

ASTRONOMY

Any Life on Venus Is Declared Impossible

Clouds That Perpetually Veil Surface of Planet Are Believed To Be Composed of Solid Formaldehyde

LIFE on the planet Venus, under the clouds that perpetually veil its surface, seems impossible, as a result of studies by Dr. Rupert Wildt of the Princeton University Observatory. Dr. Wildt, who showed that Jupiter and Saturn are surrounded by clouds of ammonia, and that the atmosphere of these planets also contains methane, has advanced the theory that the clouds of Venus are solidified formaldehyde. This is a poisonous and extremely irritating gas often used as a disinfectant because of its germ-killing powers.

His results were announced in the *Astrophysical Journal*. In this he proposes a theory to explain the origin of the formaldehyde and why it is not present in the atmosphere of the earth.

According to a suggestion made in 1924 by a German scientist named Gustav Tammann, oxygen in our atmosphere originated when the surface of earth was in a molten state. The high temperatures, it is believed, caused the water vapor to break up into hydrogen and oxygen. The molecules of the former are in such rapid motion that they would have escaped into space. Some of the oxygen would have united chemically with the still molten crustal material. When this cooled and hardened some of the oxygen was left in the air.

On Venus, proposes Dr. Wildt, there was originally a considerably smaller quantity of water vapor than on earth. Then, he believes, the oxygen would be used up as fast as it formed, and when the crust solidified, there would be a thin atmosphere of water vapor remaining.

Without earth's protection by its oxygen, the ultraviolet light from the sun would be much more intense. This would cause a reaction between the water vapor and the carbon dioxide which has actually been found in the atmosphere of Venus. Result would be the formation of formaldehyde and liberation of more oxygen.

But this, like the earlier supply, might also be used up as it unites with the crust. When all water vapor had been

used up, the process would stop.

In the spring of 1940, while visiting the McDonald Observatory in Texas, Dr. Wildt made observations of Venus, comparing it with the airless moon, in an attempt to detect by the spectroscope formaldehyde in its atmosphere. Though if it were about a third of one per cent as dense as our atmosphere it would have produced an effect, none was found. This, however, does not invalidate the theory, he states.

Formaldehyde molecules very readily combine into larger molecules, called "polyoxymethylenes," which are white solids. Therefore, he suggests that this was the fate of the gaseous formaldehyde. These polyoxymethylenes also combine with water, so if any water vapor remained they would have taken up the last of it. He refers to an experiment in which a minute amount of water vapor is injected into a jar of absolutely dry formaldehyde gas, made of single molecules. The jar is immediately filled with a cloud of the solid material in finely divided form. This, he suggests, is the composition of the clouds over Venus.

If this is the case there would still, in all probability, be enough free formaldehyde on the surface of Venus to make it most unpleasant, while the complete lack of oxygen would preclude the possibility of life.

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PUBLIC HEALTH

Syphilis Rate in Draft One-Seventh That in 1917

ENCOURAGEMENT to finish the nation-wide fight to wipe out syphilis and gonorrhea appears in the U. S. Public Health Service announcement that among young men called for Selective Service training in 1940-1941 there were only one-seventh the number of cases of syphilis and only one-third the number of gonorrhea cases found in the 1917-1918 World War draftees.

Among the first 1,070,000 men examined by Selective Service boards, there were 48,000 cases of syphilis. Of these,

1,500 had early syphilis that could be detected without a blood test. This gives a rate of about 15 per 10,000 men. The World War draft figure for early syphilis detectable without blood tests was about 105 per 10,000 men. The gonorrhea rate in this group is about 150 per 10,000 men. In 1917-1918 it was about 430 per 10,000.

Estimated syphilis rate for the entire population, on the basis of these figures, is about one and one-half to two per cent. This is slightly higher than previous Public Health Service estimates, Dr. R. A. Vonderlehr, in charge of the Service's venereal disease division, said, but the rate among young men of Selective Service age is much lower than was expected.

Rates by states show that syphilis is far less prevalent among the wealthier states which have been able to continue venereal disease prevention work uninterrupted since 1917.

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BIOCHEMISTRY

Synthetic Starch Made By Enzyme Acting on Glucose

STARCH has been synthetically made from glucose in the University of California laboratories by Dr. W. Z. Hassid and R. M. McCready. This is the first case on record of the production of starch by any means except the action of plants themselves.

The reaction was brought about with the aid of an enzyme known as phosphorylase, which the two scientists isolated from potato juice. In its presence, glucose first combined with phosphoric acid (a compound occurring in all green plants) to form a substance called phosphorylated glucose. The enzyme then broke this compound down into its original constituents, glucose and phosphoric acid, and recombined the glucose molecules into starch.

The total amount of synthetic starch thus far prepared by Dr. Hassid and Mr. McCready is only 40 grams, or 1.4 ounces. It is not absolutely identical with natural starch, but resembles it so closely in chemical and physical properties that the differences are not significant.

Starch is produced so cheaply by plants that no industrial use is anticipated for the new synthesizing process. It is of high significance, however, as a step in advance in scientific knowledge of the way plants work.

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