

Germless Island in Polar Seas

Bacteriology

Found: the magic land where you cannot get ill. At least this fairy country is absolutely germ-free. It is well known that almost all diseases are caused by germs. On the northern island of Novaya Zemlya, you would run very slim chances to be knocked down with some disease.

Dr. A. F. Kazansky, a scientist of the Central Geophysical Observatory at Leningrad, is responsible for the discovery. Polar explorers had many times noted the remarkable purity of polar air. Accurate tests were lacking, however. So, when Dr. Kazansky went to spend a winter at the Soviet Geophysical Station, Matochkin Shar, on the lonely polar island, Novaya Zemlya, he was prepared to make the tests. The results he obtained were almost start-

ling. Microbes were not to be found on this enchanted island. No matter what Dr. Kazansky tested—air, earth, water, dust, not a germ could be discovered. Even wild game shot by hunters were germ-free. Such exceptional purity is considered to be a record.

Many different ingenious tests were tried out in the attempt to hunt down some germs. Sterile dishes with an agar-agar jelly especially suitable for bacterial growth were left outdoors for several hours at a stretch. Then the dishes were placed in an incubator and warmed, to stimulate the germ life. In no cases were any microbe colonies found. Just for comparison it may be said that a similar dish with jelly, exposed for 15 minutes to city air,

would grow over with germ colonies too numerous to count.

Another highly spectacular test conducted by Dr. Kazansky was as follows: Fresh juicy meat in an open glass jar was left out-doors, where air, dust and rain could reach it. For eight months it was exposed to the elements. Yet when Dr. Kazansky examined the meat again, no trace of rotting was found. The meat was as fresh as when packed in the jar, almost a year ago.

It is supposed that the exceptional purity of air on Novaya Zemlya may prove a great attraction to sanatoria. Many pulmonary patients, being very weak and an easy prey to infection, require pure fresh air. Polar sanatoria may prove to be ideal for them. *Science News-Letter, June 1, 1929*

Blinking Stars and Size of Universe—Continued

then worked this into what is now called the Leavitt-Shapley law, by which the brightness of a Cepheid may be found by simply measuring the time it takes to change in brightness, and this has proved a powerful measuring stick for astronomers, as any object containing Cepheids can be measured for distance.

Very recently the Cepheids have proved their usefulness in a somewhat different way. This time they have gauged the diameter of space itself.

Write the number 176 and after it put a row of 18 ciphers. Then you will have the number of miles that you will have to travel if you want to completely encircle the universe and get back where you started!

Vast as this figure appears, it is about a twentieth as large as scientists supposed a few years ago. It is based on a new value of the "radius of curvature of spacetime", as the astronomer calls it, that was announced by Dr. Ludwik Silberstein. Dr. Silberstein is a mathematician physicist connected with the research laboratory of the Eastman Kodak Company, and is considered as one of the world's leading authorities on these matters, which are closely connected with Einstein's theories.

According to Einstein and his school space is not infinite. The old idea that one could travel in a straight line forever is wrong, they say. As a matter of fact, there is no such thing as a straight line, and if a person should travel far enough and long enough in what seems to be

a straight line, he would eventually find himself back at his starting point.

Yet, they also say, space is unlimited, and this is an illustration of how that may be. If a small insect lived on the surface of the globe and was unable to leave it, or to perceive anything else off its surface, he could travel indefinitely around it in any direction. He would never come to an end, yet his universe would be limited. Even if endowed with human intelligence, and he or his ancestors had never been able to perceive anything off the globe's surface, he would not be aware of the rest of the world about him.

Our universe, say the relativists, is similarly curved, in some fourth dimension, which the human race has so far been unable to perceive or comprehend. Apparently, we are free to move in any direction we choose, but actually there is at least one direction in which we cannot move, since we cannot comprehend it. If we could, then we could move in that direction.

But even though it cannot be comprehended, the scientist can get some faint glimmering of its existence, and estimate the size of this four-dimensional sphere in which we live. This is what Dr. Silberstein has done.

Using data pertaining to two separate groups of Cepheids, furnished by the Harvard College Observatory, Dr. Silberstein has made a new estimate of the radius of curvature of the universe, or "spacetime" as it is generally called. This radius is practically the same when

calculated from a group of another kind of stars. It is about a twentieth as large as a previous estimate that he made in 1924, which was based on 18 globular star clusters and the Magellanic Clouds. The latter are clouds of stars seen in the southern hemisphere of the sky. Dr. Harlow Shapley is now working out some new material on these objects. Though not finished, it appears that his previous estimate of their distances, which Dr. Silberstein used, was too large. Therefore, and for other weighty reasons, Dr. Silberstein believes that his new determination of the radius is the more accurate.

The maps show the June evening skies. Two planets are now with us. In the western sky after sunset is Mars, rather faint, but recognizable by its steady red light. In the southeast is Saturn, fairly bright, and of a steady leaden color. Through even a small telescope, Saturn is one of the most remarkable sights in the heavens, for it is provided with a unique system of rings. A telescope magnifying perhaps fifty times will show these rings, and also the brightest of the moons that revolve around the planet.

A welcome event occurs on Friday, June 21, at 4:53 p. m., Eastern Standard Time. At that moment the sun is directly over the Tropic of Cancer, in its farthest north position of the year. Then, according to the astronomer's reckoning, summer commences.

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