

ASTRONOMY

Milky Way Still in Infancy Judging By Mass Radiated

French Astronomer, Agreeing With Expanding Universe Theory, Finds Stars in Brief Time Have Lost Little

NEW scientific evidence that the universe is expanding, and a stilling of the fears of those people who worry because the sun and the stars are "quickly" destroying themselves by turning their mass into the radiation they emit, is presented in the *Astrophysical Journal*. (September).

M. Henri Mineur, astronomer at the Observatory of Paris, reports calculations showing that the stars of the Milky Way, despite their age of tens of thousands of millions of years, have only radiated away about one hundredth of their mass.

Thus if one takes M. Mineur's estimate that Milky Way stars are from ten to twenty billion years old, the apparent age of the universe, before all the mass is radiated away, would be about a trillion years. Compared to the life of a man who lives to be 75 years old the star galaxy which contains the earth and the Milky Way is only a baby, about nine months old, and cutting its first teeth.

Significant to astronomers is M. Mineur's calculations showing that the stars in the Milky Way must have been formed in the beginning with almost the same mass which they have today. Present-held theories of star evolution, therefore, must go by the board if the French astronomer's calculations and the observations on which they are based are correct.

Very Little Lost

Says the French astronomer:

"The upper limit we have found for the age of the stars is so small that, in so brief a time, the great majority of the stars cannot have lost more than a hundredth part of their mass. We must therefore believe that the stars were formed with nearly the same masses as they have now, and that the differences in temperature and spectral type actually observed are due to the fact that the stellar masses were already different at the time of their formation.

"An evolution of the stars such as has been generally accepted is, then, impossible. Our result is, however, in

perfect agreement with the theory of the expansion of the universe. G. Lemaitre has suggested a hypothesis for the formation of the extragalactic nebulae based upon his theory of the expansion of the universe, according to which the age of the Milky Way would not exceed ten thousand million years."

The G. Lemaitre referred to is the well-known Abbe Lemaitre, Belgian astronomer who has frequently visited America and has been attached to the faculty of Massachusetts Institute of Technology and also on the staff at Mt. Wilson Observatory.

Abbe Lemaitre's hypothesis on the expansion of the universe is now generally accepted among astronomers. It postulates that at some distant time in the past there was a gigantic explosion which sent the component parts of the universe into an expansion which is

still going on. The various stars and galaxies are rushing away from one another with velocities as high as 15,000 miles per second.

Experimental verification of this "rushing-apartness" of the universe comes from observations on the reddening of the light from distant stars and nebulae. This red shift, or lengthening of the wave-lengths of the light from the distant stars, is the optical equivalent of the case in sound where the pitch of a railroad train's whistle becomes lower, or deeper in tone, as the train passes an observer.

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MEDICINE

Hay Fever Patients Aided By Motion Picture Film

AMOTION picture entitled "Hay Fever" has been prepared at the Mayo Clinic as an aid to hay fever patients. The film, Dr. L. E. Prickman explained at a recent staff meeting, is intended to teach the patient "all the little details by which he can lessen the severity of his symptoms" and thus improve the results of desensitization treatment—details which the busy practitioner cannot always find time to discuss with every patient.

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FOR TRAINING

Hooded and stubby is the blind flying training plane in use at the Bureau of Air Commerce in Washington. Within its covered cockpit the pilot "flies" a course from maps, radio beam signals and his instruments by moving the plane's controls. The fixed plane will turn in almost any direction comparable to real flight except spin. Across the room the "flight" is automatically recorded on a sheet of large tracing paper so that the student pilot can later check his errors. The training instructor communicates with the pilot by earphones and at intervals gives "weather reports."