

The second of the series of scientific lectures undertaken by Professor Renne was delivered at the University on Thursday evening, when the constituents of the atmosphere were demonstrated in their various uses and functions. The movements of the particles of gases were first dealt with, the lecturer demonstrating the varying speed of the particles in their movements upon free paths, and how they acted under obstructing elements. It was shown that motion, more or less rapid, was a necessary condition to the existence of atmosphere, whether the particles were gaseous, liquid, or solid. By way of illustrating this it was stated that a pint of air injected into a room previously emptied of air would rapidly diffuse itself into every portion of the room. It was then shown by a number of experiments how the diffusion was accomplished by gases varying in weight and consequent rapidity of motion. The reason of the atmosphere remaining upon the earth's surface was shown to be because the force of gravity overcame the rate of speed at which the gases moved. That there was no atmosphere upon the surface of the moon was due to there being insufficient gravity to retain the oxygen and nitrogen. The differing theories regarding the surface of the planet Mars were discussed, the question at issue being as to whether the water supposed to exist there was in a liquid or vaporous state, if at all. The lecture concluded with a number of interesting experiments showing the solution of gases in water and other liquids and the effect of such solutions. Were it not for the fact that oxygen was soluble in water animal life could have no existence in it. Although not germane to the experiments set down upon the syllabus for the evening, the Professor demonstrated that gases had a great tendency to adhere to the surfaces of solids. In the case of platinum it was shown that this metal retained upon its surface 100 times its own bulk of oxygen. The experiments were very closely scrutinized, and the lecturer retained the keen attention of his listeners.

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UNIVERSITY EXTENSION LECTURES.

Professor Renne continued his series of lectures on "The atmosphere" before a large attendance at the University on Thursday evening. Having enumerated the principal constituents of the atmosphere the lecturer proceeded to describe in detail the most important of them, namely oxygen. He gave an account of its discovery and preparation both on the small and the large scale, and illustrated its properties by experiments. He then gave some account of the part which oxygen plays in respiration and the purification of the blood in the lungs, and of the various uses to which it can be applied. Ozone was then described, and its preparation and properties illustrated by experiments. The lecturer stated that although doubtless ozone acted as a purifying influence upon the atmosphere, yet considerable doubt had of late been thrown upon the idea that ozone possesses germ-killing properties.

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UNIVERSITY EXTENSION LECTURES.

Professor Besly continued his course of lectures on "Rome" before large audiences, at the University on Wednesday afternoon and evening. The preceding lecture dealt with the building materials, the methods of construction, and style of architecture as an introduction to a description of the Forum Romanum, which was the most instructive and interesting centre in the city of Rome and all its historical associations. This portion of the city was made the most interesting because the Forum was the scene of all the functions which took place in the city, whether of legal, political, religious, military, commercial, or social character. The lecturer went on to describe these functions as though he were a Cicero resurrected from the very life of the ancient days, and knew everything that went on to the minutest details. In fact, one would think that the modern guides who make a living by conferring with the ignorance of sightseers to the glorious ruins of the great city would not be in the same category with the knowledge of the Professor. His first illustration was a map showing the position of the Forum, and the intelligence of the spectators was aided by a graphic description of the battle between the Sabines and the Romans, the issue of which was arranged by women suffrage. At first the Forum was a market-place, with booths and shops scattered about prominently for the transaction of commercial pursuits, but the King Tarquinius Crispus laid it out in an organized arrangement for shops around a large centre for gatherings of the people of announcements and other cases meeting of general interest. The public buildings, such as temples dedicated for various purposes, a prison in which the Apollis Peter is supposed to have been kept—rostra, upon which the great Roman orators delivered their soul-stirring speeches, and Senate House, were erected in various suitable places within the Forum area. The temple, their origin and uses, claimed the special attention of the Professor, his description of them in their original beauty and grandeur being very fascinating to the students of architectural design and archaeological research. After showing the Forum in all its most fascinating proportions, and thus playing upon the sublime imagination of the listeners, the lecturer showed some pictures of what now

remained of the greatest productions of Roman genius, aided by skill and art, in most luxurious profession. This contrast of ruins gave a certain impression that to realize what had just been described, needed all the enthusiasm that none but such as the Professor himself could possibly entertain. The authentic stories and the legends which were given to explain the names and titles of the various buildings and their associations kept the audience intensely interested during the whole of the lecture.

The third of Dr. Renne's lectures upon the atmosphere was delivered at the University on Thursday evening before a good attendance of keenly interested listeners. The lecturer proceeded to explain the composition of the atmosphere, showing that although the air contained a number of gases in greater or less quantities, the two principal proportions were those of oxygen and nitrogen, and these had of late to be altered to admit of the newly discovered element of argon. Oxygen being the most important gas in the activities of life it was selected as the main topic for the discourse. The discovery of oxygen as a diatomic gas, on August 1, 1774, by Dr. Priestly, was referred to as one of the most important discoveries in science. The operation by which this discovery was made, by the application of heat to red oxide of mercury, was the subject of an interesting experiment. Pure oxygen having been obtained, it was clearly demonstrated that this constituent in the air was the necessary element to combustion. A piece of steel having been placed into a jar of oxygen resulted in the metal being rapidly burned, nothing of it being left but the rusty film attaching to the sides of the glass. Zinc and even platinum could be easily burnt in the same way. The lecturer then went on to treat of the practical uses to which oxygen was being put for commercial purposes, the artificial preparation in large quantities being obtained by heating a number of substances; chlorate of potash was the most generally used, although oxide of barium served the same purpose well. The relation of oxygen to animal life was next treated, the Professor explaining the diffusion of the gas upon the lungs and the blood to sustain life. Various experiments upon animal life had been made showing that if pure air in the form of oxygen were continually breathed life would run out in a very short space of time, which demonstrated that the air we usually breathe was quite good enough for ordinary purposes of living. It had, however, come into the practice of medicine as a stimulant, and was said to have been used to prolong the life of the late Czar of Russia. This gas was also used in the maturing of spirits, in the manufacture of vinegar, bleaching, and manufactures of various kinds. The lecture was concluded with an interesting experiment showing the remarkable conversion of oxygen into ozone by contact with electricity. After explaining the properties of ozone the lecturer incidentally remarked that although ozone existed as the sea-weed under certain atmospheric conditions, the decomposition of seaweed was not ozone, as popularly believed, although its odour was similar. At the next lecture Professor Renne will give some experiments demonstrating the influence exerted by nitrogen upon some peculiar forms of growth in plant life. These experiments are new, and have never been shown here before. They will be illustrated by lantern slides and microscopically.