

Science News-Letter

The Weekly Summary of Current Science

EDITED BY WATSON DAVIS

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CHEMISTRY

First Enzyme Isolated

The isolation and crystallization of the first enzyme has been achieved by Dr. James B. Sumner, assistant professor of biological chemistry at the Cornell Medical College, Ithaca, N. Y. Success came only after a period of research covering nearly nine years. During a part of the time Dr. Sumner, was assisted by Dr. Viola A. Graham and by Dr. Charles V. Nock.

The enzyme isolated is known as urease and occurs in the jack bean, in the soy bean and in a great many kinds of bacteria. It has been found in the horse-shoe crab and in the lining of the stomach. Urease is important in the cycle of nitrogen because it converts the urea that is produced by animals into ammonium carbonate, which is used by the plant, usually after conversion to nitrates by bacteria.

Chemists have been attempting to purify enzymes for nearly a century, but up to the time of Dr. Sumner's discovery no enzyme had ever been prepared in pure condition and the chemical nature of enzymes was entirely unknown. Indeed, a prominent worker in this field, Dr. Richard Willstätter of Germany, recently declared that the enzymes belong to no known group of chemical substances.

An enzyme, the word meaning "in yeast," is a substance elaborated by plants, animals, or micro-organisms that accelerates chemical reactions without itself being used up in the process. In other words an enzyme is a catalyst. But the enzyme is a catalyst of a special sort. It is extremely unstable and of colloidal nature. These are the chief reasons why the isolation of an enzyme has been considered an almost impossible task. Enzymes are sometimes called ferments because they cause fermentations. Of the great number of enzymes found in living cells a few examples are: zymase, which is present in yeast and which is responsible for the alcoholic

ANTHROPOLOGY



LADY AND THE MAMMOTH. Dr. J. W. Gidley, paleontologist of the U. S. National Museum, studying the skull of a prehistoric woman which he found in Melbourne, Florida. The skull was lying with bones of ancient camels, horses, mammoths, and glyptodons, and Dr. Gidley regards it as evidence that men existed in this country before the mammoths disappeared. Dr. Gidley is pointing to the teeth of the skull.

fermentation of saccharine liquids; rennin, which is obtained from the stomachs of calves and which is used in the manufacture of cheese; pepsin, which is present in the gastric juice and which digests meat; and thrombin, which is necessary for the coagulation of blood.

Urease has been prepared by Dr. Sumner as octahedral crystals that are slightly larger in diameter than human red blood corpuscles.

The isolation of urease has opened up new fields for research and is expected to aid in the solution of many problems of the chemistry of enzymes.

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British financiers have accepted a 60-year contract to light Jerusalem.

A way of measuring the speed of the blood flow in the body has been devised.

GEOLOGY

The Earth Speaks to Man

By EDWARD W. BERRY

Dr. Berry is head of the Department of Geology of the Johns Hopkins University at Baltimore, Maryland, and is recognized as one of the foremost authorities on paleontology in America.

Geology is the autobiography of the earth. Its book of history is the rocks. It is true that some of the pages are obliterated and some of the chapters have not been unearthed, but geologists have now described many thousands of feet of sedimentary rocks with the remains of animals and plants preserved in them. These are the real documents of Evolution—a true record covering millions of years and had not biologists proposed Evolution, the geologists would have had to do so. It is not possible to tell adequately of the geological record in a short discussion. I can only say that it extends over a vast lapse of time, that in general it shows a constant progression from simplicity to complexity, and always a survival of those organisms that were most perfectly adapted to their several environments. For example, boneless animals long antedate vertebrates. Among the latter, fishes appeared ages before terrestrial animals, reptiles long precede mammals and the evolution of the last, like that of the higher or flowering plants, upon which that of mammals was so dependent was the latest and most rapid.

The remains of man, in the form of weapons and tools of stone, and more rarely actual bones, are the last to appear in the records of the rocks, but during the past fifty years the discovery and study of man's origin has progressed at a marvellous rate. We now know that human beings have peopled the earth for a period of at least five hundred thousand years. We see the evidence for some belief in a future life in the ceremonial burials of Mousterian times, at least fifty thousand years ago, and with the wonderful cave art of about

(Just turn the page)

The Earth Speaks to Man

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twenty thousand years ago, we have overwhelming evidence of a very considerable ritual, and capacity for self-expression.

As I read the testimony of the rocks there can be but one scientific explanation of its meaning. Consider the endless series of faunas and floras that have been uncovered, each slightly different in types and grouping from what was older or younger—the whole run through with the warp of relationship but with a never ending change in the woof with the progress of time. Either they are genetically related or we have to assume that a creator, by some act of destruction and of special creation thousands of times repeated, destroyed the whole organic world and re-created all the myriads of living forms. Not only so, but each new creation was so like the preceding that training is required to discriminate them, and the new models were created with vestigial and useless parts—reduced replicas of parts that were functional in their predecessors. I do not deny that Omnipotence could do this, but such a conclusion is not scientific, nor does it do credit to the Infinite.

Although much remains to be discovered, we now know enough to affirm most emphatically that man as well as all other animals and plants has had a long evolutionary history extending over tens of thousands, and in some cases millions of years. The evolution of man as an animal was completed long before written history was invented, his most astonishing evolution has been the latest and more rapid development of the intellect, and there seems to me to be no limit to the betterment of the race by the exercise of wisdom, altruism and idealism—that trinity of what might be called spiritual graces.

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There are about 1,000,000 ground squirrels in Yellowstone Park.

Grafted skin is best taken from another part of the same individual.

Elephants for circuses and zoos are in such demand that the price of a fine specimen is steadily rising.

If de-inking of newspapers so that the paper can be used again comes into wide use, the pulp wood saving would amount to same 275,000 acres of spruce wood.

STUDY HELPS FOR SCIENCE CLASSES

These articles will be found to be especially useful in class work

GENERAL SCIENCE

Earth Speaks to Man, p. 97. Observing the Stars to See if America Drifts, p. 99. Yaquis Fighting for Life, p. 101. Sun's Heat Varies, p. 103. Two Meteor Showers This Month, p. 105. Two New Comets, p. 111. Articles marked with * in classification below.

HYGIENE

City Water Must Be Pure, p. 107. Statues Show Foot Troubles, p. 107. Smallpox This Year, p. 111.

CHEMISTRY

First Enzyme Isolated,* p. 97.

BIOLOGY

First Enzyme Isolated,* p. 97. Studies Giant Cells, p. 101. Man Has Long Old Age,* p. 103. Embryo Determines Growth, p. 103.

PHYSICS

Light's Speed Determined,* p. 103.

(This will fit on a 3 x 5 card.)

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PHYSICS—GEOGRAPHY

Antipodes Absurd

Lactantius (Fourth Century, A.D.), ON THE HERETICAL DOCTRINE OF THE GLOBULAR FORM OF THE EARTH. Quoted by Draper, HISTORY OF INTELLECTUAL DEVELOPMENT.

Is it possible that men can be so absurd as to believe that there are crops and the trees on the other side of the earth that hang downward, and that men have their feet higher than their heads? If you ask them how they defend these monstrosities? how things do not fall away from the earth on that side? they reply that the nature of things is such, that heavy bodies tend toward the centre like the spokes of a wheel, while light bodies, as clouds, smoke, fire, tend from the centre to the heavens on all sides. Now I am really at a loss what to say of those who, when they have once gone wrong, steadily persevere in their folly, and defend one absurd opinion by another.

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ETHNOLOGY

Nature and Indian Nature

Quotation from THE RELATION OF NATURE TO MAN IN ABORIGINAL AMERICA. By Clark Wissler. New York: Oxford University Press. \$3.50.

A hunting tribe will specialize upon one or two kinds of game and so develop a complex of traits, habits and customs favorable to the pursuit of such game. It is also clear that the traits so developed will not extend beyond the range of the game pursued.

A tongue of true prairie land reaches across Illinois and expands over northern Indiana, a geographical factor often overlooked; but ethnic phenomena did not overlook it, because we find in this pocket a tribe of Indians having striking prairie characteristics, though, for the most part, surrounded by forest tribes.

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