ASTRONOMY

Million New Galaxies

Two major instruments were used in an 18-year hunt for universes beyond our own Milky Way System. Almost a billion are believed to exist within billion light years.

➤ AN 18-YEAR hunt for galaxies, those clusters of myriads of faint stars and a few nebulae, was reported by Dr. Harlow Shapley, director of Harvard College Observatory.

This search has led to catching, on Harvard photographs, a million new galaxies such as our own Milky Way System, he told members of the American Astronomical Society.

The two major instruments for "galaxy hunting" have been the Bruce telescope in South Africa (now replaced by the Irish-American reflector) and the similar Metcalf doublet at Oak Ridge, Mass. Earlier plates made in Cambridge, Mass., and in Peru helped in cataloguing the thousand brightest star-systems.

Within 20 degrees of the Milky Way, little can be learned about how these galaxies beyond our Milky Way Galaxy are distributed. The light-diminishing dust and gas of our own Galaxy through which we must look blots out these nebulous-like objects.

Along the borders of the Milky Way, a few windows in the obscuring smog are found through which the distant galaxies can be seen faintly, or sometimes even clearly, Dr. Shapley said in delivering the Henry Norris Russell lecture.

In more than half of the sky, however, the way is clear for a comprehensive survey. There is no known limit to its depth in space.

In this dust-free half of the sky, where most of the work was done, the Harvard galactic bureau on the average had to consider stellar objects of all magnitudes down to faint 15.2 in order to find even one galaxy in five times the space covered by a full moon.

These star-systems come in pairs, groups, clusters and larger aggregations, much as people in the United States are unevenly distributed, Dr. Shapley reported.

Almost a billion galaxies are believed to exist within a billion light years (a light year is the distance light, traveling at 186,000 miles a second, goes in a year) from us, awaiting discovery with our greatest telescopes. And another billion galaxies lie hidden by the star-clouds of our Milky Way, if their distribution is at all uniform, the astronomers were told.

Dwarf galaxies, because of their faintness, are imperfectly represented in the census of all such star systems up to magnitude 17.5, visible only with powerful telescopes. But giant systems like our Milky Way, even when four or five times as distant, are picked up in the survey.

Studies of the inner metagalaxy, and especially of our Milky Way System, have strengthened the Harvard astronomer's belief that galaxies begin as chaotic, irregular systems. Developing through the various grades of spirals, with their stellar aggregations and newly formed supergiant stars, they finally become the smoothly-arranged spheroidal galaxies.

The Universe is still in its youth, Dr. Shapley said. Billions of years must pass for a spiral galaxy to develop, and yet many such spirals or young galaxies still exist.

Giant stars are still being born, he pointed out. A study of the two nearest external galaxies, the Clouds of Magellan, have shown that the Large Cloud is still rich in the stuff from which new low-density stars are made. Hundreds of these presumably young supergiant stars are found there, some of them 10,000 times as bright as our sun and 2,000 times the sun in diameter.

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ENTOMOLOGY

Stoneflies Live and Grow In Freezing Temperatures

➤ THIS is a winter story, although it has to do with life and love among the insects in the freezing spring of Alaska.

Discovery of stoneflies that "conduct themselves normally and enjoy full use of their body functions" at a temperature of 32 degrees Fahrenheit, the freezing temperature of water, is reported (SCIENCE, Dec. 22) by Dr. R. I. Sailer, of the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture.

Digging into a frozen stream on an Alaskan mountain side a couple of years ago Dr. Sailer found a number of stoneflies in an ice enclosed cavern that had been eroded above a riffle in the stream. He observed some of these insects that escaped and concluded that they are remarkable because they continued to grow and live at temperatures which stop the development of most insects.

The "thermophobic insect", as Dr. Sailer calls it, is able to reproduce under frigid conditions of temperature.

Although experience with other poikilothemic animals (which means cold-blooded animals) shows that they usually require more than one season to complete their development, the stonefly seems to have one generation each year.

Dr. Sailer suggests that these strange creatures would give useful information if others studied them more thoroughly.

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EDUCATION

$20,000,000 Wanted To Fight Illiteracy

➤ AN EXTENSIVE program of fighting illiteracy in all parts of the world during the next 12 years at a cost of $20,000,000 is being planned by UNESCO in Paris. Funds for the drive would come from private and governmental sources outside UNESCO'S regular budget.

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