggiore gave her in its beautiful relief decoration a new text for her teaching about Roman art, and for her growing appreciation of the symbolic aspect of ancient art in general, expressed, for example, in her lectures and eventual volume on "Apotheosis and After Life" (1916). She had already given Norton Lectures on this subject in American universities (1913).

In due course Mrs. Strong resumed her place at the British School, produced an Italian revision of her "Roman Sculpture" (1923) and delivered Rhind Lectures at Edinburgh on Roman painting (1920).

When the British School was reorganized in 1925, Mrs. Strong retired from active work in it, and in 1928 completed a comprehensive survey of Roman art to the age of Justinian (1928). In 1927 she was made a C.B.E.; and she held a life fellowship at Girton College founded for her by her friends. Still living in Rome, she maintained and extended her wide circle of friends; making most generous use of her learning and practical knowledge of Italy, and in spite of increasing disabilities, continuing her literary activity almost to the end. JOHN L. MYRES.

Mr. H. C. Lawlor

ARCHAEOLOGY in Northern Ireland has lost a prominent figure by the death, on September 4, of Henry Cairnes Lawlor, one of the many amateur workers to whom archaeological studies owe so much. This is especially true of Ulster, since unlike the National University of Eire, the Queen's University of Belfast, of which Mr. Lawlor was made an honorary M.A. in 1924, provides no instruction in prehistoric archaeology.

While most amateur enthusiasts in this extremely rich province were content to amass large collections of antiquities, Mr. Lawlor showed his interest and made his chief contribution by initiating a series of excavations which were to open up many new lines of research. He was by instinct genealogist and historian rather than prehistorian, and his excavations were conducted before the refinements of modern stratigraphical methods and the significance of minutiae had penetrated to Ulster, but his was the first cultivation of a field of research which was to blossom notably in the decade ending in 1940. His best-known excavations were those at the pre-Norman monastic site of Nendrum in Strangford Lough, but he examined many other sites in Counties Antrim and Down, ranging in date from the megalithic period to the later Middle Ages. His most original work lay in the elucidation of those most puzzling and widespread of Irish field antiquities, ring-forts and souterrains, and in the study of the earthworks of the early Anglo-Norman period.

Mr. Lawlor published many excavation reports and memoirs, several pamphlets on local history, and a more popular general account of "Ulster: Its Archaeology and Antiquities" (1928). These activities were closely linked with the archaeological section of the Belfast Natural History and Philosophical Society, which Mr. Lawlor inaugurated. He also took a prominent part in shaping archaeological legislation in Northern Ireland and was a leading member of the Ancient Monuments Advisory Council and sectional editor of the "Preliminary Survey of the Ancient Monuments of Northern Ireland" (1940). His interest and support helped to secure the success of the revived *Ulster Journal of Archaeology* (1938), on