be able to establish absolute motion, a contradiction of the first assumption of the principle of relativity.

Hence in all physical problems where there is a possibility of two solutions, the one which leads to the establishment of an absolute velocity must be rejected, and the alternative solution accepted as valid.

The principle of relativity, besides clearing our minds of the cobwebs of absolute time and space, gives us, through its explanation of physical experiments, a deeper consciousness of the manifoldness of space, in which time is, not the flow of duration suggested by the immortal Newton, but any one of the spacial manifolds so beautifully developed by Heinrich Minkowski in his "Raum und Zeit," and by Wilson and Lewis in the *Proceedings of the American Academy* for 1912.

Reinhard A. Wetzel
The College of the City of New York

GRANTS BY THE BRITISH ASSOCIATION

At the Birmingham meeting of the British Association for the Advancement of Science grants in aid of scientific research amounting to about $6,000 were made as follows:

Mathematical and Physical Science: Profesor H. H. Turner, seismological observations, £60; Dr. W. N. Shaw, upper atmosphere, £25; Sir W. Ramsay, constants and numerical data, £40; Professor M. J. M. Hill, calculation of mathematical tables, £20; Lieut.-Col. A. Cunningham, copies of the "Binary Canon" for presentation, £5.

Chemistry: Dr. W. H. Perkin, study of hydroaromatic substances, £15; Professor H. E. Armstrong, dynamic isomerism, £25; Professor F. S. Kipping, transformation of aromatic nitroamines, £15; A. D. Hall, plant enzymes, £25; Professor W. J. Pope, correlation of crystalline form with molecular structure, £25; Professor H. E. Armstrong, solubility phenomena, £15.

Geology: R. H. Tiddeman, erratic blocks, £5; Professor P. F. Kendall, list of characteristic fossils, £5; Dr. A. Strahan, Ramsay Island, Pembroke, £10; Professor Grenville Cole, old red sandstone of Kiltorcan, £10; G. Barrow, trias of western midlands, £10; Professor W. W. Watts, sections in Lower Paleozoic rocks, £15.

Zoology: Dr. A. E. Shipley, Belmullet Whaling Station, £20; Dr. Chalmers Mitchell, nomenclator animalium, £50; S. F. Harmer, Antarctic whaling industry, £90.

Geography: Professor J. L. Myres, maps for school and university use, £40; Professor H. N. Dickson, tidal currents in Moray and adjacent firths, £40.

Engineering: Sir W. H. Preece, gaseous explosions, £50; Professor J. Perry, stress distributions, £50.

Anthropology: Dr. R. Munro, Glastonbury Lake Village, £20; Sir C. H. Read, age of stone circles, £20; Dr. R. Munro, artificial islands in Highland lochs, £5; Professor G. Elliot Smith, physical character of ancient Egyptians, £34; Professor J. L. Myres, anthropometric investigations in Cyprus, £50; Professor W. Ridgeway, Roman sites in Britain, £20; Dr. R. R. Marett, Paleolithic site in Jersey, £50.

Physiology: Professor E. A. Schäfer, the ductless glands, £35; Professor A. D. Waller, anesthetics, £20; Professor J. S. Macdonald, calorimetric observations, £40; Professor C. S. Sherrington, mammalian heart, £30.

Botany: Professor F. J. Oliver, structure of fossil plants, £15; Professor A. C. Seward, Jurassic flora of Yorkshire, £5; Professor F. Keeble, flora of peat of Kennet Valley, £15; A. G. Tansley, vegetation of Ditchan Park, £20; Professor F. F. Blackman, physiology of heredity, £30; Professor F. O. Bower, renting of Cinchona Botanic Station in Jamaica, £25; Professor W. Bateson, breeding experiments with *Œnotheras*, £20.

Education: Professor J. J. Findlay, mental and physical factors, £30; Dr. G. A. Auden, influence of school books on eye-sight, £15; Sir H. Miers, number, etc., of scholarships, held by university students, £5; Dr. C. S. Myers, binocular combination of kinematograph pictures, £10; Professor J. A. Green, character and maintenance of museums, £10.

SCIENTIFIC NOTES AND NEWS

The British Association for the Advancement of Science has accepted an invitation to hold the meeting of 1915 at Manchester. It will be remembered that next year's meeting will be held in Australia under the presidency of Dr. William Bateson.

There have been called to the Research Institute for Biology, established under the

Kaiser Wilhelm Society, Dr. Goldschmidt, of Munich, known for his experiments on Mendelian heredity in animals; Dr. Hartmann, of the Berlin Institute for Infectious Diseases, known for his work on protozoa, and Dr. Warburg, son of the director of the Reichsanstalt, who will have charge of work on cell physiology. It was noted last week that Dr. Carl Correns will be director of the institute.

DR. DAVID HILBERT and Dr. Felix Klein, professors of mathematics at Göttingen, have been elected corresponding members of the Berlin Academy of Sciences.

DR. MAX PLANCK, professor of mathematics, has been elected rector of the University of Berlin.

COUNTESS PROSKOWIA UWAROW, of Moscow, known for her work in archeology, has been given an honorary doctorate by the University of Königsberg.

DR. WILHELM ALEXANDER FREUND, the distinguished German gynecologist, has celebrated his eightieth birthday.

M. EMIL BOUTROUX, of Paris, and Professor Alois Riehl, of Berlin, both distinguished for their contributions to philosophy, will make addresses at the opening of the graduate school of Princeton University.

DR. W. F. G. SWANN, demonstrator in physics in the University of Sheffield, has been appointed physicist in the laboratory of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington.

PROFESSOR C. W. THOMPSON, chief of the bureau of research in agricultural economics at the University of Minnesota, has taken charge of work in the rural organization service of the U. S. Department of Agriculture.

DR. HENRY CARTER ADAMS, professor of political economy at the University of Michigan, has accepted the post of general fiscal adviser to the Republic of China.

MAJOR B. K. ASHFORD has been appointed president of a board for the study of tropical diseases in Porto Rico under the medical department of the army.

THE *Annalen der Naturphilosophie* will hereafter be named the *Annalen der Natur- und Kulturphilosophie*. Professor R. Goldscheid will be associated with Professor Ostwald in editing the periodical.

AT Princeton University Professor Henry B. Fine has returned from a year's leave of absence in Europe and resumed his duties as head of the department of mathematics and dean of the department of science. Professor George A. Hulett, who was last year acting as chief of the department of chemistry in the United States Bureau of Mines, has resumed his professorship of physical chemistry. The members of the faculty on leave of absence this year include: Professor Norman Kemp Smith, head of the department of philosophy (first term); Professor Augustus Trowbridge, of the department of physics, and Professor Oswald Veblen, of the department of mathematics.

PROFESSOR M. A. CARLETON, cerealist of the U. S. Department of Agriculture, has recently resumed his duties in that department, after a year and three months' leave of absence as general manager of the Pennsylvania Chestnut Tree Blight Commission.

PROFESSOR A. E. KENNELLY, of Harvard University, represented the U. S. Committee and the U. S. Bureau of Standards at the International Illumination Commission in Berlin, August 26–30, and at the International Electrotechnical Commission, Berlin, September 1–5.

PROFESSOR AUGUSTUS D. WALLER, M.D., F.R.S., of the University of London, will lecture before the Harvey Society at the New York Academy of Medicine, at 8.30 P.M., October 4, 1913, on "A Short Account of the Origin and Scope of Electrocardiography." Professor Waller brings from London his own apparatus especially for this lecture and will give a series of demonstrations. The lecture is open to the public.

A COURSE of three lectures dealing with the early history of medicine will be given before the Royal Society of Medicine, London. The first lecture will be on October 10, by Professor

Morris Jastrow, of the University of Pennsylvania, and will treat of Babylonian medicine; the subsequent lectures will be by Professor Elliot Smith, on Egyptian medicine, and by Professor R. Caton, on Greek medicine.

Professor von Baelz, for thirty years professor of medicine in the University of Tokyo, the author of contributions to medicine and anthropology, has died at Stuttgart, aged sixty-four years.

Professor John Robie Eastman, professor of mathematics in the navy from 1865 to 1898, when he was retired for age, died on September 26, at the age of seventy-seven years. In 1906 Professor Eastman was promoted to the rank of rear admiral in the navy. He had made distinguished contributions to solar, stellar and meteoric and planetary astronomy.

Dr. John Green Curtis, from 1876 to 1909 professor of physiology in the College of Physicians and Surgeons, Columbia University, and since emeritus professor, died on September 20, aged sixty-nine years.

Dr. Charles Lester Leonard, professor of roentgenology in the University of Pennsylvania, died on September 23, aged fifty-two years, from X-ray dermatitis, contracted in the course of his work nine years ago.

Dr. Arnold Rossel, formerly professor of chemistry at Bern, has died at the age of sixty-eight years.

Professor Paul Adolf Näcke, director of the insane asylum at Colditz, known for his contributions to psychiatry, has died at the age of sixty-three years.

The death is also announced of Dr. Georg Roth, emeritus professor of mathematics at Strassburg.

The Washington Biologists Field Club has passed the following resolution:

In the death of Edward Lyman Morris, one of the founders of the Washington Biologists Field Club, on September 14, 1913, at Brooklyn, N. Y., this association has lost a member whose deep interest in its affairs never failed from the first days of organization to the last moments of his life. Although duty called him to another city, he never lost an opportunity to advance the interests of the club, and on the week preceding his death he spent three days at his beloved island and recorded on the register the flowering of a rare plant.

The members of this club mourn the loss of an ardent worker, a congenial companion, a respected associate and friend.

Resolved, that the Washington Biologists Field Club extend to the family of our deceased member its sincerest sympathy and condolence.

For the Club,
E. A. Schwarz,
A. K. Fisher,
H. C. Fuller

The U. S. Civil Service Commission announces an examination for associate physicist in theoretical and experimental optical research to fill a vacancy in this position in the bureau of standards, Department of Commerce, Washington, D. C., at a salary of $2,500 a year.

Examinations will also be held for quarry technologist to fill a vacancy in the Bureau of Mines at Washington, D. C., at a salary ranging from $2,500 to $3,000, and for junior physicist in the Bureau of Mines, Pittsburgh, Pa., and other places as they may occur, at a salary ranging from $1,020 to $1,200 a year.

The seventh annual convention of the National Society for the Promotion of Industrial Education and the organization meeting of the National Educational Guidance Association will be held at Grand Rapids, Mich., from October 19 to 25.

The annual meeting of the American Institute of Chemical Engineers will be held in New York from December 10 to 13.

Under the auspices of the school of mines at Berlin, there are offered prizes amounting to 2,000 marks for promoting safety in mines.

Arrangements are being made for an expedition to King Edward the Seventh's Land, a tract stretching from the Great Ice Barrier, to start in August next year. It will be under the command of Mr. J. Foster Stackhouse, who was intimately associated with Captain Scott in organizing the voyage of the *Terra Nova.* It is proposed that the members of the expedi-

tion sail from the Thames about the middle of August, 1914, in the steam yacht *Polaris*, a ship especially built in Norway for ice navigation in accordance with designs approved by an international committee of explorers, including Charcot, de Gerlache and Nansen. The expedition will, it is expected, be away for 20 months or more.

MR. TRUMAN H. ALDRICH, of Birmingham, Ala., has presented to the Museum of the Geological Survey of Alabama his entire conchological collection, by estimate about 20,000 species from all parts of the world. In addition to his own extensive gatherings and exchanges during more than 50 years, Mr. Aldrich had purchased largely not only from dealers but from such special workers as Garrett and Doherty. He had bought outright several important private collections, notably the entire Mauritius gatherings of the late Col. Nicholas Pike, the Jones Bermuda and Nova Scotia Shells, and the Parker cabinet of about 5,500 listed species. The Aldrich collection is particularly rich in Asiatic and Indian forms. The series of operculate land shells could hardly be matched in this country, and there are many types of species described by Mr. Aldrich and others. With the shells were given 1,300 or more volumes of conchological and other scientific works. Mr. Aldrich had already given all his duplicates, probably 200,000 specimens, to the museum, and last year he donated a very large and fine series of Tertiary invertebrate fossils. The museum, it may be noted, moved into its new building, Smith Hall, less than four years ago. Though the outcome of the Geological Survey and bearing its name, it is by law an integral part of the University of Alabama. Dr. Eugene A. Smith, since 1873 at the head of the survey, is also director of the museum.

DR. W. A. SAWYER, director of the hygienic laboratory of the California State Board of Health, and W. B. Herms, assistant professor of parasitology in the University of California, have contributed to the *Journal* of the American Medical Association an article in which they reach the following conclusions: (1) In a series of seven experiments in which the conditions were varied, we were unable to transmit poliomyelitis from monkey to monkey through the agency of the stable-fly. (2) Further experimentation may reveal conditions under which the stable-fly can readily transfer poliomyelitis, but the negative results of our work and of the second set of experiments of Anderson and Frost lead us to doubt that the fly is the usual agent in spreading the disease in nature. (3) On the basis of the evidence now at hand we should continue to isolate persons sick with poliomyelitis or convalescent, and we should attempt to limit the formation of human carriers and to detect and control them. Screening of sick-rooms against the stable-fly and other flying insects is a precaution which should be added to those directed against contact infection, but not substituted for them. (4) The measures used in suppressing the house-fly are not applicable to the control of the stable-fly owing to its different breeding habits and food-supply. Methods should be devised for diminishing the numbers of stable-flies, as they are a great annoyance to cattle and, in all probability, are capable of transferring and inoculating a number of the diseases of animals.

THE birth of ten calves in the buffalo herd maintained by the government on the Wichita national forest and game refuge, near Lawton, Oklahoma, has been reported by the game warden in charge. The herd now contains a total of 48 head of full-blooded buffalo, or, more properly, bison, of which 27 are males and 21 females. All of the animals are in good condition. In 1907 the American Bison Society donated to the federal government a nucleus herd of 15 animals which had been bred and reared in the New York Zoological Park. The animals were transported to the Wichita national forest, which is also a game refuge, and placed under the care of the Forest Service. They readily adapted themselves to their new habitat, but the area upon which they were placed was within the zone affected by the Texas fever tick and during the two or three years following their transfer only the constant care and watchfulness of the forest

officers prevented the complete loss of the herd. The animals were examined almost daily to determine whether they had become infested with Texas fever ticks and were placed in specially designed cages and sprayed with crude oil at intervals of from fifteen to thirty days, but notwithstanding the extreme precautions which were adopted, three of the animals died. Gradually, however, the enclosures in which the buffalo were confined were freed from fever ticks and there is a possibility that as the buffalo adapted themselves to their new environment they became more or less immune to the disease. No losses from Texas fever have occurred for several years, and the herd has almost quadrupled in number since it was established. The fact that the herd has not increased more rapidly is due largely to the preponderance of male calves. This characteristic of the buffalo is so pronounced in all of the herds now in captivity that a cow is considered twice as valuable as a bull.

UNIVERSITY AND EDUCATIONAL NEWS

Ernest Solvay, the discoverer of a process for the manufacture of soda, celebrated the fiftieth anniversary of that discovery on September 2 at Brussels by giving more than $1,000,000 to educational and charitable institutions and the employees of his firm. The Universities of Paris and Nancy each received $100,000.

At the last session of the Legislature of Pennsylvania an appropriation of $40,000 was made to aid in the development of courses in education at the University of Pennsylvania. Dr. Frank P. Graves, of the Ohio State University, has been appointed professor of the history of education, and Dr. Harlan Updegraff, of the Iowa State University, as professor of educational administration. Professor A. Duncan Yocum, who now occupies the chair of pedagogy at the University of Pennsylvania, will continue as professor of educational research and practise.

A graduate school of education has been established at Bryn Mawr College. It is under the charge of Professor Kate Gordon, associate professor of education, Dr. Matilde Castro, director of the Model School, and Professor James H. Leuba, professor of psychology, who will give a graduate course on the psychology of defective and unusual children.

The University of California has announced the establishment of a new Division of Rural Institutions. This new department will study and aid the rural forces which have for their aim the making of life in the open country successful and satisfactory. Elwood Mead has been called to the headship of this new division. He was formerly chief of the United States Bureau of Irrigation Investigations. He is now in Australia, as chairman of the Rivers and Water Supply Commission of the State of Victoria and chief engineer. His work in the University of California will be to deal with questions of farm credits, irrigation and drainage institutions, cooperation, and all the varied political, economic, educational, social and religious institutions which affect rural life.

Work has been begun at Smith College on the erection of a new biological laboratory which is to cost $150,000.

Professor Don Rosco Joseph, of Bryn Mawr College, has accepted a call to the medical school in St. Louis. His work in physiology at Bryn Mawr College will be given by Professor Arthur Russell Moore, now assistant professor in the University of California.

Dr. Paul S. McKibben has left the department of anatomy of the University of Chicago to become professor of anatomy in the Western University of London, Ontario.

Dr. G. E. Coghill, of Denison University, has been appointed associate professor of anatomy at the University of Kansas, Lawrence.

Edmund Vincent Cowdry, associate in anatomy of the University of Chicago, goes this fall to the Johns Hopkins Medical School.

Dr. Clara Moore, pathologist in the North Chicago Hospital, has been appointed instructor in clinical medicine and diagnosis in the University of Wisconsin.