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Remarkable Remarks: Editorial

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EDITORIAL

REMARKABLE REMARKS

In a recent book, "The Mysterious Universe," the author, Sir James Jeans, says that "the total number of stars in the universe is probably something like the total number of grains of sand on all the seashores of the world." In another book of his, "The Stars in Their Courses," published about the same time, he repeats the above statement and adds: "or to take another comparison, the total number of stars in the universe is probably about equal to the number of drops of rain which fall on the whole of London in a day of heavy rain."

Does the gifted author mean to imply that the two statements just quoted are of equal weight? If so, then the amount of rain falling on London in a day's time is prodigious: it is an amount equal in volume to all the sand on the seacoasts of the world.

Let us examine for the moment his first statement, viz. that the stars of the universe are probably as numerous as the grains of sand on all the seashores of the world. This is an amazing statement! Is it credible, or even within the realm of possibility? A few figures may help to answer.

If we assume that the average volume of a single sand grain is about one cubic millimeter, a single cubic meter of sand will contain one billion grains. That is to say, one cubic meter of sand would be equal to a billion stars. Now the actual number of nebulae or star-cities observable through our most powerful telescope is something over two million, and it is probably a generous estimate that each of these star-cities or island-universes may contain a hundred billion stars, which is simply another way of saying that, according to these estimates, the total number of stars in the universe is two million times one hundred billion or two hundred quadrillions of stars.

This is a staggering figure but whether greater or less than the number of stars in the universe, it would require but little of the coastal sand at one billion grains per cubic meter to equal it. One cubic mile of sand would contain, roughly speaking, four quintillions of grains or approximately twenty times the figure just given as to the number of stars. In other words, would it not seem a fairer comparison to say that the total number of stars in the universe is probably about equal to the total number of sand grains on the beach at Atlantic City?

Farther along in the same book, The Mysterious Universe, Sir James quotes Huxley as saying that if at the beginning of time, six monkeys had been set strumming blindly and unintelligently on typewriters, they would have, in the countless millions of years which followed, produced all the books in the British Museum. Sir James tacitly avoids direct approval of this remarkable remark of Huxley's, but he does say: "If we looked through all the millions of pages the monkeys had turned off in untold millions of years, we might be sure of finding a Shakespeare sonnet somewhere amongst them, the product of the blind play of chance."

"Curiouser and curiouser," said Alice! One might indeed imagine that out of the infinitude of letters produced by these perennial simian type-pounders, some would be arranged into real words, but to imagine farther that these rarely formed words would ever be actually grouped into the order necessary to form a Shakespeare sonnet, is to impose too much of a burden upon human credibility.

In discussing the burrowing habits of the pocket-gopher, Seton remarks that: "Their aggregate power as geological agents must be immense; and when we stand on the banks of the Mississippi and watch that turbid river bearing its 400,000,000,000 tons

of mud per annum to the sea, i. e., one square mile, about 240 feet deep, for the manufacture of new continents, we should realize that a great many thousand million tons of that flood-borne silt is simply the debris from the workshop of the Geomidae."

A remarkable remark, indeed! A river carrying that much silt would be something like a mud pie, for 400 billions of tons of silt, allowing a ton to the cubic yard, would make roughly about 75 cubic miles instead of the one twentieth of a cubic mile which he postulates. And since he attributes a good share of this sizeable heap to the industry of the gophers, they are surely an indefatigable and hard-working group.

Two friends once engaged in a heated altercation, until one called the other a liar. "I do not call you a liar," replied his friend, "but you tell what isn't so." A great man once said: "Scientists are often wrong, but they don't mean to be."

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CAVES

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ed on it most of the time and one can take a ride of five hundred feet into the side of the hill. It is very similar to Sequiota Park in Missouri. In Maquoketa State Park is a splendid example of an erosion cave where a stream has tunneled its way under the ground and rock for about four hundred feet. On either side of this is a deep canyon like valley. There are two natural bridges here standing one hundred feet above the canyon floor. The highway passes over the main cave stream.

In Mesa Verde National Park in Southwestern Colorado are found some of the best examples of wind or river erosion caves along the side of canyons. Especially so since these caves have been the homes of a prehistoric race. Remains of their dwellings and samples of their craft work are still to be found in some of these caves. Many of the caves are accessible only by ladders or by narrow winding trails along the side of the cliff, many of which are two thousand feet high. Some caves which were used as homes are only large enough for one family, others were occupied by villages. In one cave three hundred feet long and fifty feet back and thirty feet high a village has been explored having two hundred rooms and twenty-three kivas, which were used as places of worship. They have arranged these homes as safety places from natural and human enemies. From these they would go out and till the semi arid soils on the mesa above or in the valley below, also to hunt or gather nuts and fruits from the scanty vegetation around them. These were a primitive people leaving records only in the form of a little picture writing on the cliffs or on their pottery. When they occupied these caves as homes is only conjectural. There is abundant evidence that it has not been during the last five hundred years. Some would place it one or two thousand years ago. The arid climate has kept the structural timbers in a good state of preservation. Scattered over the Southwest mainly in Colorado, New Mexico, and Arizona are found hundreds of such cliff dwellings. Some of the best known are Mesa Verde, Montezuma Castle, Puye and Black Walnut Canyon.

The lava caves present no peculiarities excepting the underground stream like feature and the characteristic markings or spines formed where the viscous lava settles away from the ceilings and sides. The lava flow of the Craters of the Moon National Monument in southern Idaho, because of its recent formation, has a large number of these caves that are open so that one may explore them. One can ill afford to miss seeing this interesting region of caves and volcanic craters when touring from Yellowstone Park to Salt Lake City.

In three of these lava caves, one in Craters of the Moon National Monument and two in central New Mexico south of Gallup, ice is found the year round. This phenomena is hard to explain. None of them are artificially lighted so it is difficult to explore them to any extent.

In respect to ice caves Iowa is not to be left out as we have two such caves. One is at Decorah which has ice in it during the forepart of the summer. The other is in Bixby State