condition (*c*). The final saturations of the colours, however, are very seldom greater than those of the original, and are usually considerably less.

Why, then, can trichromatic reproductions be so acceptable ? The answer lies very largely in the fact that they are scarcely ever seen alongside the original scenes, and the quality of the reproduction is judged against a mental conception of what the scene probably looked like. But scenes vary tremendously in their colour qualities, and particularly so in colour saturation, according, for example, to the type of lighting and the atmospheric conditions. Moreover, colour reproductions are generally viewed under conditions very different from those of the original scene, and this introduces a number of complicating subjective effects, which depend on the size, brightness and surface both of the picture and its surroundings.

Of colour reproduction, it must be said that accurate methods are impracticable, and practicable methods are inaccurate ; and some may be inclined to add that all methods are too expensive. But the urge to 'fix the images of Nature' is just as insistent as it was a century ago, and there are some signs that the early trickles of hope are at last becoming the full floods of success.

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[2] Hardy, A. C., and Wurzburg, F. L., *J. Opt. Soc. Amer.*, **38**, 300 (1948).
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OBITUARIES

Prof. K. N. Bahl

Karm Narayan Bahl, who died at Lucknow on April 21 in his sixty-fourth year, was one of the great leaders in Indian zoology, and his work is known and admired throughout the world.

He was born on February 14, 1891, at Multan, in the Punjab, and educated at the Government College, Lahore, where he graduated B.Sc. in 1911 and M.Sc. (first class) in 1913, when he was also awarded the Maclagan Gold Medal. As soon as he had taken his B.Sc. he began his university teaching career by becoming demonstrator and assistant professor at Lahore ; in 1914 he was appointed professor at the St. John's College, Agra, and in 1916 at the Muir Central College, Allahabad. His first research was on the ant-like spiders of the family Attidæ ; but then he turned to the study of the Indian earthworms and very soon made the outstanding discovery of a new type of nephridium. In 1919 he published the first of a series of important papers on earthworm anatomy which appeared during the next thirty years in the *Quarterly Journal of Microscopical Science* ; in this first one he described three distinct kinds of nephridia—septal, pharyngeal and integumentary—which he found in the worm *Pheretima posthuma*. It was the septal nephridia which presented such an interesting novelty, for they opened not to the outside of the body, as in all other such organs, but into the intestine ; he called them an enteronephric system and made the suggestion, which in later years he strongly supported by experiment, that they were an adaptation for the conservation of moisture in a dry climate. He then visited England to work for two years under Prof. Goodrich at Oxford, where he was awarded the D.Phil. for further studies on *Pheretima*, in which he worked out the blood-vascular system and the development of the enteronephric organs. His earlier discovery had in the meantime won him the D.Sc. of the University of the Punjab. On returning to India in 1921 he was made reader in zoology in the University of Lucknow and two years later became professor ; here he did the greater part of his work, remaining in the chair until he retired and was appointed vice-chancellor of the University of Patna in 1951. Many more studies in earthworm anatomy, reproduction and development followed ; in these he described enteronephric systems in a number of other genera and, jointly with Dr. M. B. Lal, showed the existence of a 'hepato-pancreatic' gland, with a hepatic portal system, in worms of the genus *Eutyphoeus*. His morphological work was not, however, confined to earthworms ; he produced, in the *Records of the Indian Museum*, an outstanding monograph on the skull of *Varanus monitor* with its associated muscles, blood-vessels and nerves. He was awarded the D.Sc. of Oxford in 1938, and in 1942 received the Joy Gobind Law Memorial Gold Medal of the Asiatic Society of Bengal.

Bahl's leadership will continue to be felt in India and the East for many years to come through that excellent series of *Indian Zoological Memoirs* which he initiated and edited. Since he wrote the first on *Pheretima*, seven others, by different authors, have dealt in turn with selected types of the Indian fauna ; they are the oriental counterparts of the well-known *Liverpool M.B.C. Memoirs* which have played so important a part in the training of English zoologists. In the words of a review which appeared in *Nature* some years ago, "zoologists in India owe a debt of gratitude to Prof. Bahl to whose enthusiasm this series of manuals is due". The debt will grow and extend through many countries as these memoirs become more widely used ; there could be no better memorial to Bahl than this series of volumes. On his retirement he was made a research professor at Lucknow, but his sense of duty then compelled him to accept a pressing invitation to become vice-chancellor of Patna University ; here his heavy duties proved too much for him and in 1952 he suffered a breakdown in health from which he never completely recovered. Our sympathy goes to his wife, three sons and a daughter who survive him.

A. C. Hardy

Dr. R. S. Clay

Reginald Stanley Clay died on April 10, after a short illness ; he was eighty-five.

Dr. Clay's interests were many and various. He was educated at Tollington Park College and St. John's College, Cambridge, becoming a Wrangler in 1892. His first professional appointment was as physics master at Mill Hill School, and in 1897 he became head of the Physics Department at Birkbeck College. In 1900 he was appointed principal of the Wandsworth Technical College and in 1902 was invited to become the principal of the Northern Polytechnic. There he found ample scope for the exercise of his professional qualifications and administrative ability, which, with his power of winning the sympathetic co-operation of his staff and the respect of his students, enabled him, during his twenty-nine years of office, to make the Institute more widely known and to bring it to a high degree of efficiency. In 1931 he retired, to the regret of all who had been associated with him either as colleagues or students.