GEOCHEMISTRY

Evidence Found for Life Two Billion Years Old

➤ EVIDENCE that life-like chemicals may have existed two and a half billion years ago is being uncovered at the Carnegie Institution of Washington's Geophysical Laboratory in Washington, D. C.

The life-like chemicals contain carbon, hydrogen and oxygen, which are basic to all living things today. The compounds were found by Dr. Thomas Hoering in rocks laid down at least two and a half billion years ago.

The evidence is preliminary and more studies are being made. However, it is quite definite that life chemicals identical to those in living things today have been found in rocks about 500,000,000 years old, Dr. Philip Abelson, director of Carnegie's Geophysical Laboratory, reported.

The identical chemicals are palmitic and stearic acids, which are fatty acids found in all forms of life from the lowly chlorella green algae to humans. Gas-liquid chromatography, a new technique for separating and identifying chemicals, was used to detect the fatty acids in ancient rocks, Dr. Abelson told the Washington Academy of Sciences meeting.

Compounds very similar to the chlorophyll by which today's plants convert the sun's energy into food—porphyrins—have been found in rocks 500,000,000 years old as well as those only 1,000 years old. Dr. Abelson said this means that a relatively short time, geologically speaking, is needed to change porphyrins to chlorophyll.

Radioactive dating of old rocks also indicates that life-like chemicals existed two and a half billion years ago, Dr. Abelson said.

• Science News Letter, 81:136 March 3, 1962

MEDICINE

Eye Exam Detects Measles If Symptoms Are Absent

➤ A CHILD exposed to measles who does not develop the usual spots and fever should have his eyes examined, physicians were told in the Journal of the American Medical Association 179:568, 1962.

In a study involving 34 children, Drs. Alfred L. Florman and Howard J. Agatston of North Shore Hospital, Manhasset, L.I., N. Y., reported that they had found in both mild and regular measles a slight inflammation of the cornea of the eyes and lining of the eyelids.

Lack of symptons can be due to gamma globulin given to an exposed child for protection. When symptoms do not develop, he may be given more gamma globulin injections that could be eliminated if an ophthalmologist examined his eyes with a microscopic device.

Another article disclosed that certain blood groups have been associated with rheumatic fever and stomach cancer (p. 479).

Drs. Joseph A. Buckwalter and Gerald V. Tweed of the State University of Iowa, Iowa City, said their findings indicated that persons of NN blood type, a subtype of MN blood group, had an "increased liability" to rheumatic fever.

Persons with one subtype (R^2_r) of the Rh blood group also showed increased incidence of rheumatic fever. The physicians said they found an association between Rh blood groups and stomach cancer, but "the nature of the association is far from clear."

Cervical cancer is increased by early marriage—between the ages of 15 and 20—Dr. I. D. Rotkin of the Kaiser Foundation Research Institute, Oakland, Calif., reported in the Journal (p. 486). Young girls are believed to be most susceptible to a male substance that can remain dormant for as long as 30 years before developing into cancer.

Some persons cannot listen to organ music or jazz without going into convulsions termed musicogenic epilepsy, another report said (p. 501). Dr. David Green of the College of Physicians and Surgeons, Columbia University, with Dr. Robert J. Joynt and Renee Green of the State University of Iowa College of Medicine, described a recent case. Only about 44 persons have been affected with this rare disease.

• Science News Letter, 81:136 March 3, 1962

GENERAL SCIENCE

C. P. Snow's Charge in Radar Dispute Attacked

➤ CONTROVERSY as to whether the late Prof. F. A. Lindemann (Viscount Cherwell) obstructed the application of radar during the war is renewed in the book recounting the official life of Viscount Cherwell, "The Professor and the Prime Minister" (Houghton Mifflin), written by the Earl of Birkenhead.

In Harvard lectures in 1960 Sir Charles P. Snow indicted Cherwell as a scientific eccentric who had been assigned too much power by Winston Churchill. Cherwell was an intimate adviser of Churchill on scientific affairs. Sir Charles contended that the late Sir Henry Tizard was the successful champion of radar, developed by Sir Robert Watson-Watt, which contributed to winning the war.

The Earl of Birkenhead questions in his book the propriety of a British scientist washing such dirty linen in a foreign university. He says that Sir Charles' account of the dispute between Tizard and Lindemann resembles a Victorian melodrama in which virtue in the form of Tizard is triumphant and the villain Lindemann is hissed off the stage.

"In his assessment of Lindemann's character he was no doubt assisted by his imaginative powers as a writer of fiction, and his conclusions are so ignorant and misleading to anyone who knew the dead victim as to approach caricature," Lord Birkenhead charged.

Discussion of the radar controversy is another installment in the discussion of science in war-time politics in England which was begun prominently last year in Snow's book, "Science and Government." The book was based on his earlier lectures.

• Science News Letter, 81:136 March 3, 1962

IN SCIEN

IMMUNOLOGY

Newborn Infants Can Be Immunized

➤ PROOF THAT BABIES less than a week old can respond to artificial immunization was reported by three University of Wisconsin researchers.

Antibodies that counteract typhoid fever and tetanus were introduced into the stomachs of seven babies from 12 hours to five days old, John C. Leissring, Dr. John W. Anderson and Dr. David W. Smith, Madison, Wis., report. The number of these antibodies circulating in the blood rose in every baby.

This rise indicated that antibodies could be absorbed from the stomach into the blood stream of very young infants, a subject of conflicting reports for the past 30 years, the scientists state in the American Journal of Diseases of Children (Feb.), published by the American Medical Association.

The antibodies were detected by a highly sensitive method of blood analysis. The test is believed to detect incompletely formed antibodies in addition to complete antibodies.

It is possible, the scientists said, that even small amounts of antibody given soon after birth could prolong and enhance the immunity passed on to the infant by the mother.

• Science News Letter, 81:136 March 3, 1962

CHEMISTRY

Thousands of Chemicals Predicted in Few Years

➤ THOUSANDS of new chemicals will be made within the next few years using extremely high temperatures, a chemist predicted.

After being made at such high temperatures, the compounds will be cooled to normal temperatures and used. Some of these materials should have higher melting points than tantalum carbide, which has the highest melting point of any known solid. Or they may be more chemically reactive than the best fuels and oxidizers now available, Dr. John L. Margrave of the University of Wisconsin predicted.

He said that the exact number of new chemicals that will be made is difficult to forecast, but noted that chemists had made more than a million compounds from only five or six elements. Today's high-temperature chemists have available more than 100 elements and temperatures ranging from absolute zero, which is 459.7 degrees below zero Fahrenheit, to more than 5,000 degrees.

The electric arc is one promising method of producing high temperatures, Dr. Margrave reports in Science, 135:345, 1961.

• Science News Letter, 81:136 March 3, 1962

CE FIELDS

BIOLOGY

Radiation Protection May Come From Bacteria

➤ HARMLESS "radiation-resistant" bacteria may some day protect man from death by radiation, according to studies by scientists at Oregon State University, Corvallis, Ore.

The bacterium, *Micrococcus radiodurans,* which can withstand 10,000 times the atomic radiation dose fatal to man, was discovered during work on methods of preserving meat by radiation.

Discoverer Dr. A. W. Anderson, a microbiologist at the University, is experimenting to see if the organism or its substances could be used as radiation protection for other forms of life.

He found that white mice, injected with a solution prepared from the bacteria, are surviving doses of 800 roentgens of radiation. Fatal dosage for mice and man is generally 650 roentgens. The survival rate of the injected mice varied from 30% to 80%, according to Dr. Anderson.

Mice injected after exposure to radiation were partially protected. It may be, Dr. Anderson thinks, that the solution may help damaged tissues recover and regenerate more rapidly as well as protect from initial exposure.

The organism is often found in meat, uses only a few chemical substances for its life processes and produces sulfur compounds that are already known to protect against radiation. It is not disease-producing and is killed easily with heat.

• Science News Letter, 81:137 March 3, 1962

GEOPHYSICS

Communications to Planets Being Tested

➤ SATELLITES, rockets and ground-based instruments used to probe the ionosphere are gathering information that will improve communication with future scientific expeditions to Mar or Venus.

Communications between earth and the planets being explored will be necessary whether the expedition is manned or unmanned, Alan H. Shapley of the National Bureau of Standards, Boulder, Colo., told an international audience in a Voice of America broadcast.

"We must know which frequencies will get through the planetary ionosphere, and which can be used with the radio-mirror effect to talk from one part of the planet to another," he said. The techniques now used for studying the earth's ionosphere are being adapted for research on possible ionospheric conditions around other planets.

The ionosphere is the "radio mirror" high in the atmosphere from which short-wave signals are reflected back to earth, allowing long-distance communication. It starts about 40 miles above the earth's surface and extends to more than 250 miles.

Mr. Shapley described the ionosphere as a "huge natural laboratory where nature performs experiments demonstrating complex laws of physics that cannot be duplicated in our own laboratories." Satellites offer the greatest promise of helping scientists learn more about the ionosphere, previously studied only from below, since they can be placed in orbit above it.

"At least two satellites are now being prepared for this purpose," Mr. Shapley reported. They will be hurled into near-polar orbits at about 600 miles altitude. Called "topside sounders," the satellites will reverse ground-based procedures, taking soundings downward from above the ionosphere.

One will use six different wavelengths continuously as it moves in orbit to determine the shape of the top of the "F" layer within the ionosphere. It is called the S-48. The other will use the entire range of ionospheric radio frequencies to provide better detail at the expense of some loss of geographic continuity. This one, called the S-27, is being instrumented by a Canadian laboratory for U. S. launch.

Among the principal advantages offered by the satellites will be their ability to make measurements over the Pacific Ocean and other vast areas of the earth inaccessible to ground stations.

• Science News Letter, 81:137 March 3, 1962

PHYSICS

Earth Acts as Shield Against Plasma Wind

➤ THE EARTH acts as a shield against the 180-mile-per-second plasma wind thrown out by the sun, much in the same way as a building blocks the wind.

Dr. Bruno Rossi of the Massachusetts Institute of Technology, Cambridge, Mass., reported to the American Physical Society in New York that information telemetered from Explorer X, which was launched as a space probe on March 25, 1961, showed that the plasma wind thrown out by the sun has a velocity of 180 miles per second. The magnetic field with its lines of force is frozen into the plasma.

The earth and its magnetic field act as a shield to this plasma wind, leaving a region behind it from the sun that is relatively empty of the protons and electrons making up the electrically neutral plasma. The shield extends to at least 15 times the radius of the earth. The boundary of this shielded region appears to move in and out depending on the density of the plasma, being smaller when the plasma is more dense.

Dr. Rossi also reported that there was a "striking correlation" between changes in plasma density and the magnetic field. There is some evidence of a direct connection between the magnetic field in the shielded region and that in interplanetary space.

• Science News Letter, 81:137 March 3, 1962

MEDICINE

Frequent Nosebleeds Seen Caused by Allergy

➤ IF A CHILD'S NOSE bleeds as often as once a month, he may be suffering from an allergy.

Some children rub their noses with an upward motion that physicians call the "allergic salute." Bleeding can come from such rubbing or from pulling or "picking" the nose. The slightest injury can start the blood flowing.

Mothers have been warned to be on the watch for nose rubbers because rubbing the nose is a sign of irritation that stems from a variety of causes.

The Pennsylvania Acadamy of Ophthalmology and Otolaryngology requested Dr. Leonard S. Girsh, a pediatric allergist at Temple University Medical Center in Philadelphia to tell mothers about this new-found cause of nosebleeds. Only an allergist can tell exactly what is causing the trouble after a series of allergy tests.

One common cause of allergic attacks is bedding. Substituting foam pillows for feather pillows, and nylon blankets or cotton quilts for wool coverings may stop nosebleeds at night.

Animal hair, house dust, chocolate or some other food can bring on allergic symptoms, including nosebleeds. Symptoms also may occur only in the hay fever season, or they may be related to asthma attacks. Hay fever and asthma are both forms of allergy.

There are other causes of nosebleed, of course, including rheumatic fever, nasal growths or even some foreign object in the nose, which result in injury. But these causes are infrequent compared with "allergic rhinitis," Dr. Girsh said.

Emergency home treatment such as ice packs around the neck and bridge of the nose restricts the flow of blood to permit clotting. Clothing around the child's neck should be loosened and he should sit with his head erect.

But frequent attacks require the advice of an eye, ear, nose and throat specialist or a pediatric allergist.

• Science News Letter, 81:137 March 3, 1962

TECHNOLOGY

New Plastic Armor Developed for Military

➤ KNIGHTS IN ARMOR will have nothing on the modern U. S. Army now that a new plastic armor has been developed.

The plastic is transparent and tough enough to stop shrapnel and deflect bullets, according to The Polycast Corporation, Stamford, Conn., where the material was developed. The lightweight plastic can be used for body armor, helmet lenses, flak suits and canopies for low-flying planes.

The armor weighs three pounds each square foot and is undergoing extensive testing by the U. S. Army Quartermaster Corps in Natick, Mass.

• Science News Letter, 81:137 March 3, 1962