

they have many features in common with lizards, yet their eyes are so little like those of their reptilian kindred "that no one would suspect, from the eyes alone, that a snake is any more closely related to a lizard than a cat is to a frog."

To account for this discrepancy, Dr. Walls suggested that the remote ancestors of snakes were once subterranean creatures, living in total darkness, until their eyes degenerated almost to the vanishing point, like the eyes of many cave animals now living.

"Later, the snakes emerged above ground and fought their way back to 'respectability,'" Dr. Walls explained. "To help accomplish this, they had to invent one substitute after another within the eye, to take the place of lost lizard-eye features. The fact that the snake eye is such a bunch of 'Ersätze' thus sheds light, for the first time, upon the habits and history of the first serpents."

Science News Letter, January 13, 1940

Rust Resistant Pines

YOUNG white pines that are apparently resistant to the deadly blister rust disease that is sweeping the country have been found in Wisconsin, it was reported by Prof. A. J. Riker of the University of Wisconsin and T. F. Kouba of the U. S. Department of Agriculture.

The tree plague had swept through an unprotected area in Wisconsin, killing practically all young white pines. However, perhaps one out of 300 to 500 trees survived, free from infection. A search was made for cone-bearing specimens for possible use in propagation, and 163 such trees were found. They have been exposed to blister rust constantly for 15 or 20 years, and it seems reasonable to suppose that some of them may be rust resistant, and therefore the potential ancestors of new white pine forests for the northern states.

Science News Letter, January 13, 1940

Lime Cements Cells

CELLS lining the capillaries, the ultimate fine blood vessels of the body, depend on lime to stick together, no less than the bricks of a house. Prof. Robert Chambers and Dr. B. W. Zweifach of New York University told how they had tried out blood vessels from a frog, using synthetic blood-like fluids, one containing calcium, the other without that element. When the calcium-free fluid was used the lining cells lost their grip on each other and the capillaries became "leaky."

Science News Letter, January 13, 1940

MEDICINE

Crystals From Soil Bacilli Protect Against Pneumonia

Material So Powerful That Millionth of an Ounce Protects Mouse Against Infection Otherwise Lethal

PNEUMONIA protection by crystals of a chemical obtained from germs that prey on other germs was announced by Drs. René J. Dubos and Rollin D. Hotchkiss, of the Hospital of the Rockefeller Institute for Medical Research, New York, at the meeting of the Society of American Bacteriologists in New Haven.

So far, only mice have been given the new germ-killing crystals. Studies on other animals and other disease-causing germs besides the pneumococcus are under way but have not yet been completed. The material described is so powerful that one-millionth of an ounce is sufficient to protect a mouse from a pneumonia infection which would otherwise rapidly kill the mouse.

Another chemical compound was obtained in pure crystalline form from the same germ source, but this second compound is ineffective in mice. Studies of the chemical differences between the two compounds will, it is hoped, help to explain what is necessary to secure a protective action against infection within the body of the animal.

Discovery of the potent germ-killing and apparently curative material was the result of a deliberate search in which the Rockefeller scientists took advantage of the fact that certain species of microorganisms or germs are known to be antagonistic to other species of microorganisms.

Staphylococci, commonly found in boils, abscesses and flesh wounds, were the bacteria chosen as the prey. Bacilli able to live upon them were found in soil. When grown in artificial media free from other bacteria, the bacilli still retain the ability to kill staphylococci and grow and multiply in their presence. Furthermore the bacilli were found able to kill not only the one species, but also a large group of organisms having in common with staphylococci the property of being "Gram-positive" (meaning that they are dyed in a particular way by a much-used bacteriological stain). Some other Gram-positive bacteria which are also susceptible are streptococci, pneumococci, and diphtheria bacilli.

From the bactericidal organisms was obtained a non-living chemical agent which by itself was able to kill the Gram-positive microbes. This chemical agent has now been further purified and two pure crystalline chemical compounds have been isolated from it. Both of these bactericidal compounds are so active that a millionth of an ounce is sufficient to kill a few billion pneumococci in the test tube.

Science News Letter, January 13, 1940

BOTANY

Tree Rings Fallible As Records of Weather

TREE RINGS are not infallible records of the weather in the years when they were formed. It depends partly on the species of the tree. Such would seem to be the inference from records before the meeting of the Ecological Society of America by Prof. Charles J. Lyon of Dartmouth College.

Prof. Lyon's studies were made on a number of trees, of six different species, that had grown for years in the neighborhood of a regularly maintained set of weather-recording instruments. The 1938 hurricane blew them all down, which gave occasion for the study of correlation between their growth rings and past weather records.

Closest correlations between spring rainfall and ring growth was shown by white pine, Scotch pine and red oak, but

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Austrian pine, Norway spruce and European larch showed no consistent agreement with precipitation records of any period. Temperature studies showed almost no correlation whatever when the growing season itself was concerned, but all the coniferous trees gave significant correlations between growth rate and the temperatures in March and April, before the growth starts. This Prof. Lyon interpreted as an effect of water supply, too, since the air temperature determines

soil thawing and hence availability of soil moisture.

"On the whole," the speaker concluded, "our native white pine tree is particularly sensitive to its water supply and was the best indicator tree of those tested in this study. The width of its annual rings is a better index of growing conditions for crops and forests than the Weather Bureau records of rainfall and temperature for the year."

Science News Letter, January 13, 1940

the world's growing skepticism, shown today in American newspapers' non-committal attitude in presenting war news, may lead to similar analysis of historical source records, and similar incredulity there. Egyptologists, he said, are already re-examining Egyptian texts, questioning whether they should be taken at face value.

Emphasizing that this does not mean tearing down ancient history, Dr. Wilson said:

"The analysis which gives an initial appearance of destroying history and historical figures may go on to rehabilitate both."

Science News Letter, January 13, 1940

ARCHAEOLOGY

Propaganda Served Egypt Four Thousand Years Ago

Pharaoh Ramses Spread His "Victory of Kadesh" Over Walls Quarter of Mile Long; Follower Used Same Piece

HISTORIANS, grown skeptical over modern nations' twisting and coloring of war news, have turned a sharp eye on Egypt's Pharaohs and found them adept at the best tricks of propaganda.

Evidence that Egypt began conscious use of propaganda as early as 2000 B. C. and that its historic inscriptions include actual defeats cleverly advertised as comfortable victories was reported to the American Historical Association Meeting at Washington by Dr. John A. Wilson, director of the University of Chicago's Oriental Institute.

Modern dictator governments would understand Pharaoh Ramses the Second's idea in spreading his "Victory of Kadesh" over walls a quarter of a mile in extent in the city of Thebes alone.

"It was a tremendous personal boast to overwhelm the rumor of failure," said Dr. Wilson.

Actually, Ramses did not win this mighty thirteenth century B. C. battle on the Orontes River in Asia Minor

against Hittites and their allies. Checked with other historic evidence, the best that can be said for Ramses, said Dr. Wilson, is that he fought a drawn battle and managed to retreat in good order.

Ramses' distorted war report evidently was successful propaganda, the Egyptologist added, since a century later Pharaoh Ramses the Third plagiarized almost word for word one of Ramses the Second's inscriptions, thereby claiming that he defeated a Hittite army almost single-handed at Kadesh. The third Ramses never fought any such battle at all, it is now pretty certain.

Success of old Egyptian propaganda is attributed by Dr. Wilson to efforts of the priesthood. Religion and state were inextricably mixed in Egypt. It was highly advantageous to the priests to give the ruler of Egypt a build-up as superhero, since this spurred Egypt on to glories and victories and in turn brought riches into temple treasuries.

Dr. Wilson expressed the view that

GENERAL SCIENCE

Rule of Emotionalism Brings Law of Jungle

NEVER since 1600 has the world seen such a reversion toward authoritarianism, superstition and every irrational and unscientific brand of emotionalism as at the present moment. This is the judgment of Dr. Robert Andrews Millikan, Nobelist, expressed in his latest book, "Cosmic Rays" (Macmillan).

"Wherever emotionalism determines conduct, there you have necessarily the law of the jungle," Dr. Millikan writes.

His definition of a reactionary: "The man who has turned his face back toward the method of the jungle, toward brute government instead of ballot government, toward authoritarianism instead of toward freedom."

On the right and the left Dr. Millikan finds all the reactionaries, only in the center is found the true progressive. In the center, "are found all those who are trying to replace the method of the brute by the method of a being supposed to be endowed with a mind—that is, by analysis, by persuasion, by adjudication, by compromise, by evolution, by peaceful change. On the left, and in somewhat lesser number on the right, are found all those who, no matter to what kind of liberalism they may pretend to adhere, actually support by their influence, and practise in varying degree, violent world revolution, assassination and intimidation, suppression of freedom of speech, press and action, indoctrination of the public in the interests of the ideas and the individuals at the moment in power, despotism—in a single word, reaction."

Science News Letter, January 13, 1940

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