BIOLOGY

Measure Heatless Light

The "cold light" of living things, such as fireflies and the bacteria and fungi that cause rotted wood to glow in the dark, has been made the subject of scientific measurement by Dr. W. W. Coblentz and Dr. C. W. Hughes of the U. S. Bureau of Standards. These humble organisms are so much more efficient in getting light out of a given amount of energy than the best incandescent lamp which man has yet devised that they are at once the admiration and the despair of scientists, and they may some day furnish a hint that will revolutionize the whole art of illuminating engineering. For this reason physicists and biologists are always at them, trying to pry open their secret.

In their present study, the two government scientists have split up the light of these organisms by means of a spectroscopic prism to learn accurately of what colors it is composed, and they have also measured the amount of energy in each of the color bands with a device that makes use of a sensitive photographic plate. The photographic exposures necessary varied from an hour in the case of the firefly to three days with pieces of "fox-fire" wood.

They found that the various organisms varied widely in the range of colors that go to make up their light, as well as in the particular color most intensely present in the glow. Thus, the light of "fox-fire" wood, which comes not from the wood but from a fungus in it, included all colors from blue-violet down to red-orange, with the highest intensity in the green, and a smaller high point in the yellow. In a certain glowing sea-creature the range shifted toward the violet end of the spectrum, going beyond the light of the "fox-fire" and almost to the limit of visibility, but stopping short at orange and excluding red at the lower end. The point of highest intensity for this animal's light was a slightly greenish blue. The firefly with which they experimented had an uneven distribution of color in its spectrum, but was strongest in the yellow. They also tested certain zinc compounds that glow in the dark, for purposes of comparison.

The light from these glowing animals and lowly plants does not come from a slow combustion of their substance, as was once supposed, but from a sort of digestive process which involves a special material secreted by the organism and a special enzyme that works upon it and causes it to shine, according to Prof. E. N. Harvey of Princeton, who has studied this phenomenon of "bioluminescence" from the biological point of view. When these two things come into contact, other conditions being favorable, the light appears. It is also possible to take the "luciferin" of one animal and cause it to glow by adding the enzyme, or "luciferase," of a different species.

Science News-Letter, February 12, 1927

Mountains Influenced Greece

A spiny backbone of mountains across the center of Greece played a big part in shaping events in the famous civilization of the old Greeks according to Dr. J. L. Myres, noted British archælogist, who is visiting this country.

In prehistoric times, much of this mountain zone was shattered by earthquakes and submerged for about half its total height, leaving a gulf filled with islands and promontories, which represent the peaks and ridges of the sunken highland scenery, Dr. Myres explains.

When men learned to use the treasures of the mountains they found there marble, copper, iron, and gold. But the almost complete absence of coal was responsible for a permanent shortage of power in the Greek world. This was reflected in the constant shortage of labor and the prevalence of slavery.

The peculiar climate of Greece, with its mild wet winter and hot, dry summer, made this unpromising region habitable and made possible its great, highly specialized civilization. Where there was enough moisture, grain crops were possible, but these are always precarious in the Mediterranean, and the only secure crops were from selected deep-root trees, such as the vine and olives. Greek agriculture consequently became more and more an intensive production of oil and wine. The industries promoted by local conditions were textile production, based on the wool from the pastures, and hardware of various kinds derived from the mineral resources of the old crystalline rocks.

Dr. Myres concludes that out of geographic conditions the great civilizations arise. And in times of adversity man reverts to the early close dependence upon climate, soil, and sea.

Science News-Letter, February 12, 1927

The average child between four and five uses 1,700 words.

PSYCHOLOGY

Song for Infantry

The U. S. Infantry's desire for a song of its own illustrates the psychological effect of the symbol in the opinion of Prof. Harry L. Hollingworth of Columbia University.

Other branches of the service have songs which may be regarded as their special property, but the Infantry has none. This lack so impressed officials of the Army that they have inaugurated a contest in the hope of obtaining music and possibly words for a song, to express the spirit of the "plodding, hiking, dogged, storming, fighting Infantry."

A symbol is necessary, Prof. Hollingworth says, in all organizations that draw their vitality from emotional sympathy on the part of their members. Every religion has some symbol, be it crucifix, crescent or idol, which in the minds of the followers evokes the emotions connected with the religion. Each country has a flag, the sight of which tacitly reminds citizens of struggles, victories, defeats. Likewise a song standing for a certain organization may bring to life dormant emotions on which the organization bases its existence.

Esprit de corps, according to Prof. Hollingworth, is founded on emotion. And the power of the Infantry as a body of men working in harmony lies in the development of esprit de corps. A sure means of arousing harmony is to identify an organization with a catchy song.

Science News-Letter, February 12, 1927

ZOOLOGY

Seal Herd Increasing

Seal skin coats are not likely to become an extinct fashion if the Alaskan fur seal population keeps on growing.

The Alaskan seal herd, according to counts made by the U. S. government, has increased from a quarter of a million in 1912 to three-quarters of a million in 1925, according to Prof. G. H. Parker of the department of zoology at Harvard University.

At the beginning of this century the numbers of the Alaskan herd were seriously reduced, but it began to recover when deep sea sealing was made illegal. Even with the resumption of commercial killing in 1918 no deterrent effects were observed on the growth of the herd, declared Professor Parker, though internal social adjustment of considerable interest has taken place as the result of selective killing off of mature males.

Science News-Letter, February 12, 1927