

Richet, Charles Robert, 1850-1935.

MD REMEMBERS: A Great Physiologist's Odyssey

■ In his memoirs Charles Robert Richet described his life as a journey that began August 26, 1850, in Paris and included explorations in a broad field of biomedical research and "an enchanted voyage" to receive the 1913 Nobel Prize. The famous French physiologist, who is best known for discovering anaphylaxis, showed that animals injected with bacteria developed immune bodies, pioneered serum therapy, investigated muscle contraction, thermal regulation, respiration, nerve physiology, liver function, gastric secretion, and dietetics. During his scientific odyssey, he wrote poetry, novels, and plays, actively advocated pacifism, designed an airplane, and made excursions into the realm of parapsychology and spiritualism.

Surgeon's Son. Richet, whose father Alfred was clinical professor of surgery at the University of Paris, received his early education at the Bonaparte Lyceum. Soon after he began his medical training in Charles A. Wurtz's chemistry laboratory, he sniffed a vial of boiling sulfuric acid and suffered burns. Surgeon Richet thought that Charles had lost an eye but kept him in complete darkness for three days and administered treatment, which was so successful that the youth's cornea was unscarred.

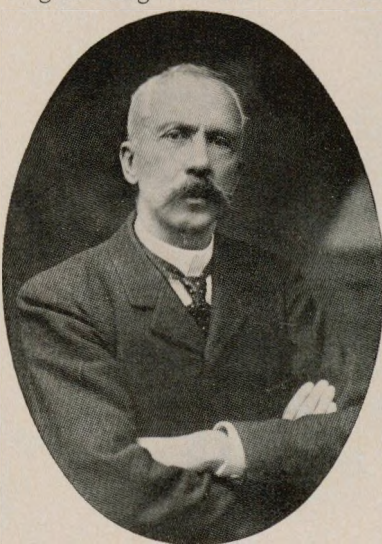
During the Franco-Prussian War young Richet served as a hospital aide and ambulance attendant. Resuming his academic training, he worked in Professor Jules Behier's medical service, investigated crayfish muscle contraction in Etienne-Jules Marey's laboratory and served a surgical internship.

While traveling in the Middle East, Richet received a cable offering him the opportunity to study a boy with a surgically created gastric fistula. Richet noted that whenever the boy chewed anything sweet or acidic, gastric juice immediately flowed in his stomach; at this time he did not realize the importance of this reflex. He subsequently showed that the acidity of gastric juice was due to hydrochloric acid.

In 1877 Richet received his doctorate from the University of Paris

and began to teach at the Collège de France. Continuing his research, he demonstrated that lactose was a potent diuretic in dogs and that French sheep developed resistance to anthrax if inoculated with blood from Algerian sheep that were naturally resistant to the disease.

At the age of 36 Richet was appointed professor of physiology at the University of Paris and provided with a new laboratory where he developed the anesthetic chloralose, conducted research on respiration, the constancy of body temperature and methods of immunization. His long-standing efforts to immunize



Nobel laureate Charles Richet.

dogs against tuberculosis were unsuccessful but he reported that dogs with cancer improved temporarily following an injection of serum from animals previously inoculated with tumor material.

Serendipity. Aboard the Prince of Monaco's yacht in the summer of 1901 Richet studied the reaction of ducks to injections of the poison in tentacles of the Portuguese-man-of-war. Since these coelenterates were not available in his Paris laboratory, he continued his experiments using the toxic substance in sea anemones. To his surprise he found that when dogs recovered from the initial dose of the poison and were given an extremely weak dose two or three weeks later, "the animals immediately exhibited dreadful symptoms: vomiting, bloody diarrhea, syncope, loss of consciousness, asphyxia and

death." Richet coined the term "anaphylaxis" for this reaction which he said he discovered in spite of himself.

This serendipitous discovery formed the starting point for modern studies of allergies. From his extensive experiments on lactic acid fermentation, he deduced that microbes become resistant to poisons and thereafter a drug for combating a pathogen becomes less effective. He went so far as to advise physicians: "When a medicine succeeds, hasten to change and adopt another."

He suggested that epileptics would require less medication if their salt intake was curtailed, and advocated a diet of raw meat (zootherapy) for tuberculous patients. When Richet caught whooping cough from his children, he invented his own therapy and marched his brood up a 300 meter hill each day. Although he credited the change in barometric pressure for their improvement, it took two months of this strenuous regimen before they recovered.

In addition to a *Dictionary of Physiology*, a three volume record of experiments and numerous scientific papers, Richet wrote short stories, novels, poems and the play *Circé* in which Sarah Bernhardt starred. He studied hypnotism, was interested in the occult and founded an International Institute of Metaphysics. As a young man the physiologist flew in a glider and in later years he and an associate were building an airplane when the Wright brothers flew their first plane.

Richet, a pacifist like his maternal grandfather who opposed the Napoleonic wars, made speeches against World War I but after his sons entered military service he went to the front to administer blood transfusions to the wounded.

In 1925 Richet retired from active teaching and the following year when the Academy of Medicine celebrated his scientific jubilee he received the Grand Croix of the Legion of Honor for his many contributions. At the age of 85 he contracted pneumonia and died December 4, 1935.