

do for physics and astronomy what the Greeks did when they took the isolated facts of Egyptian mathematics and combined them into a logical system. The bringing of the atomic world into the same set of rules that governs the rest of the universe is one of the unsolved problems of science. Einstein and others have also been attempting to bring gravitation and electrodynamics into one set of theories. If the Milne picture of cosmology succeeds in accomplishing these objectives, it will be a major achievement.

One major consequence of Dr. Milne's work is that the two conflicting conceptions of space and time, the Newtonian static universe and the expanding universe of Einstein's special relativity, can be reconciled and in fact shown to be variations of the real universe.

The universe based on Newtonian dynamics, which Dr. Milne calls "Tau time" because he uses that Greek letter to designate it in his equations, is stationary, homogeneous, infinite in extent and hyperbolic in space type. The expanding universe of special relativity in what is called T time has the nebulae or star systems rushing out with tremendous speeds, its matter is not evenly distributed, it has a finite limit to its maximum expansion. It is described as a "flat private space." Yet analysis by Dr. Milne shows that T time becomes Tau time when the universe is viewed from any particular location.

One consequence of the Milne formulations of space and time is that if a material solid rod of some sort could be made to join two great stellar galaxies rushing away from each other at tremendous speeds, it would not break because it would expand at the same rate as the expanding universe of which it would be a part.

Starlight Dimmed by Clouds

EVEN the brightest parts of the Milky Way stretching across the night sky would be twice as bright were it not for light-absorbing clouds of interstellar matter that dim their starlight, Dr. Joel Stebbins, director of Washburn Observatory, Madison, Wis., told the astronomers.

These dark clouds of cosmic dust that capture night light lie close to the main plane of the Milky Way. They are so thick that light coming to earth takes about 325 years to pass through them. However, the last 650 years of light's journey from stars to earth is through clear space. Dr. Stebbins plans to continue his researches to determine wheth-

er the sun happens to be in a clear region of space.

Until a few years ago astronomers did not suspect that stars are dimmed by clouds of interstellar material. By using the electric eye as well as the human eye and photographic plates, color differences were traced to irregularly distributed absorbing clouds in our part of the universe.

Galaxy Is Middle-Aged

WE LIVE on the outskirts of a middle-aged spiral universe of stars, which in the beginning was a great cloud of gas. As time goes on it will extend farther two spiral arms consisting of millions of stars, only to contract them again. This is the picture of our Milky Way presented by Dr. Bertil Lindblad, Stockholm Observatory, Sweden.

Look out at night upon the brightest

part of the Milky Way in the region of Sagittarius and you are looking toward the center of our galaxy. It is thirty thousand light years away, obscured by clouds of cosmic stuff. In the central system of our own spiral nebula, there are a hundred thousand million stars, but our sun is not so centrally located as these. Instead, the sun with its family of planets is revolving about the central portion of the spiral, making the circuit in two hundred million years.

From the form of the Milky Way, Dr. Lindblad concludes that it is no longer young, but on the other hand is not unduly aged. It is probably at an age corresponding to "life begins at forty" in a human being.

Looked at from the outside it would remind one of a pinwheel with two streams of starfire, but revolving oppositely from a fireworks pinwheel.

Science News Letter, May 20, 1939

PSYCHOLOGY

Wager and Publicity Best Aids to Cutting Out Smoking

Best Way Is to Lose Desire, But That Is Not Likely; Lacking That, Make a Bet and Tell Everybody of It

IF YOU want to quit smoking, bet some friend a whopping big sum of money—a year's rent, say—that you are going to swear off smoking and then tell everyone you meet that you have sworn off. These two measures are recommended, as the surest and most practical way of breaking the tobacco habit, in a book by J. C. Furnas, *So You're Going to Stop Smoking* (Simon and Schuster).

The book also gives the low-down on why people smoke and what tobacco smoking does to the body.

A big bet and plenty of publicity enabled Mr. Furnas, himself a two-to-three-packs-a-day cigarette smoker, and his wife to stop smoking for six months, he reports. But his researches, which included sending questionnaires to many prominent persons after he discovered how interesting the subject was to himself and many others, produced many alternative methods which the smoker who wants to stop might try.

The best way, Mr. Furnas admits, is suddenly to lose the desire to smoke. George Ade did after an illness. John Spargo did without even an illness. Mr. Furnas dismisses this idea, however, as

"involuntary magic" unlikely to come to those who are worried over how to stop smoking.

The next best way Mr. Furnas advises is to have some physician "scare the lights out of you about smoking." That this does not always work is shown by the testimony of Rose Wilder Lane, who stopped smoking for 10 days on a doctor's order, then lighted a cigarette and went to another doctor because she was "convinced the first one was stupid."

Rationing the number of smokes per day and tapering off are "poison," Mr. Furnas declares. One "automatic" smoker reported he was helped by what Mr. Furnas terms the "soul searching method" of asking himself each time he started to light up whether or not he really wanted to smoke at that moment. But Mr. Furnas clearly thinks little of this method.

The "Mammon Method" is the surest, Mr. Furnas believes, "for the crude, crass and thoroughly reprehensible reason that no sane person would light a smoke costing enough to pay the rent for a year."

Science News Letter, May 20, 1939