distance races, when it will be longer. Unlike the human athlete, running over even shortish distances at a likely racing pace does not seem to be part of the technique of horse-training. The way in which a race is actually run—the initial pace, the running for position—depends upon the jockey and not upon the horse's judgment of pace. Training is an art, declared Mr. Jarvis, and a training routine must be suited to the mental and physical constitution of each particular animal.

Finally, Mr. J. Lynas (Blackpool Football Club) and Mr. J. Egan (Leigh Football Club), two well-known trainers and coaches of professional footballers, Association and Rugby League respectively, gave accounts of their methods of training. They made it clear that a general fitness for endurance and ability to run quickly on occasion makes only a foundation on which the particular skills of the game can be imposed. Mr. Egan analysed the duties of the different players in a team, showing, for example, how the physical and physiological requirements of a wing three-quarter in Rugby football differ from those of a forward and pointing out that, although an all-out run of fifty yards is usually a maximum, very few players are likely to undertake it; frequently, very rapid acceleration over a few yards is more important than first-class sprinting ability. Initial training at the beginning of the season concentrates on distance running to promote endurance, and more specific practice in sprinting, kicking and ball-handling is taken according to individual requirements. While Mr. Lynas seemed less inclined to regard an Association football team as a collection of specialists, his training requirements seemed to be on similar lines, with emphasis on the practice of the skills required for the game. Both trainers regarded speed in running as unimportant in itself. Many great players have been relatively slow runners, but their knowledge of the game and anticipation has often given them actually several yards start of their opponents.

One point which emerged clearly from the papers and from the discussion was that the term 'fitness' should be applied only towards a specific end. A certain degree of muscular development and ability, through the circulation, to transport oxygen is necessary for any sustained muscular activity—this might be termed a 'general fitness'. But beyond this there must be a 'specific fitness' involving the development of particular muscles and the acquirement and use of particular skills, such as pace judgment and economy of effort for the athlete, game technique for the football player and control of the horse by the jockey.

OBITUARIES

Dr. Winifred Brenchley, O.B.E.

Dr. Winifred Brenchley, the well-known agricultural botanist of the Rothamsted Experimental Station, died at her home at Harpenden, on October 27, after a long and crippling illness which, however, was mercifully without great pain for her. She was born on August 10, 1883; her father was a popular and successful schoolmaster at Camberwell, serving at one time as mayor of the Borough. In early childhood, while recovering from measles, a well-intentioned friend took her out for a drive: she caught a chill which so gravely injured her ears that she suffered all her life from deafness. But she never allowed this to interfere with her work or her social activities or with her never-failing helpfulness to her younger colleagues.

From James Allen's School, Dulwich, she went first to the Swanley Horticultural College, and then to University College, London, to study under F. W. Oliver, with whom there grew up a life-long friendship. In 1906 she went to Rothamsted, the first of the staff that A. D. Hall was then assembling, and the first woman scientist to be appointed, either there or at any other agricultural institution in the country.

She soon started investigations on plants by the water culture method which she, and afterwards her colleague Katherine Warington, developed into an instrument of remarkable effectiveness. From the outset she included metallic salts known to be toxic at high concentrations, and watched for the stimulus they were supposed to exert at low concentrations: spectrographic methods had not yet arrived, and she narrowly missed discovering the essential role of the trace elements. The earlier results are summarized in "Inorganic Plant Poisons and Stimulants", published in 1914 by the Cambridge University Press; a later revised and enlarged edition came out in 1927. The work continued, however, during all her time at Rothamsted: the last element dealt with was molybdenum.

Through Oliver's influence, Dr. Brenchley began a second group of investigations: ecological studies of the complex floras of farmed land. The effects of fertilizers in altering the competition-equilibrium between the various species in a meadow were described first in "The Manuring of Grassland for Hay" (Longmans) in 1924: but she was still continuing the work when she retired. Her studies of weeds in arable crops and grassland were brought together in "The Weeds of Farmland" (Longmans, 1920), extended later to include studies of the viability of weed seeds in the soil: she was able to show that some had remarkable powers of survival for many years. She also studied the effects on the growing plant of individual factors that make up the natural environment, especially temperature, light and nutrients. These botanical studies did not exhaust her scientific interests; she and Dr. A. D. Imms, then the Rothamsted entomologist, became great friends, and with his help she acquired considerable knowledge of insects.

Dr. Brenchley summarized the first thirty years of her work in the Rothamsted Annual Report for 1935, and the next ten years in the issue for 1939–45. She retired in September 1948, intending to write up her accumulated observations. These had been made with great care and deserved closer study than her busy working life had allowed; but her illness intervened, and it steadily grew worse to the deep regret of a wide circle of friends at Rothamsted and far beyond.

E. John Russell

Dr. Wendell C. Bennett

Wendell C. Bennett, a distinguished student of Peruvian archæology, died on September 6 in his forty-eighth year. His end, while swimming off the shore of Martha's Vineyard in Massachusetts, was a tragic one.

At the time of his death, Bennett occupied a number of important posts at Yale University, where