may change to a neutron and a positive electron, the following relations are what is to be expected whenever an electron is emitted.

1. When a neutron is captured the radioactive disintegration gives a negative electron.
2. When a proton is captured a positive electron is emitted.
3. When deuterons or α-particles are captured either a positive or a negative electron is emitted.
4. In electron emission the isotopic number does not fall below zero.
5. When a positive electron is emitted the isotopic number rises to +1 or higher.
6. A low isotopic number, as compared with the position of the band of stability, favors the emission of a positive, and a high isotopic number, the emission of a negative electron.

At the present time almost any element may be produced in a radioactive form, and it is probable that some or many of these will be useful in medicine and surgery. The effects of neutrons upon tissues should be much more intense than those of γ-rays. On account of the large water content of the body fast neutrons which penetrate the tissues are rapidly converted into slow neutrons, which are then captured. Thus nuclear chemistry enters the realm of physiology.

OBITUARY

CHARLES VELMAR GREEN

ON April 18, 1936, two days after his thirty-fourth birthday, Charles Velmar Green, a research associate and one of the Board of Directors of the Roscoe B. Jackson Memorial Laboratory, was accidentally drowned while fishing near Bar Harbor, Maine.

This sudden end to an all too brief career, marked by superior ability and great industry, had in it elements of tragedy lacking in the foreseen termination of the activities of those of advanced age.

The years of quiet, patient effort that had marked Green's progress from his birthplace on a farm in Ashley, Michigan, through school, Michigan State College and the University of Michigan, left their mark on his character. They had been distinguished throughout by self-reliance and independence of thought, by tenacity of purpose and by the highest ideals of personal integrity.

When in 1927, two years after his B.S. degree, he received an M.S. under the friendly guidance of Professor Harrison Hunt, of Michigan State College, he had already developed a calm maturity of intellect and an unfailing soundness of scientific judgment far in advance of his years.

These qualities he continued to show in increased measure during the work for his doctorate and in the years which followed it (1930–36). By concentration and tireless effort he obtained and analyzed a sufficient mass of data to establish for the first time linkage between genes for size and a gene for color in mammals. His grasp of this subject was demonstrated, not only in the initial presentation of his results but in the extended discussion of them which followed.

In the course of the development of his work he also contributed notably to research in the field of differential growth, to changes in crossing-over correlated with age and to many other interesting and important phases of mammalian genetics. He had already published more than thirty scientific papers covering a wide range of research.

His chief happiness lay in research rather than in teaching. Each succeeding year saw broader and more important advances in his methods of approach. To these advances two factors contributed greatly. One was the contentment and inspiration of his home life and the completely adjusted companionship with his wife, Sybil Kent Green. The other was the joy that he derived from fishing and other recreation inherent in the environment of Mount Desert Island.

One may fairly say that happiness, creative activity and a balanced integration of purpose filled his own life so abundantly that, to an unusual degree, he transferred these qualities to those around him. In the face of these inspiring facts the deep personal sorrow of his friends and associates must quickly be recognized as selfish, and must give place to a willing determination to carry on as he would have done had he lived.

C. C. L.

SCIENTIFIC EVENTS

THE BRITISH NATIONAL HUMAN HEREDITY COMMITTEE

A LETTER to the editor of the London *Times* of May 6, signed by R. Ruggles Gates; Humphry Rolleston; Grafton Elliot-Smith; R. A. Fisher; Arthur Keith; E. Farquhar Buzzard; Moynihan; F. Gowland Hopkins, members of the British National Human Heredity Committee (115 Gower Street, London, W. C. 1), reads as follows:

Problems of national health have reached a point where the hereditary element can no longer be neglected. The leaders of the medical profession are no longer satisfied with the alleviation of disease, but are acutely conscious of the need for fuller knowledge of heredity in connection

with its prevention. This applies not only to preventing the transmission of defects. It is recognized that methods of cure must vary with the type of constitution of the patient, and in this connection information concerning heredity is of great importance. In education, in training, and in choice of career, the ascertainment of innate endowment not only prevents waste and failure but would contribute largely to the attainment of success.

The instructed public already recognize the importance of heredity for the future of the race, and the Brock Report in 1933–34 emphasized the need for greater knowledge in regard to the inheritance of mental and physical defects. But there is as yet no center to which the public can turn for full information.

The Imperial Bureaux of Plant Genetics (in Cambridge and Aberystwyth) and of Animal Genetics (in Edinburgh) have achieved much by setting up simple machinery for collecting information based on the results of research and making these available for the practical breeder. The Bureau of Human Heredity which has recently been set up at 115, Gower Street, W.C.1, follows these models, and small contributions have already been made for its upkeep.

In these days of international mistrust and animosity, it is refreshing to find a field in which representatives of nearly every civilized nation are engaged in cooperative work. The scheme for an international clearing house of facts concerning human heredity has been evolved by a small international committee, which has delegated to its British members the task of setting up a bureau in London for the collection and distribution of all authentic information on human genetics. The British Council is asking for £10,000 to carry on this work for five years.

It is strange to think that students of fruit-flies, or mice, have at their command the latest information, while those similarly concerned with man can look nowhere for a complete survey of the knowledge they require.

The urgency of this need leads us to commend the Bureau of Human Heredity to public-spirited donors. They will find no institution the endowment of which will give a more liberal return for all time.

THE SUMMER SYMPOSIUM ON THEORETICAL PHYSICS AT THE UNIVERSITY OF MICHIGAN

PROFESSOR W. HEISENBERG, of Leipzig, who had planned to lecture on nuclear physics throughout the symposium on theoretical physics at the University of Michigan, has found it impossible to be at Ann Arbor this summer.

As finally arranged the program of the conference, which will last from June 29 to August 21, is as follows:

Professor E. O. Lawrence, University of California, "The Design and Technique of Cyclotrons, Artificial Radioactivity, the Biological Action of Neutrons and Other Similar Topics." For one month beginning June 29.

Professor P. Ewald, Technische Hochschule, Stuttgart, Germany, "The Theory of the Solid State." Throughout the session.

Professor H. Bethe, Cornell University, "The Physics of High Speed Particles." For one month beginning June 29.

Professor E. U. Condon, Princeton University, "The Quantum Mechanical Treatment of Selected Problems from the Field of Spectra." For six weeks beginning July 6.

Professor G. Breit, University of Wisconsin, "Special Topics in Nuclear Theory." For two weeks after July 20.

Professor I. Rabi, Columbia University, "Nuclear Moments." For two weeks after July 12.

Professor D. M. Dennison, University of Michigan, "Theory of Band Spectra." Throughout the session.

Professor Otto Laporte, University of Michigan, "Quantum Mechanics and Atomic Structure." Throughout the session. "Spinor Analysis." Two or three lectures.

NATIONAL RESEARCH FELLOWSHIPS IN PHYSICS, CHEMISTRY AND MATHEMATICS

THE Fellowship Board in Physics, Chemistry and Mathematics of the National Research Council announces the following appointments to Fellowships for 1936–37. After the name, the institution is given from which the doctorate was received (followed in the case of reappointments by the name of the institution at which the Fellow will work) and the subject of his research.

REAPPOINTMENTS FOR A SECOND YEAR

In Physics:

Albertson, Walter Edward, Massachusetts Institute of Technology '35, Mt. Wilson Observatory, "Spectroscopic Analysis."

Nordsieck, Arnold Theodore, California '35, Stanford University, "Relativistic Quantum Theory."

Van Voorhis, Stanley Nichols, Princeton '35, University of California, "Nuclear Physics."

White, Milton Grandison, California '35, Princeton University, "Construction of a Cyclotron for Nuclear Physics Research."

In Chemistry:

Bonner, Lyman Gaylord, California Institute of Technology '35, Princeton University, "Spectroscopic Determination of Molecular Structure."

King, Gilbert William, Massachusetts Institute of Technology '35, Harvard University, "Vibrational Levels of Polyatomic Molecules."

In Mathematics:

Levinson, Norman, Massachusetts Institute of Technology '35, Princeton University and Institute for Advanced Study, "Closure and Entire Functions. Tauberian Theorems."

NEW APPOINTMENTS

In Physics:

Konopinski, Emil John, Michigan '36, "Nuclear Theory."