

PHYSIOLOGY—CHEMISTRY

New Red Pigment of Liver is Giant of Body's Chemicals

New Heavy-Weight Was Discovered as a By-Product of Research Seeking Enzymes in Liver of the Horse

A NEW, and yet unidentified, red pigment, which is a super heavy-weight among the body chemicals of the higher animals, has just been isolated at Yale University, it was disclosed at the meeting of the New York Section of the American Chemical Society.

The red pigment, having a molecular weight more than 50 times as great as familiar hemoglobin in the blood, was found in a research seeking enzymes in horse liver. Dr. Kurt G. Stern, who reported the discovery, and Dr. R. W. G. Wyckoff, both of Yale, collaborated in the studies.

"As far as we can tell," Dr. Stern said, "this red pigment is different from any other substance, from liver or from other sources, yet described." Chemically speaking, the new red pigment—having the enormous molecular weight of 3,000,000 to 4,000,000—has not yet revealed features which would permit its classification among any known class of chemical compounds.

The new super giant of the animal body was found as a "by-product" of research seeking a pure solution of cata-

lase, an important body enzyme. An air-driven ultra-speed centrifuge, whirling rapidly, was used to separate the liver red pigment from the brown catalase.

The pigment is far larger in its molecular size, than anything previously encountered in the bodies of higher animals. Only the copper-containing blood pigment of invertebrates, known as hemocyanine, may reach similar proportions, Dr. Stern indicated.

The biological function of the red liver pigment is yet obscure, he added. But it is assumed that it is connected with the use of oxygen by the animal body because it can be reduced to a clear, colorless form. The red color, however, appears to be a property of the large molecule itself and not of an impurity.

The molecular weight of catalase, the enzyme sought in the original research, was determined by the Yale scientists to be between 250,000 and 300,000, or four times larger than hemoglobin, the respiratory pigment of red blood corpuscles.

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ASTRONOMY

New Star May Be Nearest or Next Nearest to the Earth

A STAR that is either the nearest or the second nearest star to the earth has been discovered at Yerkes Observatory of the University of Chicago.

It is named Wolf 424 and it has a visual magnitude of 12, which means that, close as it is, it can be viewed only with a powerful telescope.

Prof. G. P. Kuiper in recent months has obtained spectra of many faint stars of large proper motion, that is, they change their positions considerably in relation to other stars. He used a fast one-prism spectrograph attached to the 40-inch Yerkes telescope.

Star Wolf 424 was found to have what astronomers call a very late M type spectrum which is duplicated in the heavens only by Wolf 359 star. This is the intrinsically faintest star known. The distance of Wolf 359 is eight light years (two and a half parsecs), that is, it takes light traveling 186,000 miles per second only eight years to travel from that star to the earth.

But the Wolf 424 star newly observed is found to be 1.17 magnitudes brighter. Computations show that its probable distance would therefore be about 3.7 light years.

This is closer than famous Alpha Centauri, 4.1 light years away. If Wolf 424 is an unresolved binary star, however, its computed distance from earth might be somewhat larger than that of Alpha Centauri, which is known to be connected with Proxima Centauri, considered usually a part of the same star system.

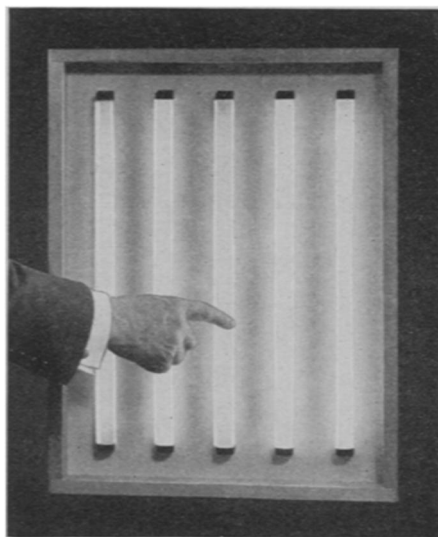
Science News Letter, May 21, 1938

ENGINEERING

Lamp Companies Announce New Fluorescent Lamps

A NEW type of electric lamp, that uses ultraviolet light and fluorescent chemical-coated walls to produce white or colored light with an efficiency ranging up to 200 times that of present-day filament lamps, was announced simultaneously by the Westinghouse Electrical and Manufacturing Company and the General Electric Company. The new lamp was demonstrated before members of the New York Electrical Society, the American Institute of Electrical Engineers, and the Illuminating Engineering Societies.

Differing entirely in principle from existing types of lamps in general use, the new lamps convert invisible ultraviolet light into white or colored light through the phenomenon of fluorescence. The efficiency of the new bulbs is far



COOL LIGHT

Fluorescent lamps, as much as 200 times as efficient as today's hot incandescent lights, have just been made available by two of America's largest lamp manufacturers. Invisible ultraviolet light generated inside the tubes bombards chemical-coated walls, which fluoresce, giving out light but practically no heat.

higher than that of the incandescent lamp, one type of the new lamp producing 60 lumens of light per watt in the 30-watt size, while the equivalent standard bulb produces only three-tenths of a lumen per watt.

Ward Harrison, of General Electric Company, and S. G. Hibben, of the Westinghouse Manufacturing Company, described the lamps at the meeting.

One of the new lamps, Mr. Harrison claimed, produces the nearest approach to natural daylight ever achieved by any artificial illuminant.

Chemical powders coating the walls of the bulbs contain the secret of the new means of lighting. Mercury vapor at low pressure, when an electric current is passed through it, produces invisible ultraviolet radiation with a high degree of efficiency. The ultraviolet radiation, bombarding the chemical powders, is re-radiated as visible light, its color depending upon the particular chemicals used. This transfer is also extremely efficient. The great heat losses of the present type of incandescent lamp are avoided.

Science News Letter, May 21, 1938

GEOLOGY

Continents Did Not Drift, Fossil Evidence Shows

Distribution of Fossil Land Animals Indicates Migration Was From the North, Not By Southern Seas

DRIFTING continents and great transoceanic land bridges were not necessary to explain the distribution of life during the earth's past ages when coal was forming, Dr. Charles L. Camp, University of California geologist, has concluded.

Distribution of fossil land animals does not support the theory of continental drift, but strengthens the idea that the continents have always been land and the oceans always full of water.

To explain the distribution of plants and animals of past ages, geologists have evolved a number of theories.

1. That in early times there was only one continental land mass, which broke up. The fragments, gradually evolving into our present continents, drifted slowly around the earth, carrying with them the primal animals, ancestors of some of our present forms.

2. That there were great land bridges extending across the South Atlantic, over which animals and plants migrated from continent to continent. These bridges, according to theory, foundered into the oceans not so many millions of years ago.

3. That the continents have always had about their present shape and distribution, with occasional submergence of some low-lying areas, and upraising of shallow sea floors to become land.

Discussing his evidence, gained from a study of the fossil land animals of the continental areas, Dr. Camp finds that

they probably migrated from Eurasia to America over northern land connections, and that neither drifting continents nor land bridges in areas that are now deep sea are needed to explain their distribution.

Using only large land animals, which cannot swim long distances or be carried by birds or wind, as evidence, Dr. Camp solves the problem of conflicting evidence. Long ago it was shown that the plant and water-animal life of Africa greatly resembled similar life forms in South America, and on this resemblance many geologists contended for continental drifting and land bridges. Other geologists pointed out that birds can carry plant seeds, winds carry fern spores, and that water animals generally travel by swimming, needing no land bridges or drifting continents to explain their presence in Africa and South America.

Southern amphibians and reptiles, according to Dr. Camp's interpretation of the fossil evidence, came to the southern continents from the north, which, throughout much of geologic history, was an interconnected series of continents. Southern fossil types, then, came from the same place—the north—suggests Dr. Camp, and did not cross over from one continent to another on land bridges, or drift across the Atlantic on a "foot-loose" continent.

Science News Letter, May 21, 1938

Artificial rubber can be made from tomatoes, according to an Italian report.

SOCIOLOGY

World's Giant Cities Seen "On Downward Path"

THE WORLD's greatest cities are on the downward path. Far from being good and wonderful in proportion to size, they are mechanized and expensive giants, crushing rather than serving the millions within their grasp.

This is the warning sounded by Lewis Mumford, sociologist, in a startling new volume, "The Culture of Cities." In a sweeping survey of city life from the tenth century onwards, he finds that vaunted improvements have been mainly for the worse. Our most pressing task, perhaps, he says, is "to cast off the dead-form of the metropolitan order."

Sticking pins in the balloon of modern pride, he says in substance:

Medieval towns were more livable than any built since.

Renaissance towns were made elegant for the gentleman. As much as one-fourth of a city's people, by estimate, were casuals or beggars.

The machine age brought industrial towns in which even upper classes lived in slum-like congestion, with houses lacking proper light and ventilation.

The metropolis offers what the sociologist calls a ghost-like existence, in which people know about many things but have vital acquaintance with so little. Passive crowds know life by reading, looking, listening. He says, "they are bordering on a pathological state."

Subways he calls traveling prisons, in which people spend vast amounts of time "upon an activity that has flatly no value in itself."

The tremendous water supplies needed by a giant city are seen as a wartime danger: "Should an enemy disorganize the water supply of the metropolis for as much as three days, the result would be a far more horrible loss of life than the worst conceivable vomit of poison gas from the skies."

The downward cycle of city evolution, if unchecked, leads toward over-expansion of industry and questionable speculations, followed by depressions. Cities are dominated by their worst traits, including graft, privilege-seeking, all forms of grab-and-get, moral apathy, fear, uncertainty, "rise of gangster-dictators (Hitler, Mussolini) with active consent of the bourgeoisie and systematic terrorism by pretorian guards." This stage ends in a deliberate cult of savagery, barbarian invasions from within and without, and beginning of exodus from the cities.