Sir Oliver Lodge Expounds His Cosmogony

By James Stokley

Following is a continuation of the report of the meeting of the British Association for the Advancement of Science, cabled from Leeds.

One of the sensations of the meeting of the British Association for the Advancement of Science at Leeds was the exposition by Sir Oliver Lodge of his ideas of the nature and structure of the fundamental stuff of the universe.

The universe, declared the aged philosopher-scientist, is not a creation in the commonly accepted sense, for it has always existed and probably always will. So far as the physicist can see, the universe is a "going concern, not yet run down, perhaps not destined to run down."

If it should come to such a state of entropy, of dead inertia, of complete run-down-ness, he asked, could it be wound up again, and what would do the winding?

Sir Oliver answered his own questions: "Yes, it could be wound up again. An Intelligence would do the winding. Clerk Maxwell imagined an intelligence contrivance whereby quick molecules could be sorted out from slow ones. Thus one chamber or compartment of an apparatus could be made hot and another cold without the expenditure of any energy. There may be the beginnings of something of supreme importance in this concept."

The sum-total of energy in the universe, Sir Oliver continued, must be simply untold, boundless. We do not know yet when the energy in a single atom is completely discharged. The atom of radium, for instance is "usually quiet, but once in a century or so it fires off a projectile. It may take a thousand years before it fires one, but once it has started it fires off four more, and then becomes 'dead.' But who knows whether it has exhausted all its heat and energy then? Indeed it is now pretty certain that it has not. Even ordinary inert pieces of matter, like a lump of lead or even a glass of water, contain vast stores of energy locked up among their atoms, only waiting for the releasing trigger, as a haystack waits for a match."

Where Electrons Come From

Sir Oliver's idea of the natural universe is a space filled with a substantial entity, fluid in its nature, but outside our present ken. It transmits waves, is the seat of electric and magnetic fields, and is in "a violent state of spinning and is the seat of an immensity of energy such as has never been imagined."

When the continuity of this fluid is interrupted by a minute cavity a strain is set up. The cavity is an electron and the strain is an electric field. The stuff from the cavity is not destroyed, but spins around under the influence of the force which extracted it. The strain causes a gyration of the particles, which accumulates to form matter as we perceive it. Sometimes the particles reunite and cancel each other, the matter disappearing in a burst of energy.

The veteran physicist expressed a strong disbelief in the doctrine of materialism, but does not believe that the term "vital energy" is justified.

"I do not think that life is a form of energy, in the sense that it can be transmuted into other forms. There seems to be a guiding principle *ad extra*—from the outside—which interacts with the material universe but yet is not of it. The universe must contain many things beyond the scope of physical science. Though we may be silent about them we need not make the absurd blunder of denying their existence. Physical science is not comprehensive of all reality."

New Data On Cosmic Rays

Prof. Robert A. Millikan of the California Institute of Technology, Pasadena, told of his latest researches on the penetrating cosmic rays. The new researches were conducted in a lake high up in the mountains, with apparatus eight times as sensitive as that formerly used. With Dr. Millikan was associated Dr. C. H. Cameron. They found the rays to be twice as penetrating as the first determination indicated. The radiation penetrated to a depth of one hundred twenty feet in the lake, and this depth in water is the equivalent in stopping power of eleven feet of solid lead. The rays are three times as powerful at the summit of Pike's Peak as they are at sea level.

Just what these penetration rays signify is as yet completely unknown. Without question they pass through and through man and all his works, through all living things, every moment of the day and night. But no trace of physiological effect has ever been detected. So far as we know, they are just part of our normal environment.

Dr. Werner Kolhoerster, German pioneer in the investigation of the cosmic rays made famous in America by Dr. Millikan, reported his researches, following Dr. Millikan. On the whole the results independently arrived at by the two workers are in agreement. Dr. Kohlhoerster has paid especial attention to the direction from which this mysterious radiation comes. There is some indication that the rays are most intense from the direction of the Milky Way, especially from the constellations Hercules and Andromeda, but he is unable to say what astronomical body or bodies might be their source.

Scientists Differ With Bishop

Reminiscences of the famous controversy between Thomas Henry Huxley and Bishop Wilberforce in the days when the Darwinian theory was young were aroused Sunday when, at a church service attended by the president and officers of the Association the Bishop of Ripon suggested that the sum of human happiness would not be diminished if all laboratories were to be closed for ten years and the time and money devoted to promoting mutual understanding among nations and men. The scientists were not long in responding to this opinion. Their point of view was typically expressed by Sir Richard Gregory, editor of *Nature*. He said: "It would be far better if the bishops, instead of devoting all their time in preparation for a life on the other side of the Jordan, would themselves give particular attention to means of producing a new heaven and a new earth here below."

X-Rays And Genetics

Dr. F. A. E. Crew indicated one way in which science can be of great assistance to human life. He predicted that animal breeders will in the future make use of X-rays to regulate heredity to suit themselves. "X-rays are the very tool to use in exploring the hereditary constitution of animals and plants of economic importance," he declared. "It is no longer necessary to await mutations arising naturally to obtain experimental stock; we shall be able to manufacture a series of artificial

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strains. It may soon be possible to order sufficient mutations at will, to give the breeder of domestic stock the powers of full control needed for his complete success. There is no reason to assume, however, that X-rays alone will do this. There are doubtless many other chemical and physical agencies that will do the same thing."

In another paper before the section on zoology Prof. Crew told of his observations on a newly evolved hairless mouse. The animal's normal coat is developed in infancy, but the hair is all shed when the mouse is three weeks old. The males of this strain have normal powers of reproduction, but the females are sterile unless they are kept at a temperature of eighty-eight degrees Fahrenheit. Internally, the animals are found to have abnormal thyroid glands.

Freud and all his works were flung overboard by Dr. William Brown, in his presidential address before the psychology section. Cases of multiple personality are now less common, he pointed out, and this coincides with a decreasing use of hypnotism in psychoanalysis. There is a danger in this psychological instrument, he asserted, for a patient liable to suffer from dissociated personality is peculiarly subject to hypnosis, and the hypnotist is likely to insert the opening wedge.

Taming the Zuyder Zee

Holland is about to increase the territory subject to her jurisdiction by a total of ten per cent. But this conquest will not involve firing a shot or losing a human life in war. Dr. K. Jansma, secretary of the Zuyder Zee Board, told how the Zuyder Zee is being drained and turned into a new province. A great dike three hundred feet wide at the base and rising twenty-five feet above the water surface at its crest is being built. It will carry a railroad along its top. The total cost will be thirty-seven million dollars. The cost of drainage, subsidiary dikes, compensation to fisheries and other interests injured, will run the whole project to a cost of two hundred million, but Holland figures that the five hundred and fifty thousand acres of land reclaimed from the ocean will be worth it.

More Palestine Quakes

The Holy Land may expect to suffer from earthquakes for millions of years to come, Prof. Bailey Willis, Stanford University seismological expert, told the Association in describing his experiences during the disastrous quake that occurred in Palestine July 11. The area around Jerusalem is a region of potential earthquake danger, he explained, like Japan and parts of California. The Bible records seismic disturbances, and they have occurred from time to time in the centuries since. A fault line along which earth slippage may occur passes directly through the Mount of Olives.

Dr. Willis has the reputation of being present at earthquakes. He was visiting Santa Barbara, California, during its 1925 shock and he inspected the Palestine disaster just a day after its occurrence. The July earthquake was not as severe as many others in history, Professor Willis explained, although much damage was done because of flimsy construction of the buildings. Modern houses made of bricks and mortar, even when they were not of first class workmanship, withstood the shocks.

The Psychology of Wit

Appreciation of wit, a quality that an American superstition credits with being entirely lacking in Englishmen, was the subject of a paper by Dr. Ll. Wynn-Jones, British psychologist. His researches have shown that for English school children and university graduates wit furnishes one very good test of intelligence. "It does not follow," he said, "that one's capacity to appreciate wit cannot be improved even if it be admitted that one's intelligence cannot be improved."

Darwin's House To Be Shrine

Darwin's home as an international scientific shrine is now a realized fact. Early in the sessions of the Association this step was proposed and greeted with enthusiasm by both the British and visiting scientists from other lands. An offer to purchase the house and to establish an endowment for its upkeep was made by Dr. Buckston Browne, a retired London Surgeon, and at its closing session the Association authorized its president, Sir Arthur Keith, to accept this offer. The total outlay involved will be between sixty and seventy-five thousand dollars. Sir Arthur has suggested that a part of the permanent endowment be set aside to establish an annual Buckston Browne Prize for the best contribution to biological science during each year, the prize to be awarded by the Council of the British Association.

The Darwin house is located at the town of Down, and is still in the possession of the Darwin family. The plan is to restore it to the same condition in which it was when the famous biologist lived in it.

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Civilization need not destroy us. If we suffer it will be because we refuse to recognize that man is himself the greatest of all subjects for study that the universe has as yet produced, and that we know less of his nature and capabilities than of many aspects of the natural world toward which our investigations have been directed.

—*John C. Merriam.*

Science News-Letter, September 17, 1927

The mummy of a horse buried 3,000 years ago was found near Cairo, Egypt.

Sunlight falling upon the earth in a day exerts a weight of more than 100,000 tons.

The black, or house rat, a native of southern Asia, began to spread over the world about 1200 A. D.

Soft, fat, white worms from the maguey or pulque plant are fried and eaten like potato chips in Mexico.

Ojibway Indians sometimes visited the graves of persons who had died 40 years earlier in order to honor and remember them.