

would thus be possible to adopt children even before fertilization—in a manner of speaking—he said.

"By these means the way can be opened for unlimited progress in the genetic constitution of man, to match and reinforce his cultural progress," Dr. Muller concluded.

Creating Test-Tube Life

MAN MAY be able to create life in the test tube within the next 1,000 years.

There seems to be no reason why scientists will not be able to rediscover the physical and chemical conditions that once determined and directed the course of evolution, Dr. Hans Gaffron of the University of Chicago predicted at the Darwin Centennial.

Scientists have now extended Charles Darwin's concept. While Darwin described the evolution of each living thing from a less complex ancestor, with modifications that enabled it to meet better the stress of its environment, it is now believed possible to carry this description one step further.

There must have been a first primitive living cell or group of cells. If this is admitted, it seems that living matter could be made in the laboratory, Dr. Gaffron said.

Thus, while it took nature three billion years to form the first living cells, scientists may be able to achieve the feat in the laboratory test tube within the next 1,000 years.

The four stages that led from the lifeless compounds to the living were described as follows by Dr. Gaffron:

1. A layer of water vapor-methane-hydrogen-ammonia covering the earth provided for the accumulation of important organic compounds.
2. Oxygen began to replace hydrogen in the earth's atmosphere.
3. Organisms capable of living in an oxygen-less atmosphere gave way to cells deriving their energy from visible light.
4. Green plants which produce oxygen became dominant.

Dr. Gaffron pointed out that in recent years laboratory evidence has been obtained to show that this is an accurate description of what did occur.

Science News Letter, December 5, 1959

ROCKETS AND MISSILES

Rockets May Service Satellites in Earth Orbit

ROCKETS may soon soar up to satellites in orbit, service them, feed information to them, change parts, photograph and even "psychoanalyze" them.

Recently the Air Force's 199B Air Launched Ballistic Missile (ALBM) was fired up for a short visit alongside the Paddlewheel satellite, Explorer VI.

The two-stage missile was launched from an airborne Air Force B-47 stratojet bomber.

The space-age experiment was intended only to test accuracy of the new guidance

system in the missile, but results were so spectacular that the Air Force is now considering the proposal of Martin, builders of the ALBM, for a Satellite Surveillance Program that would include many experiments involving a missile-satellite relationship.

The rockets would be fired to the same height and at about the same speed as the satellites, but they would return to earth after moments of flight.

Some of the rockets would photograph the satellites to determine their condition after exposure to bombardment of particles from outer space. Other rockets would interrogate them, or pass radio information back and forth.

It has been speculated by experts that improved guidance systems might enable the rockets to attach spare parts to satellites, or add experiments. Recoverable rockets may clamp on to the satellite and bring it back to earth intact.

The Air Force has hinted at the military advantage of the ALBM as an instrument to knock enemy satellites from their orbit, or recover them intact.

ALBM's, or rockets like them, have been proposed to carry food, water and supplies to astronauts in manned observatory satellites that stay in orbit for long periods.

Science News Letter, December 5, 1959

MATHEMATICS

Plotting 24 Points On Globe Is Solved

HOW TO plot 24 points on the surface of a globe so that each is as far as possible from all neighboring points has been solved for the first time.

The best arrangement is to make the points form the tips of 32 equilateral triangles and six squares on the sphere, with one square and four triangles meeting at each point. Previously the problem of plotting points on a sphere at the longest possible distances from each other was solved only for nine and 12 points on the surface.

The 24-point solution was reported to the American Mathematical Society meeting in Los Angeles by Dr. R. M. Robinson of the University of California. It is not known to have any practical application at this time.

Science News Letter, December 5, 1959

Questions

BIOLOGY—How has the skull of *Zinjanthropus boisei* been described? p. 379.

ENGINEERING—How can telephone line tapping be detected? p. 384.

ROCKETS AND MISSILES—What is the core of SNAP II? p. 381.

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Do You Know

Cobalt, a somewhat magnetic element, is used with iron in making magnet steels and alloys.

Ozone, a form of oxygen that occurs in minute amounts in the atmosphere, can be used as an excellent tracer of air movements in the lower half of the stratosphere.

The production of *uranium oxide* in the free world is running ahead of requirements.

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