

BIOLOGY

From Now On: Cells

Rapidly dividing cells, which hold the secret spark of life, are still the top mystery of science. This secret may be broken in the research of tomorrow.

By WATSON DAVIS

This is the last in a series of glances forward into science.

► THE primary mystery of the world is still that of life and death. No longer do any bold scientists have confidence that what we now know about purely mechanistic physics and chemistry, applied biology, will explain the spark of life and the fundamental difference between the living and the non-living.

Death, particularly, is the motive power behind all religions and many philosophies. The eternal questions seem to be what is life, what was the origin of consciousness, organized growth, and the ability to reproduce one's kind. What is the future of life as we know it?

We are not sure how life originated on the earth. Did it arise out of slimes of seas a couple of billion years ago, warmed by the sun of early eons? Has it arisen more than once in the history of the earth? Is there a chance that in primitive form life comes into being in our own time?

The viruses consisting of complex and relatively gigantic protein molecules have some of the attributes of living matter. They reproduce themselves and yet they are not, presumably, alive.

Biologists have explored into living cells and tried to put the searching fingers of their intellects upon the vital substances. Within the germ cell there is a nucleus. Within this spherical body there are chromosomes, units that carry on the heredity of life. Within the chromosomes there are genes which determine the shape and whole structure of the living thing starting its marvelous new life.

And all of these persistent and highly specific parts of the cell are made up of atoms and molecules, the same kind of atoms and molecules that compose the non-living rocks and walls and other things of everyday life.

There is one significant difference between the composition of the living and the non-living, that is, in the way in which the atoms and the molecules they form are arranged. Dr. Erwin Schroedinger, Nobelist, among the many who have pondered this mystery of life, believes the secret lies in the atomic arrangement and the structure of the fundamental elements.

Somewhat as there seem to be two physical laws, one governing what happens within the nucleus of the atom, and the

other governing everything else in the universe, so the living organism seems to have a different sort of thermodynamics than inorganic matter which allows it to concentrate and build in an orderly manner instead of dissipating chaotically.

A half century ago there was high confidence in some quarters that the physical scientist could, by extending his laws, ex-

GENERAL SCIENCE

USSR Physicist Rebuked

► THE Russians have slapped down their top theoretical physicist for being a "spreader of idealistic assertions" who has a "negative attitude toward dialectical materialism and in his writings sometimes acted as a loud-speaker for the opinions of bourgeois physicists." This latest victim of the "Marxist-Leninist theory" is Dr. J. Frenkel, recognized as a top man in theoretical physics and quantum mechanics.

Dr. Frenkel's work could conceivably have been in connection with the development of the Russian A-bomb, although American physicists who know and admire his theoretical work decline to hazard a guess as to that.

According to a speech by a Prof. D. N. Nasledov, of the USSR Academy of Sciences, printed in the Leningrad PRAVDA and reprinted in the American PHYSICS TODAY, Dr. Frenkel "admitted his ideological errors and in his declaration stated that he had come to the conclusion that the Marxist-Leninist theory in the natural sciences and particularly, in the science of physics, is of foremost importance."

This sort of thing is not new to Dr. Frenkel. In the 1920's, during a popular lecture in Russia, he repeated the current joke among physicists about electrons. "On Mondays, Wednesdays and Fridays," he said, "physicists believe electrons are waves, on Tuesdays, Thursdays and Saturdays, they think electrons are particles of matter."

Whereupon a handsome young female communist in the audience rose from her chair and berated Comrade Frenkel. "This sort of bourgeois compromise," she stated, "cannot exist alongside dialectic materialism." After that, things being more lenient in Russia in those days, Dr. Frenkel went into voluntary exile for a few years.

There is evidence in this most recent speech, as printed in the Leningrad PRAVDA, that the Russians are trying to cook up an argument in physics similar to the argu-

ment in biology which produced Lysenko.

plain life. Today the problem is not so simple.

For the future:
A. All the basic research upon chemicals, living organisms, disease and everything else within the realm of scientific investigation, including the development of mathematics, will be used for hints that may be useful in solving this mystery of life.

B. In the studies upon the viruses and related protein complexes, there may come an opportunity with more progress and knowledge to aspire again to attempt the creation of living from non-living matter.

C. Even the millions upon millions of galaxies of stars, remote as they are from the minute vigor of an embryo, may give their hints upon understanding the nature and meaning of life.

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"Creative brigades have been formed," said Prof. Nasledov, "which have been busy studying the two basic fields of modern physics (quantum mechanics and the theory of relativity) with regard to which bourgeois critics have uttered so much idealistic nonsense."

Prof. Nasledov expresses the hope that out of these "creative brigades" will come papers directed against these "bourgeois perversions."

American physicists cannot imagine what hook the Russian physicists will find on which to pin an argument with the Western world. Nor do Western scientists think that such goings-on will affect too much the actual quality of the work the Russian physicists are doing, except insofar as their time is wasted in attending meetings of "creative brigades." There is no evidence yet, in papers published by Russian physicists, that dialectic materialism has crept into their work to its detriment.

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MEDICINE

Army Gets X-rays At Wholesale Rate

► UNCLE Sam is getting the draft X-ray and blood tests at a fair wholesale rate, although doctors do admit that bulk of gross business that some practitioners and hospitals are getting is very nice for them indeed. In Washington the workmen's compensation schedule followed by doctors in insurance cases allows \$5 to \$35 per X-ray instead of the \$3 fee approved by the army for the X-ray alone. Blood tests for syphilis (Wassermann and Kahn) are rated at \$5 instead of the army rate of \$2.

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