

BIOLOGY

Life is Simply a Matter of Organization and Cooperation

Origin of Cells' Mutually Functioning Patterns Is The "Mystery of Mysteries," Says Dr. Edwin G. Conklin

LIFE is not found in atoms or molecules or genes as such, but in the organization and cooperation of all the constituent parts of the living organism, Dr. Edwin G. Conklin, famous Princeton biologist, president of Science Service and vice-president of the American Philosophical Society, declared at the Stanford University symposium on the cell and protoplasm.

"The origin of cellular and protoplasmic organization is a vast problem upon which science has scarcely made a beginning," said Dr. Conklin, "but once this organization or combination of constituent parts has been achieved, the fundamental properties of life emerge. Once the organization of the germ cells is established and is brought into proper relation with the environment, development results. Here in mere outline is a possible mechanism for the origin of life, for the increasing complexities of structures and functions in development, for the evolution of the million species of living things.

"The mystery of mysteries is not the mechanism of evolution, but the evolution of the mechanism by which cells and protoplasm came to have the organization that has resulted in 'the promise and potency of all life.' This is the great problem which is sure to occupy increasingly the attention of biologists in the future. From our mere beginnings in the study of cells and protoplasm we confidently look forward to the epoch-making work of the future on the origin and nature of life."

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New Division Proposed

THE OLD classical division of the world of living things into the plant and animal kingdoms should be revised, Dr. Herbert E. Copeland of Sacramento Junior College told the Botanical Society of America at its Stanford meeting.

Proposals put forward by Dr. Copeland included the setting up of two new "kingdoms." One, including bacteria and certain other lower forms known as the

blue-green algae, he would call the Monera, a term coined in the nineteenth century by the German biologist Haeckel. The second, to include fungi and the red and brown algae, he would entitle the Protista.

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ENGINEERING

Refinery Machinery Is Rebuilt by Metal Spray

THROWING a molten spray of metal against worn refinery machinery, metal atomizers are saving the oil industry thousands of dollars in rebuilding costly equipment.

Huge refinery tanks damaged by corrosive petroleum products and chemicals receive sprayed atomized coating of stainless steel.

Pump rods worn down in service are

taken out to large lathes and, as they slowly turn, are rebuilt to size with high carbon steel.

The metallizing atomizer process operates on the same principle as the perfume atomizer of the boudoir, report D. R. Johnson and E. K. Dewey, Jr., of the Continental Oil Company, to the American Petroleum Institute.

The protective metal is fed into the spray gun in the form of aluminum, steel or brass wire. There it is heated to a molten state. The tremendous force of the air rushing through the tip of atomizer breaks the molten metal into microscopically minute particles which cling to the interior surface. These form a coating which repels the attacks of acid and sulfur corrosion.

In the reaction chamber of a refinery cracking unit, explain the oil experts, corrosion ordinarily occurred at the rate of .05 inch each year before 10 layers of atomized aluminum were sprayed on to a total thickness of .18 inch. After the application no measurable corrosion has been noticed. From 4 to 5 per cent. of the protective coating is replaced each year.

Real money saving is achieved for pump rods cost \$300 each when new. Metallizing by the huge atomizers rebuilds them for about \$90 a rod.

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METAL ATOMIZER

Spraying molten metal on to oil refinery equipment is the way the petroleum industry rebuilds valuable devices and saves replacement charges.