

ZOOLOGY

Man of the Far Future

Man's evolution slowed by inventions. Big-brained, small-jawed humans seen within 1,000,000,000 years. Man will change little in next 1,000,000 years.

► YOUR DESCENDANTS 1,000,000 years from now will look very much like you do, but in 1,000,000,000 years they will be barely recognized as members of the present human race, Dr. William A. Spoor, professor of zoology at the University of Cincinnati, predicted.

The average man in 1,000,000 years will probably have a coffee-and-cream-colored skin, straight or slightly wavy black hair, dark eyes and will be about the same height he is now. He will be a blend of all today's races, Dr. Spoor forecast.

Man in 1,000,000,000 years will be quite different. Although the people of that time will be recognizable as human beings, slow evolutionary trends will have given them larger brains and greater intelligence, larger heads, smaller jaws, fewer teeth, a lower rate of development, and a longer life. A person living then will not have to worry about appendicitis, because the appendix will cease to exist, Dr. Spoor predicted.

Man's greater brain development in 1,000,000,000 years will probably have a profound effect on the nature of human society at that time, Dr. Spoor believes.

Human science and technology will slow down man's evolution, the zoologist thinks. Artificial control over environment, increased population, and virtual annihilation of geographical barriers, he speculated, will be the chief inhibitors of evolution.

When geographic barriers have been entirely surmounted, human populations will no longer be isolated from each other. This isolation, which encourages the development of distinctive traits in separate groups, plays an important role in human development if it is followed periodically by interbreeding. According to Dr. Spoor's theory, the necessary isolation prior to interbreeding will be eliminated by improved transportation and communication.

So far as is established, man has existed for only 500,000 to 1,000,000 years. Dr. Spoor thinks the human species will still exist 1,000,000,000 years from now.

"There are reasons for believing that man will continue to exist as a species as long as the present climatic conditions of the earth exist, probably for some billions of years into the future," Dr. Spoor predicted.

In predicting changes in the human species, the probable effects of mutation, natural selection and chance must be considered, the zoologist pointed out.

He forecast man in a million years will have each characteristic of the current human races in proportion to its present numbers in the population. If, Dr. Spoor reasoned, we take into account the

relative numbers of genes for skin color, eye color, hair type and color, and the dominance and recessiveness of genes, and assume these genes will become randomly distributed, we have the coffee-and-cream-colored man of the year One Million.

However, Dr. Spoor said, there are always unknown factors that can change any prediction.

"As long as the current populations of man exist as more or less distinct races, anything—exterminative war, food supply, differences among breeding rates—that affects one race more than another will be reflected in the final product," Dr. Spoor explained.

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ASTRONOMY

Interstellar "Cold Spots" May Be Stars' Birthplace

► THE BIRTHPLACE OF STARS was proposed as "cold spots" in interstellar space at the American Astronomical Society meeting in Columbus, Ohio, by Dr. G. C. McVittie of the University of Illinois Observatory.

Instead of looking at the heavens with a

telescope to get his ideas about stellar birth, Dr. McVittie used mathematics based on Einstein's equations of general relativity.

Interstellar space is known to be cold, but Dr. McVittie suggests, for stars being born, a much colder temperature, one close to absolute zero, which is 459.7 degrees below zero Fahrenheit. Other theories propose that stars are formed from condensations in dust clouds in interstellar space.

Dr. McVittie estimates the time taken for stellar formation is from 100,000 to 100,000,000 years, "acceptably short" on the astronomical time scale, which places the age of the universe at about 5,000,000,000 years.

Observations have shown, Dr. McVittie said, that there are non-luminous gas clouds at temperatures far lower than those of stars. There are also, he noted, theories on properties of stars now shining that fit observations.

For the intervening stages, however, no previous theory gave a step-by-step description of the shrinking of a gaseous sphere into a star.

Two forces act on the contracting gaseous sphere: one due to the differences in pressure between the inner and outer portions, but overwhelming this is the "self-gravitational force by which each portion of the gas is attracted toward every other."

The problem is thus one in gas dynamics with gravitation, Dr. McVittie said, and is now being attacked by a method he developed based on the use of Einstein's equations of general relativity.

"Many further theoretical possibilities, which must still be explored, are opened up by the investigation," Dr. McVittie said.

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WAIKIKI IN MINIATURE—Cornell University students learning city and regional planning build a model of famed Waikiki Beach as it could appear some time in the future. The students have added parks, beaches and hotels, and have sought to eliminate traffic problems. The model will be shipped to Hawaii. Aim of the project is to help keep Hawaii's charm while accommodating more tourists.