BACTERIOLOGY

BacteriophageNowVisible

This foe of disease germs, formerly invisible, has now been seen through an ordinary light microscope as bright yellow pinpoints of light.

➤ BACTERIOPHAGE, formerly invisible foe of disease germs, has now been seen through an ordinary light microscope, Dr. Alvin W. Hofer, of the New York State Agricultural Experiment Station, and Dr. Oscar W. Richards, of the Spencer Lens Company, Buffalo, report. (*Science,* May 4.)

When the electron microscope made it possible to see bacteriophage particles, scientists found that they were larger than the flagella of bacteria. Since the flagella, tiny whip-like affairs extending from bacteria, can be stained and seen under ordinary light miscroscopes, it seemed reasonable to suppose bacteriophage particles could, too.

This has now been done. First the bacteriophage was treated with auramin, a dye, and radiated with ultraviolet rays. The bacteriophage particles then appeared through the microscope as bright yellow pinpoints of light in an otherwise dark field. With further study, Dr. Hofer and Dr. Richards developed two more methods for making bacteriophage visible. These involved the use of stains, or dyes, one a modification of the acid-fast stain, and ordinary light.

With these methods and use of the new phase difference microscope, the scientists were able to work out the order of events in bacteriophage destruction of bacteria. The sequence agrees with that seen in a dark-field motion picture, made by Dr. A. J. Pijper, of Pretoria, South Africa, showing bacteriophage action on a strain of typhoid fever organisms.

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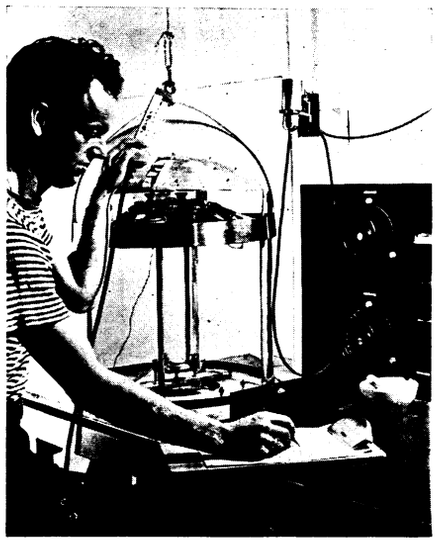

LENSES COATED—Mounted on a rounded panel inside a large bell jar, lenses for naval combat instruments are given a coating of magnesium fluoride in the optical shop at the Mare Island Navy Yard, Vallejo, Calif., to improve their light transmission and field definition characteristics. Jim DeMartini, chemist, is checking the thickness of the coating.

METALLURGY

Airplanes Dissolved

Whole sections of wings and fuselage are placed in a bath of caustic soda to speed up recovering of valuable aluminum from obsolete planes.

➤ RECOVERING valuable aluminum for re-use from crushed war-weary, crashed, or obsolete planes has been speeded up by a new process that literally dissolves the aluminum from whole sections of these planes. This new method, developed by the Aluminum Company of America in cooperation with the Air Technical Service Command, eliminates all need for sorting metals before the aluminum is melted down and gives an end product of pure, high-grade aluminum ready for reprocessing. The aluminum obtained from alloys and other metals coated with aluminum is for all intents and purposes the same as aluminum manufactured from bauxite.

Whole sections of wings and fuselage are placed in a bath of caustic soda. This caustic soda dissolves the aluminum in the planes, while any steel nuts and bolts, rivets, copper piping, bronze bushings, rubber or other non-aluminum parts are not attacked by the caustic and remain in solid form. Aluminum alloying elements are not attacked by the caustic, and as is the case with other non-aluminum parts they can be removed readily from the sludge. Thus scrapped planes are taken apart quickly by chemicals, instead of by tedious hand labor.

After filtering out the solid impurities from the sludge, the aluminum bearing liquor is transformed into pure aluminum oxide by the Bayer process. This is accomplished by pumping the liquor into precipitating towers as high as six-story buildings and allowing it to stand and cool. In time, crystals of aluminum hydroxide begin to settle out. These crystals are removed and washed to free them of caustic soda. Then they are heated white hot in large rotating kilns to drive off any moisture and leave commercially pure aluminum oxide, or alumina. The caustic soda recovered can be re-used.

The aluminum oxide can be processed into any desired form by standard methods, about which there is nothing new. Other parts, such as rivets, rubber, and so on can also be salvaged.

The chemical stripping of aluminum from wrecked planes makes possible the conservation of the country's high-grade bauxite reserves and man-hours required to mine bauxite. If this process had been available at the time of the scrap aluminum drive in 1942, when housewives turned in to the government their aluminum pots, pans, and skillets, those cooking utensils could have been processed and used in aircraft construction. As it was, they were of little value, since the large number of different mixtures and alloys of aluminum used in cooking utensils made it impossible to identify and sort the vast quantity turned in. Most of this material was melted down into low-grade metal.

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MEDICINE

Refrigeration Treatment For 89 Days Saves Leg

➤ REFRIGERATION treatment for 89 days continuously saved a woman's leg from the amputation that would ordinarily have been required to save her life, Dr. Isidor Kross, clinical professor