

BACTERIOLOGY

Seven Stages in Life Of TB Germ Given

THE TUBERCULOSIS germ, like man, apparently has seven stages of life. While the seven stages of man's life were poetically described centuries ago by a famous poet-dramatist, the seven stages of the tuberculosis germ's life cycle are described in scientific terms by Dr. R. R. Mellon of the Western Pennsylvania Hospital Institute of Pathology.

Dr. Mellon reported the results of research to the Society of American Bacteriologists. Ruth D. Richardson, L. W. Fisher and Carl C. Lindegren were his associates.

The life cycle of the tubercle bacillus consists of four stabilized stages which are vegetative and three transition stages between them which are reproductive. Of these reproductive states, two are probably asexual, while evidence for the possible sexual nature of the third was obtained.

Science News Letter, January 28, 1933

MEDICINE

Serum, Fever and Vaccine Fight Undulant Fever

IMMUNE SERUM, artificially induced fever and vaccine feedings are three methods of treating undulant fever that produced improvement in guinea pigs suffering from the infection, C. M. Carpenter and R. A. Boak of the University of Rochester School of Medicine and Dentistry, reported to the Society of American Bacteriologists.

Numerous methods of treating undulant fever in man have been tried without satisfactory results, the Rochester investigators pointed out. In many cases the symptoms subside spontaneously. Consequently it has been hard for scientists to evaluate the various methods of treatment. Their studies of the effects of various remedies on guinea pigs suffering from the ailment are expected to throw some light on their value.

Methods which were unsuccessful in controlling the infection were methyl-violet and thionin given by mouth, and injections of heat-killed vaccine.

Cattle or dairy products are the chief source of the germ causing the disease, at least in New York State, two members of that state's health department, Ruth Gilbert and Marion B. Coleman, reported at the same session. More cases of undulant fever were reported from

New York than from any other state in the country during 1930 and 1931, they found.

Scarcely one-tenth of the cases which occur are correctly diagnosed or reported. This is apparently due to the fact that only a small percentage of the physicians in rural districts where the disease seems to be most prevalent are familiar with the symptoms. In many cases, this disease is not even considered until a sample of the patient's blood, sent to the laboratory to be examined for evidence of another disease, shows the presence of undulant fever.

Science News Letter, January 28, 1933

PSYCHOLOGY

Light On Eye's Blind Spot Visible By Radiation

THE field of vision of the blind spot in the human eye is not entirely invisible as scientists once supposed. Bright lights in the field of vision covered by this spot can be seen because the light irradiates from the optic disk to sensitive areas of the eye, Dr. C. R. Garvey, of the Institute of Human Relations, Yale University, told the American Association for the Advancement of Science.

Experiments conducted by Dr. Garvey were designed to discover whether the optic nerve itself is sensitive to light, as has been proposed, or whether the irradiation theory is correct, he said.

This problem has been a puzzle to scientists, because the blind spot is the part of the visual field which corresponds to the optic disk, or gap in the light-sensitive area of the eye, made by the optic nerve as it leaves the eyeball.

After carefully mapping the blind spots of his subjects, Dr. Garvey placed in this area two different types of lights—one a ring like a doughnut, the other a spot like the doughnut's hole. Since they did not overlap in position, they should be easily distinguished by the subject provided the optic disk were light sensitive, he reasoned.

But the two forms of light were not distinguished. The ring and spot were both vague, indistinct blurs of light, or various, irregular, grotesque forms as seen by the subjects, he reported. The ring appeared brighter, however, in about half the trials, and this greater brightness can be explained on the basis of the irradiation theory, Dr. Garvey believes. It is larger and therefore does not have so far to irradiate to reach the sensitive area outside the optic disk.

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IN SCIEN

PHYSICS

Wind and Spray Make Sunburn at Sea Worse

VOYAGERS on the high seas who suffer reddened skin even in cloudy weather should not blame solely the ultraviolet radiation for their "sunburn."

Dr. W. W. Coblenz, Bureau of Standards physicist, in making measurements of solar ultraviolet radiation on the ocean has found that the excessive erythema experienced by travelers on the ocean during cloudy weather is accelerated by the wind and by the fine, almost imperceptible, ocean spray.

Measurements made of ultraviolet radiation at sea, far from the land's dust and smoke, did not show appreciable increase in intensity over those made at sea-level land stations where the air is dust free. If the increased sunburn experienced by Dr. Coblenz and his shipmates were due to the ultraviolet radiation entirely, the photochemical dosage intensity meter operated during his voyage by Dr. Coblenz would have shown higher values.

On the heights of Switzerland's famous Jungfrauoch, Dr. Coblenz found that the ultraviolet component in sunlight is not much greater than at lower altitudes. This is in agreement with previous results obtained in Arizona.

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ASTRONOMY

Lowell Observatory Director Honored With British Medal

DR. V. M. SLIPHER, director of Lowell Observatory, Flagstaff, Ariz., will receive the Royal Astronomical Society's gold medal this year in recognition of his spectroscopic researches on planets, stars and nebulae. He will deliver the George Darwin lecture later in the year when he goes to London to receive the medal. The planet Pluto was discovered in researches under Dr. Slipher's direction.

The Royal Astronomical Society gold medal is considered one of the highest honors in astronomy.

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CE FIELDS

ANTHROPOLOGY

Peking Man Had Ape-Like Feet But Man's Hands

FURTHER exploration of the cave at Choukoutien, China, where the Peking skull was found, has disclosed a small wrist bone not appreciably different from that of modern man and also a piece of collar-bone about the average of the length of the collar-bone of an adult male in North China today.

Describing these discoveries, Prof. Elliot Smith said that the feet of Peking Man showed that he must have walked like an ape, with in-turned toes, but there is no evidence that he shared the apes' ability to grip with his feet. The shape of his hands leaves no room for doubt that this member of the human family had already gained the skill and intelligence which stamp him as genuinely human.

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GEOLOGY

Bacteria In Lake Mud Precipitate Limy Mineral

GEOLGY in the making, at the bottom of a Wisconsin lake, was portrayed before the Geological Society of America by Prof. W. H. Twenhofel of the University of Wisconsin. He told of researches conducted on the geological processes now going on in Lake Mendota, which lies in Madison, where the university is situated. His colleagues in this work were Fred T. Williams and Prof. Elizabeth McCoy.

The bottom of Lake Mendota is a soft, oozy sludge, rich in organic material, and underlying this is fairly firm mud to an unknown depth. Samples of the sludge were brought up by means of a clamshell sampler, and cores of the mud by an ingenious core-cutting tube that can be hammered into the bottom and then "hammered out" again with a heavy weight sliding on a cable.

The mud cores were analyzed for their mechanical make up and their chemical contents. Under the microscope they showed only microscopic life and small worms. The former was very

abundant, especially in bacteria and diatoms. The average bacterial count was five millions per gram of dry mud, and it ran as high as fifteen millions.

Bacteria able to live only in the presence of oxygen are present in the upper-layers, bacteria able to live in its absence predominated in the deeper mud. By laboratory culturing, with subsequent physiological testing, it was found that these bottom bacteria are active in taking calcium out of the water and precipitating it in solid form. It does not seem to precipitate as "straight" calcium carbonate, Prof. Twenhofel said, which does not seem to be either calcite or aragonite. The precipitates in the lake are exceedingly high in calcium content, running as high as 80 per cent. calcium carbonate.

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PSYCHOLOGY

Teaching Blind Mimicry Seen as Service to Them

THE PANTOMIME of smiling for politeness' sake, and of putting on an expression of fear or concern when a friend tells of a slight mishap, is a language of which the blind know scarcely "a single word."

This is the report of M. Georges Dumas, who has studied the quiet, often apathetic faces of the blind in French institutions, to find out whether they mimic expressions at all, as seeing persons do.

The blind laugh or look sad when genuinely stirred. But those interviewed by M. Dumas did not know how their faces changed in emotion, nor how to produce these expressions at will.

One blind man, accustomed to self-analysis said: "I know perfectly well what you ask me, but I do not know how joy, sorrow, or anger are expressed on my face."

The same man said that he did not feel that his happy, laughing face was different from his face when sad.

M. Dumas attributes the absence of mimicry in blind people to their inability to observe other people and to imitate their expressions. Before his study of the blind, he said he had thought it likely that human beings learn mimicry by a different method than by imitating others. He had speculated "that we imitate voluntarily in our own spontaneous expression after becoming conscious of it through our own muscular and cutaneous sensibility."

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GEOLOGY

Famous Glacier Being Cut By Stream of Water

NISQUALLY Glacier, in Mount Rainier National Park, Washington, is in danger of being considerably damaged through water washing across its snout and cutting into the glacier, according to Superintendent Tomlinson of the park.

After a washout following a storm that occurred about the middle of October, a stream of water started running over the surface of the glacier for a distance of about three-quarters of a mile and has cut through its snout to a depth of approximately fifteen feet. Unless the water can be diverted in some way to the bottom of the glacier, it appears that in time a great deal of damage will result.

Superintendent Tomlinson states that it seems probable that the stream, apparently arising in the accumulation of water on the glacier over a fairly long period of time and augmented by excessive rains of a recent two-months' period, was diverted from its regular course by a landslide.

The Nisqually is one of the best-known of Mount Rainier's glaciers, as a road passes within half a mile of it, with a trail leading from the road to within 100 feet of the snout of the glacier. Measurements made at the snout of the great mass of ice each year show that it is slowly receding.

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CHEMISTRY

Soy Bean Paste Makes Salad Dressing "Stay Put"

SALAD DRESSING of the mayonnaise type can be made without egg as a stabilizing agent, if a paste made from finely ground soy beans is substituted. Advantages claimed for the new method are its low cost, the ease of storing and shipping soy beans as compared with eggs, the possibility of sterilizing the paste immediately before its use and the larger amount of liquid which can be worked into the dressing.

A report on the new salad dressing, which describes in detail how it was made, is published in *Science* by Ada M. Field, Beulah H. Alexander and Ethel B. Sylvanus of the laboratory of home economics, University of California at Los Angeles.

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