changing fine-structure at that particular place and time. If we judge from the physical properties of its constituent atoms and molecules alone, living organisms are, in contradistinction to crystals, extremely improbable and should not exist at all, and it seems to the writer that we may well be forced to the conception that the spacing of the molecules in living cells is not directly determined by any grouping of atoms, however complicated, but by an *independent* fine-structure in space, which only slightly modifies the ordinary motions of electrons and atoms. To secure stable "materialization," growth and development of the minute structure in an egg-cell, for instance, it seems that aggregation of atoms must first be "trapped" in certain singular points in the immaterial fine-structure. This can only happen if the vibration system of the aggregate moving through it harmonizes with the existing structure. For this purpose the aggregate must have the right mass, charge and structure, the polarities must be correct, and it must move slowly in a liquid—like atoms when forming a crystal from a solution—so that the weak electric forces due to the fine-structure can effectively stop it, and it is then incorporated in the immaterial (mass- and inertia-free) fine-structure (assimilation).

We living beings can, if we so choose, change the potential spacing of atoms within the cells of our muscles and do work, but the energy must come from a source other than the mental will or the nerve impulse. We are also familiar with a whole world of other phenomena, associated with space and time, but not directly with mass, energy or momenta.

CONCLUSION

It was the pull of the intangible threads binding my material body to the space structure, the latter being in itself the foundation of the innumerable atoms in the innumerable galaxies, I felt when my street car stopped. It was the same pull, due to a horizontal stratification in the superimposed foundations of the atoms in the near-by earth I felt when I raised my hand. In doing this I sent weak electric currents through certain nerves to the muscles in my arm, which caused a modification of the potential spacing of the atoms in the individual cells. The contraction of the muscles required work, and this was mostly taken from organized chemical energy.[12] The small energy needed for the nerve impulse was similarly supplied by chemical action in the brain cells. I noticed a time lag and an element of freedom to do or not to do it, which I imagined was due to the fact that the original action in the brain cells was entirely energy-free. It did not belong to the ordinary physical world of atoms, ruled by probabilities, but belonged to another world, with which I was also familiar, but only on a gross scale, where individual bodies were moved according to a plan, the energy being taken from a source external to the designer.

A large number of photons, which, starting eight minutes earlier from the sun, were reflected by my hand, had at the emission process arranged themselves in a peculiar moving pattern, which made possible the formation of a distinct image of my hand on the retina of my eye. The vibrations in the space structure in a certain part of my brain caused by this image had also another and much more fundamental aspect and represented in my consciousness a visual sensation. When I reflected over this, and over the existence of organic and, in particular, human life as indicative of the method by which a development of something immaterial is brought about for an unknown ulterior purpose, the space structure in other parts of my brain also vibrated. Another vibration and I felt an intensive joy, like that of a man, born and kept in the dungeons of a prison, who has just seen a ray of light coming through the impenetrable prison walls revealing a little bit of a mysterious sunlit world.

OBITUARY

RECENT DEATHS

THE death is announced, at the age of seventy-seven years, of Dr. Erasmus Haworth, formerly dean of the school of geology at the University of Kansas and for many years state geologist.

DR. HEINRICH HASSELBRING, chief of the department of botany, Central Experiment Station, Santiago de las Vegas, Cuba, from 1907 to '09, and physiologist in the United States Bureau of Plant Industry from 1909 until his retirement for disability a short time ago, died on November 9 at the age of fifty-seven years.

SIR DUGALD CLARK, known for his work on internal combustion engines and the properties and possibilities of gaseous fuel and gas lighting and heating, died on November 12, in his seventy-ninth year.

[12] The conditions may be similar to those in a voltaic pile, where we also have organized chemical energy and where the electric attraction between the plates may represent the contractive force. But we must not overlook the possibility that some of the energy may come from disorganized motions (heat) of the atoms. Although this is a contradiction of the second law of thermodynamics, we must remember that we are dealing with an action on an atomic scale. It seems to the writer quite possible that atoms also here may be "trapped" in certain singular points of the modified fine-structure.

DR. WILLIAM GARNETT, secretary and educational adviser to the London Technical Education Board, 1893–1904, educational adviser to the London County Council, 1904–15, previously principal and professor of mathematics of the Durham College of Science, died on November 1, aged eighty-one years.

Nature reports the death of Thomas Gray, professor of technical chemistry at the Royal Technical College, Glasgow, an authority on fuels, on September 26, aged sixty-three years, and of Sir Bernard Mallet, registrar-general from 1909 until 1920, and president since 1929 of the Eugenics Society and a past president of the Royal Statistical Society, on October 28, aged seventy-three years.

SALOMON REINACH, director of the National Museum of Antiquities at St. Germain-en-Laye, France, died on November 4, at the age of seventy-four years.

MEMORIALS

THE Minnesota State Historical Society has placed a bronze tablet on the home, at Le Sueur, Minnesota, of Dr. William W. Mayo, who was born in England in 1819. The tablet was unveiled on November 23. It is inscribed: "In this house from 1858 to 1863 lived Dr. William W. Mayo, father of Dr. William J. Mayo and Dr. Charles H. Mayo and the physician who cared for the defenders of New Ulm after the Indian massacre of 1862." Governor Floyd B. Olson, officials of the historical and medical societies and the two sons of Dr. Mayo took part in the commemoration.

A RED oak sapling was planted on November 10 in memory of Dr. George F. Kunz, civic leader and gem expert, on the Central Park West lawn of the American Museum of Natural History. The ceremony took place under the auspices of the New York Bird and Tree Club, of which he was honorary president. The speakers included Dr. Roy Waldo Miner, curator; Dr. C. Stuart Gager, director of the Brooklyn Botanic Garden, and Dr. Elmer D. Merrill, director of the New York Botanical Garden.

The Wistar Institute News reports that the "Life and Letters of Professor Joseph Leidy," who was fifth professor of anatomy at the University of Pennsylvania and who died in 1891, is to be completed at the institute during the coming winter. The death of Dr. Joseph Leidy, II, nephew of Joseph Leidy, early in the summer of 1932, left unfinished the book upon which he had been working for many years. Dr. Leidy, II, left to Dr. Charles S. Dolley, formerly professor in the University of Pennsylvania, now a resident of Nassau, N. P., the materials for completing this work. Mrs. Joseph Leidy, II, is now transferring to The Wistar Institute all the manuscripts, letters of many distinguished naturalists of Professor Leidy's time and many other documents, drawings, etc. The book will be published by The Wistar Institute Press.

AT University College, London, the Bayliss-Starling Memorial Scholarship (in physiology or biochemistry) has been founded by old students, friends and admirers, in commemoration of Professor Sir William Maddock Bayliss and Professor Ernest Henry Starling. The annual value of the scholarship is about £120, with exemption from tuition fees; it is tenable at University College, London.

A MONUMENT was unveiled in Brussels to Ernest Solvay, the eminent chemist, philanthropist and publicist, on October 16, in the presence of the King of the Belgians and the Duke of Brabant. Solvay was born at Rebecq in Brabant on April 16, 1838, and died in Brussels on May 26, 1922. The foundation of his success in chemical industry was his discovery of the ammonia-soda process.

SCIENTIFIC EVENTS

THE ANNUAL SESSION OF GERMAN SCIENTIFIC MEN AND PHYSICIANS

THE Berlin correspondent of the *Journal* of the American Medical Association writes that the annual session of the Gesellschaft Deutscher Naturforscher und Aerzte was held this year in Wiesbaden and Mainz, with an attendance of 2,600. The insignia showed a bust of Goethe, with the question asked by Faust: "Wo fass' ich dich, unendliche Natur?" The addresses of welcome were characterized by a warm patriotic tone, expressed satisfaction at the liberation of the Rhine countries, and contained many references to the great sacrifices that the population of this region had been obliged to make.

Professor Aschoff, the chairman, called attention to the reorganization of the society, which has brought about a simplification of the program. He emphasized the need of these conventions, which now, owing to the changed conditions resulting from the creation of numerous societies of specialists, had assumed a new task; namely, that of supplying a comprehensive survey of the whole field. All attempts to separate the physicians from other scientific men were unavailing.

The medical section convened on the afternoon of the first day. The address of Professor Müssemeier, of Berlin, on anthrax, was presented in honor of the memory of Robert Koch. Dr. Müssemeier discussed new important measures for the prevention of the