It is believed that at a certain time unusual softening of the mass by water caused it to give way, and that the greater part of the visible flow descended at one time, in the manner illustrated by mixtures of soil and rock waste which, on a much smaller scale, frequently flow down ravines or mountain slopes as a result of cloudbursts.

The Slumgullion flow took place before the beginning of the present heavy forest growth and after the glaciation which produced the morainal deposits on the adjacent slopes.

FRANCOIS E. MATTHES,
Secretary

THE ACADEMY OF SCIENCE OF ST. LOUIS

THE academy met at the academy building, 3817 Olive St., Monday evening, May 17, 1909.

Professor W. E. McCourt, of the department of geology of Washington University, presented an illustrated paper on "Diamonds in Arkansas."

Professor McCourt first gave a general account of the properties of the diamond, and an account of some of the famous diamonds of history. Then the general commercial occurrences of the diamond were considered—namely, India, Brazil and Africa, whence the world's supply of diamonds has largely come. Diamonds have also occurred in the United States, some of them to a size of fifteen carats, but nowhere in very large quantities.

In 1906, however, diamonds were found derived from a parent rock in Pike County, Arkansas, near the town of Murfreesboro. The presence of the rock in this region, similar to rock in which diamonds were found in Africa, has been known for some time, and the state survey has mapped one of the areas. The igneous rock is a peridotite which has been pushed up through the Carboniferous and Cretaceous quartzites and sandstones, and in places is covered by beds of Post-Tertiary and Quaternary formations. But there does not seem to have been any metamorphism accompanying the intrusion of this material. This peridotite is dark colored, basic igneous rock which contains olivine, augite, magnetite, mica and perovskite. In some places the rock is exceedingly hard and dense, but in others it has weathered to a yellowish and greenish soft material to a depth of from twenty to twenty-five feet. Covering the region to a depth of a foot or so is a black gumbo soil which contains fragments of the hard peridotite and the country rock.

The work in this region has not been very extensive, but bore holes have been made in several

places, one reaching to a depth of 205 feet in the hard rock; several companies have located on the area; and stones to the number of about 600 have already been found. The largest stone is six and a half carats. Some have been cut and are valued at \$104 a carat. The colors vary, most of them being white, brown and yellow, though one blue diamond has been found and several black ones.

From these indications this area seems to contain a mass of rock similar to the rock in South Africa. But as to the number of diamonds which may be found deeper in the peridotite, that, said Professor McCourt, is a question which can only be settled by actual mining and testing. The results which have been shown by the more or less spasmodic exploitation, however, seem to indicate a good promise.

Professor Nipher stated that he had been unable to finish his work on electrical discharges on account of recent developments. He has found that the electric corpuscles can be focused by means of a fiber of red glass lying on the film of the photographic plate. When the positive and negative terminals of the influence machine are grounded at different points, he finds evidence that the corpuscles are discharging from the negative line to surrounding bodies. They are also moving from surrounding bodies to the positive line. This refracting device seems to furnish a way of making further studies on electric fields.

The following memorial was adopted in memory of Dr. H. Aug. Hunicke, corresponding secretary of the academy at the time of his death:

Dr. Henry August Hunicke, at the time of his death on April 5, 1909, had been a member of the Academy of Science of St. Louis for rather more than twelve years, during five of which he held the office of corresponding secretary.

His active interest in everything appertaining to the labors of the academy is indicated, not only by his contributions to its scientific proceedings, but also, to an even greater degree, by his active participation in the business of the council, in matters of organization, in the discussion of questions of policy and in the promotion of measures designed to broaden the scope or to increase the usefulness of the academy.

He was an effective speaker, because his outlook and his sympathies were both broad and deep. Although a keen debater, he was uniformly considerate of the feelings of others and never permitted himself to treat his opponent of the moment with anything less than the most perfect courtesy. His spirit was ever helpful, encour-

aging, warmly appreciative of merit or good intent, but he was, nevertheless, quick to detect and to comment upon faults in logic or on errors of any sort. Such criticisms were always without rancor and were delivered with a touch of humor and with so delicate a tact, that, while they enlivened debate, they rarely or never gave offense.

As a councillor, his advice was highly valued, because he looked to the end, being not easily diverted from the main objective nor disposed to waste time over side-issues or trifles, and because he neither underestimated the adverse view nor overstated his own.

In his various capacities, as adjunct professor at Washington University, as a resourceful and able technologist, and as a close student of certain strictly scientific applications of the theory of thermodynamics, Dr. Hunicke enjoyed in full measure the respect of those who were in a position to judge his work, and so achieved his reputation; but in the minds of his colleagues of the university and of the academy, his truest claim to distinction lies in the exceptional qualities of heart and character, which endeared him to his friends, which were a constant inspiration to all who came within the sphere of his influence and of which the memory constitutes a living monument in his honor.

The Academy of Science of St. Louis places this record in its archives as a brief token of respect and as an expression of its sense of the severe loss which the academy and the world have sustained in his death.

LAUNCELOT W. ANDREWS,
CHAS. D. STEVENS,
H. A. WHEELER

THE academy met at the academy building, 3817 Olive St., Monday, June 7, 1909.

Professor W. E. McCourt, of Washington University, exhibited a number of photographs taken in Onondago Cave, near Leesburg, Mo., and described the formations found there.

Professor F. E. Nipher, of Washington University, gave a verbal account of some of his recent work on electric discharge, stating that his paper on the subject has not yet been completed.

He has recently obtained what have the appearance of shadow images of glass fibers laid across the film of a photographic plate enclosed in a hard-rubber holder, although the fibers were not present. They had been laid across the film of another plate previously exposed in the same holder. When the fibers were present they gave

black focal lines on the negative. The after images formed on the next plate were white shadow images. The electrons which came from a highly charged line wire from the negative terminal of a plate glass machine were on the second plate deflected away from the lines upon which they had been converged in the first plate. This indicates that the effect is due to electrons and not to ether waves or ultra-violet light.

Experiments of the same kind with X-rays have given negative results. Previous exposures of plate holders to electrical radiations do not appear to affect X-ray images, although this matter is still under examination.

Later experiments to determine momentum effects around an angle in a wire have been made by placing the angle flat upon a sheet of glass. It is held in place by means of a fine silk thread doubled around the wire at the angle and attached to a helical spring. A photographic plate may be slipped under the wire at the angle. A sheet of black paper is inserted between the film and the wire, and a larger sheet is laid down upon the glass plate. These sheets of paper cut off luminous effects due to the discharge. If these sheets of paper are used a second time during the day, images of the wire due to previous exposures are formed on the plate. The momentum effects previously observed and reported are less marked by this method, and can only be obtained by placing a grounded and laminated condenser plate below the sheet of glass upon which the plate is supported. This deflects the negative particles downward upon the film.

It has also been found that the smooth aluminum wire lying flat upon the sheet of black paper in contact with the film, produces under some conditions an image which shows a sharp system of wave forms. The breadth of the image is about 3 or 4 mm. at the widest part and inappreciably small at the nodal points. The wavelength and position seem to be affected by the angle in the wire and the local geometry of the circuit around the angle. The wave-length is about 2×3.75 cm. The wave forms reverse their positions in a symmetrical way when the direction of the discharge is reversed. It is suspected that the tension on the wire has something to do with these wave forms. When the tension is small they are not observed. There is, however, much remaining to be done in the study of these phenomena.

W. E. MCCOURT,
Recording Secretary