

BACTERIOLOGY

Expect To See Viruses at Work with New Microscope

► THE POSSIBILITY of seeing disease-causing virus at work in living cells is suggested by experiments with the new kind of microscope that uses contrast of phases in the light.

Dr. Robert Barer of Oxford University's department of human anatomy reported in the British scientific journal, *NATURE* (Aug. 14), that he has photographed the virus of parrot fever and smallpox vaccine. The viruses were unstained and mounted in water. These are among the larger viruses, but he has also observed living *Leptospira*, tiny organisms which cause some types of jaundice and the swamp fever of eastern Europe. *Leptospira* are said to be less than 0.15 microns or six millionths of an inch across.

The phase contrast microscope depends on contrast of dark and light to make small particles visible. First described about a decade ago by the Dutch scientist, Dr. T. Zernike, the phase-difference microscope has proved a boon to scientists who can now study living objects under high magnification. It brings out details without using stains which kill the cells.

Dr. Barer believes that still smaller viruses can be seen with the phase-difference microscope if an intense light source and a strong absorbing phase plate are used.

Science News Letter, October 2, 1948

DENTISTRY

You May Exert Force of 260 Pounds on a Molar

► HOW WELL you chew your food can now be measured in pounds. Tests made on a group of people with normal teeth show that the force exerted can range from 14 to 260 pounds on a single molar, Dr. R. S. Manly, of Boston, Mass., reported to the American Dental Association, meeting in Chicago.

He suggested that the low chewing force exerted by some people is caused by pain or fear of pain rather than lack of muscle power. In support of this theory, persons with low chewing force had their dental tissues anesthetized. Fearing no pain, they showed a marked increase in chewing power, he said.

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DENTISTRY

Electron Microscope Finds "Cracks" on Teeth Surfaces

► THE PROBLEM of decaying teeth may be licked soon with the aid of the electron microscope.

As a research tool it is opening up new avenues of research into the causes of one

of mankind's most widespread diseases, the American Dental Association was told in its meeting in Chicago.

This sensitive instrument has already revealed "cracks" on the surfaces of teeth which were not known to exist there before, Drs. David B. Scott and Ralph W. C. Wyckoff, of the laboratory of physical biology of the National Institutes of Health in Bethesda, Md., reported.

These cracks, moreover, have been eliminated as suspects in the beginning of the decay process because they were found present on both decayed and non-decayed surfaces of the teeth, the scientists reported.

These cracks will be the subject of further study on young teeth, both because they are more apparent on them than on old teeth and because caries is primarily a disease associated with the teeth of young people.

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DENTISTRY

Toothless Gums Still Need To Be X-Rayed

► PERSONS who have lost all of their teeth still need to safeguard themselves against infection by having X-ray examinations, the American Dental Association was told in Chicago.

Studies have revealed that one out of every four patients with extracted teeth still has roots, unerupted teeth, cysts or other possible sources of infection present, according to Drs. LeRoy M. Ennis and Harrison M. Berry, Jr., of the University of Pennsylvania.

One survey made among 500 patients with no teeth or with a few teeth showed that 130 of them were wearing dentures with a possible source of infection underneath. Moreover, they had been doing so for about four and a half years, the dentists said.

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AERONAUTICS

New Turning Rule by CAA To Cut Plane Noise

► GOOD NEWS for people living in the vicinity of major airports is a new ruling by the Civil Aeronautics Administration.

Shallow turns at altitudes lower than 500 feet are now permitted by the CAA. This will let pilots avoid some of the densely-populated areas near runways in taking off. It may result in less noise from low-flying planes in many localities.

Traffic patterns at three major airports—Newark, N. J., La Guardia Field, N. Y., and the Washington National Airport—have already been adjusted to keep the heavy, and loud, planes as far away as possible from congested areas, the CAA announced. Officials pointed out, however, that the CAA will not order airline pilots to make the low-altitude turns.

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IN SCIENCE

VETERINARY MEDICINE

Over-Use of Sulfa Drugs On Hens Cuts Egg Yield

► SULFA DRUGS given to chickens to fight diseases may cost the flock owner half his birds' egg production, the American Veterinary Medical Association warned.

In one experiment, when 671 chickens were given sulfa drugs for periods of from three to six days, laying rate fell off 50% in one week, as compared with that of an untreated control group of 430 birds. Egg production in the treated group did not get back to normal for a month.

This is not intended as an argument against the use of sulfa drugs when needed, the Association emphasizes. However, it is felt that poultrymen should not be too ready to reach for the sulfa bottle.

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METEOROLOGY

Death Valley Proved To Be Hottest Spot on Continent

► DEATH VALLEY in California is the hottest spot in North America.

From the temperature records of several decades, an Army meteorologist has come up with the following Death Valley heat records:

A top temperature of 180 degrees Fahrenheit may be expected on the desert floor in the valley one day in every seven years.

At five feet above the ground, where the official figures are taken, it was 134 above on July 10, 1913.

Top daily temperature was not under 127 degrees F. from July 7 to 14, 1913.

Coldest temperatures recorded at two different stations in Death Valley during the month of July were 69.11 above at one in 1936 and 68.26 at the other in 1938.

Arnold Court of the Office of the Quartermaster General, in a report to the American Meteorological Society, says that weather observations are getting more accurate all the time. But, he adds, no place else in North America is likely to break Death Valley's heat records.

The Death Valley studies showed that the surface sand or gravel has the highest temperature, with the temperature dropping as altitude is increased. Thus, when it is 160 degrees above zero Fahrenheit on the surface, it is 116 degrees five feet above the ground. And at 2,000 feet, it would be a mild—for Death Valley—92.

Mr. Court's studies are part of an Army research program aimed at development of clothing to protect soldiers in any climate.

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CE FIELDS

ENGINEERING

Acids Not Friction Cause Auto Engine Wear

► THE ACTION OF ACIDS resulting from low-temperature operation is the major cause of automobile engine wear, Shell Oil Company research scientists declared.

When your car is used for short trips around town, with much starting and stopping, it is running "cold." Partially burned fuel gases and moisture result from this and attack the engine. It adds up to 90% of the wear on your car's engine, C. E. Davis, vice president in charge of manufacturing of the oil company, reported.

Laboratory studies and 2,500,000 miles of road testing were made by the scientists who discovered that acids rather than friction are the main enemies of long life for the motor in your car.

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BOTANY

Males Win Four to One On Form—in Poplars

► ON FORM, males are four-to-one winners over females—among cultivated poplar trees. This appears in studies made at the Harvard Forest in Petersham, Mass., by Scott S. Pauley, and reported in the journal, SCIENCE (Sept. 17).

Poplars belong to that minority of tree genera in which male and female flowers are borne on separate trees, instead of both on the same tree. An examination of 76 distinct strains of poplar grown in this country, all of which were originally selected for good stem form and general vigor and all kept true to type by propagating only by cuttings, showed that male lines or clones prevailed over female by a little more than four to one. Of eight poplar lines similarly propagated in Europe, only two (exactly one-fourth) are females.

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ICHTHYOLOGY

Mackerel's Family Life Traced by Biologist

► MACKEREL have long kept their home life a deep secret, but finally an English scientist has found out about it. He is Dr. G. A. Steven, of the Plymouth Laboratories of the Marine Biological Association.

These fish, that figure so importantly in England's bill of fare, leave their inshore haunts in early spring and go out into deep water, at least a hundred miles west of the

nearest land. There they deposit their eggs at a depth of some 600 feet.

After spawning, the fish return shorewards and disperse all along the coastline, where they remain until late autumn. Then they disappear from the surface, and concentrate in widely separated spots on the sea floor. In early spring they come to the surface again, and prepare to repeat the cycle.

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CHEMISTRY

Quick-Setting Plastic Is Mineral-Filled

► A NEW MINERAL-FILLED plastic which is molded in a matter of seconds was announced by the Plaskon division of Libbey-Owens-Ford Glass Company in Toledo, Ohio.

Called alkyd molding compound, the new plastic is being used on electrical conductors, switch units and similar parts which are now in limited commercial production. First public exhibit of the new material was made recently at the National Plastics Exhibition in New York.

Plaskon alkyd is produced in granular form with natural light brown color, but a range of colors for the plastic is expected to be made available.

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ENTOMOLOGY

Leaf-Hoppers Are Carriers Of Elm-Tree Disease

► PHLOEM NECROSIS, an elm-tree disease even more deadly than the more widely publicized Dutch elm disease, can be carried from sick to healthy trees by leaf hoppers, small insects so inconspicuous that most people never notice them. This has been proved in experiments running back as far as 1940, now reported by W. L. Baker of the U. S. Department of Agriculture, who did his work at the Bureau of Entomology and Plant Quarantine laboratories in Columbus, Ohio.

Leaf-hoppers of two different genera were permitted to feed first on elm seedlings known to be diseased, then on healthy seedlings, all kept carefully in insect-proof cages. Necrosis was very slow in developing on elms infected by the bites of one of the two insect genera, taking as much as five years to appear. Development time was somewhat shorter in the case of the other insect's attack.

Further work is still in progress; but now that some definite knowledge of the disease carriers has been gained there is some hope of eventually developing counter-measures against this destructive shade-tree disease, known to exist from West Virginia to Kansas and from Iowa to Mississippi, Mr. Baker pointed out in the journal, SCIENCE (Sept. 17).

Science News Letter, October 2, 1948

MEDICINE

New Plastic Film Dressing Will Keep Wounds Dry

► YOU WILL NOT have to worry about getting your wound infected or your bandage dirty on the job if you wear a new plastic film dressing.

The new dressing is made of a nylon-derivative film. It is bacteria-proof, but at the same time it keeps the wound dry in spite of body perspiration. Experiments with the new dressing are reported in the British journal, THE LANCET (Aug. 7), by J. P. Bull, J. R. Squire and Elizabeth Topley, all of the Birmingham Accident Hospital.

They explained that the improved dressing is based on a wartime discovery. In the search for suitable clothing for tropical warfare, it was found that a material can protect against liquid from the outside, while allowing perspiration to pass through it in vapor form.

Advantages of the dressing are: the skin is kept dry; the wound can be inspected without lifting the nylon dressing, because the doctor can see through it; and there are fewer of the germs usually found on normal skin under this dressing.

To make the dressing waterproof, the scientists built a "window frame" of another plastic. One of these "window frames" coated with adhesive goes around the edge of the dressing, while the other frame sticks to the skin. The dressing will remain in place for days if the skin is free of grease and a heavy growth of hair. Workers using oil require additional protection, in the form of acrylic resin which is painted over the edges of the adhesive.

Clinical trial of the dressing for industrial and other wounds is now in progress, the scientists stated.

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GENERAL SCIENCE

Scientists in Reserve Get Research Projects

► SCIENTISTS who have uniforms in their clothes closets, ready for active service in an emergency, are now being given research and development projects during peacetime.

A new plan of the Research and Development Group of the Army's General Staff is funneling to officer reservists throughout the nation some projects and research jobs that the Army needs done under present conditions.

Local groups are being organized in the large cities and universities to plan and conduct the research projects and other reserve corps activities.

Reserve officers who are scientists are being encouraged to submit ideas and problems that they believe, from their wartime experience, will help the Army's defense program.

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