the atmosphere in the latitudes of the dry zone would account for the scarcity of rain in it. These winds belonged to two classes—Firstly, those which formed a part of the general circulation of the atmosphere resulting from the spherical form of the globe and its rotation on its axis. To the influence of these must be attributed the low rainfall in the dry zones. Secondly, there were the winds, which were mainly due to the relative distribution of continents and oceans, and participating therefore in the nature of monsoons. To these the abundance of rains in the well-watered portions (the eastern) of the same zones which interrupted the continuity of the dry lands must be attributed. The operation of these causes was as follows :—The primary circulation of the atmosphere, which arose in the difference of temperature between the tropics and cold regions of the globe, had its origin in the broad ascending current which, under the influence of a powerful equatorial sun, started from the belt of calms. The vast ascending masses of air overflowed on both sides towards the temperate zones, causing an accumulation of air at about 30°, enhanced still more by the decrease of the pressure over the areas poleward. Here existed a belt of high barometer pressure, the highest on the earth's surface. From this belt of high barometer pressure the air divided, flowing downwards both ways. A portion returned to the tropics and became a part of the trades and reascended in the belt of calms, making a complete circuit. The second part flowed poleward and became the anti-trades. At first sight the occurrence of north winds, especially during our summer months, seemed to present a meteorological paradox, as the wind ought to blow from where the air was cold to where it was warm. But a disturbing effect was produced by inequality of atmospheric pressure, winds pouring in over a region of low barometer, while flows of air proceeded from a region of high barometer pressure. The first of the descending currents from the equatorial flow brought drought, the second was the principal source of the rains in the temperate latitudes. It was somewhat singular, observed the lecturer, that two different branches of the same air current should have so different an effect on aqueous condensation. Both were dry winds, for a descending wind forced into a region of greater pressure would contract, and in doing so the latent heat which it had absorbed in ascending reappeared and increased its temperature capacity for moisture, thus rendering condensation more difficult, if not impossible. Moreover, the equatorial branches, blowing to warmer regions, with no chance of meeting a cooler atmosphere, lost all regular causes for condensation, and the countries they passed over remained parched and dry. The rainy areas of the belt of dry were on the east side of the great land masses. These interruptions were due to the powerful influence of the relative situation of the great land masses and water areas producing strong monsoon winds, which overcame the general wind circulation. In conclusion, the Professor pointed out one great peculiarity of the Australian Continent, which was divided into three isolated regions, separated from each other by the dry belt, and to which cause might probably be ascribed some of the apparent anomalies which existed in the animal life of this continent. His next lecture he proposed to devote to a consideration of this important subject.

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UNIVERSITY LECTURES.

Professor R. Tate, F.G.S., F.L.S., continued his series of lectures on "The Climate and Distribution of Life in Australia" at the University on Monday evening before a small audience. After going over the ground touched in his first lecture, the Professor proceeded to discuss the various suggested methods by which a possible change of climate might be brought about, such, for example, as letting in the sea to the lakes from the south. In any case he thought the area of the dry zone could only be shifted, not done away with, as the causes which, as he had previously shown, brought about the lack of moisture in the centre of the continent would still be at work. In speaking of the alterations of climate on the globe the Professor observed that the testimony of the rocks of Great Britain revealed that that country had been at one time so hot as to lure to its shores tropical plants and animals, and at other times so cold as to almost destroy animal and plant life. Nearly the whole of the Northern Hemisphere showed evidence that in recent times it shivered beneath an all-shrouded mantle of ice. This was known as the glacial period of the Northern Hemisphere, and there were not wanting indications that the Southern Hemisphere had passed through like vicissitudes. Dr. Croll had published a theory on the subject, in which he attributed the great changes of climate indirectly to the variations in the eccentricity of the earth's orbit, combined with the procession of the equinoxes. In consequence of the first the earth's orbit would be lengthened outwards, and afterwards become more circular, alternating between the two in extensive periods of time. There were abundant evidences to show that in comparatively recent times the dry zone in this continent had passed through several changes of climate, owing, he believed, to the first of the causes named—variations in the eccentricity of the earth's orbit—the present salt-water pans or lakes having originally been extended fresh-water basins, supporting fresh-water fish and crocodiles. The remains of gigantic herbiverous animals had been found in this district, the existence of which was altogether incompatible with the present climatic conditions which prevailed in that now dry region. Lake Eyre was an example of a contracted fresh-water basin. Like all the other lakes in the dry region it was now little more than a salt-pan, due to the concentrated saline matters originally brought down by fresh-water rivers. Evidence of the existence at one time of these fresh-water lakes he would give at a later time. The Professor then proceeded to treat on the possibility of inducing a rainfall artificially. Several methods had been suggested. Science could as yet, however, hold out no hopes of successfully inducing rainfall in a country where the atmosphere was not saturated with moisture, such as the dry portions of this continent. Opinions differed as to the influence of forests on the rainfall, the most generally accepted view being that trees increased the rainfall. They were told that if they deforested the country the rainfall would diminish. From this theory, however, he differed. European experience with rain measures dated from 1688, but this experience had failed to prove that rainfall decreased with the destruction of the trees. Similar results were reported from the United States, where experiments had been conducted for sixty-six years. The timber-covered State of Minnesota had the same amount of rainfall as the treeless region east of Chicago. In this country no change in the rainfall had resulted from the transformation of a vast extent of forest land into agricultural land. He recommended teachers to read Professor Marsh's "Earth as Modified by the Action of Man," from which they would gain some interesting information on this subject. He did not wish them to think, however, that forests had no value. On the contrary, they were safeguards against floods; they broke up the rain, caused a slower percolation in the soil, and had many other advantages. The