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Editor and Advisory Board

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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 tons