

PUBLIC HEALTH

Consolidate Laboratories For War Against Disease

► THE FIRST STEP in consolidating the national headquarters of the communicable disease fighters of the U. S. Public Health Service was taken in Atlanta when Surgeon General L. A. Scheele accepted from Emory University a 15-acre plot of ground.

From the concentration of laboratories to be placed there teams of doctors and health experts will go forth when necessary to fight the menace of diseases spread by insects and animals.

Malaria is a major problem for the health forces under the command of Dr. R. A. Vonderlehr, since CDC, as the communicable disease control is called, began with the campaign against this mosquito-carried disease. Other diseases they are ready to handle, upon request of local and state authorities, include: yellow fever, infantile paralysis, encephalitis, hookworm, typhus, plague, sand fly fever, amoebiasis, schistosomiasis, filariasis, dengue fever, dysentery and other related infections.

Science News Letter, August 14, 1948

NUTRITION

Latest Breakfast Treat Is Cereal from Prunes

► THE LATEST addition to breakfast menus is a cereal made of prunes.

The new breakfast cereal, made from sieved prunes, was developed by the food technology division laboratories of the University of California in Berkeley. It is termed healthful, tasty, inexpensive and contains more than 50% dried fruit.

One method of making the cereal calls for making a dough of whole wheat flour, white flour, bran, corn sugar, yeast or baking powder and sieved prunes. The mixture is then baked in small loaves, sliced and dried. Finally the slices are crushed and sieved to "grape-nuts" size.

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GENERAL SCIENCE

"Statistical Blackout" Charged Against Soviets

► FACTS about the economic life in the Soviet are hidden from the rest of the world not by an "iron curtain" but by a "statistical blackout," a group of American scientists have charged.

The scientists are editors of *The American Statistician*, published by the American Statistical Association. They describe the "blackout" in an editorial (June).

Efforts of the Economic and Social Council of the United Nations to get a picture of present world economic conditions and future prospects are "severely handicapped" by lack of information from the U. S. S. R., the statisticians complain.

When the UN group prepared its "Eco-

nomie Report" without including Russia, the Soviets were the first to complain, the editorial explains. But when Prof. Arutiunian, the Soviet representative, did give his figures, they were little help.

Industrial output in the U. S. S. R., he reported, rose 32% in 1947 over the previous year. Just what this made the industrial output last year, or from what level it had risen from 1946, was not stated. Thus, the statisticians point out, "These figures are of little significance."

For our information on the economy of the U. S. S. R., the editorial continues, we must depend on "a small corps of experts on Soviet economy."

"These men combine economic and statistical competence with detective ability and highly developed imagination."

Their best sources of information, the editorial adds, are "apparent slips and inconsistencies in official Soviet data."

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GENERAL SCIENCE

Charge Military Seeking Custody of Atomic Bombs

► SOME MILITARY LEADERS are trying to gain custody of the U. S. stockpile of atomic bombs which were assigned to the civilian Atomic Energy Commission under the McMahon Act, an atomic scientist charged.

In a statement marking the third anniversary of the atomic bombing of Hiroshima, Dr. William A. Higinbotham, vice-chairman of the Federation of American Scientists in Washington, and a physicist at the Brookhaven National Laboratory, declared a battle over military or civilian control of the nation's atomic bomb stockpile is raging under a "cloak of secrecy."

Dr. Higinbotham said that some military men are arguing that atomic bombs are a weapon which should be in the hands of the military. This, the scientist cautioned, would make it "physically possible for military men to make the decision to use the atomic bomb and carry this decision into effect.

"A 'border incident' involving the use of an atomic bomb could not easily be smoothed by diplomacy," Dr. Higinbotham warned.

The Federation, the statement emphasized, feels that atomic bombs "should be retained firmly in the hands of the President and his advisers who have an overall picture of the international political situation."

Attacking secrecy, the scientist said that convenience and not security is to blame for the fact that the debate on control of the bombs has not been contested openly.

"The national security is certainly not endangered by making public the pros and cons of this issue, whether the bomb should be held by civilians or soldiers," Dr. Higinbotham said.

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IN SCIENCE

AERONAUTICS

New Bomber Triumph in U. S. Warcraft Progress

► THE RECENT 6,000-mile test flight of the new Air Force giant bomber, the B-36, which took off at a gross weight of 300,000 pounds, indicates the American position in modern warcraft. So also is another new bomber just delivered to the Air Force, the speedy Martin XB-48, powered with six jet engines. (See SNL, Aug. 7.)

The B-36, which took off with the heaviest load ever taken aloft by an airplane, was built by the Consolidated Vultee Aircraft Corporation and is a giant in comparison with the big B-29 which brought the Japanese to their knees. It is said to be the world's largest land-based bomber.

It was designed to replace the B-29, being larger, faster and able to carry greater loads. In addition, it has much greater range. On this 6,000-mile test run it averaged 300 miles an hour and, with a lighter load, could have added another 3,000 miles to its trip. It can make a round-trip from America to central Europe without landing.

This giant bomber, with a bomb-carrying capacity of some 30 tons, is roughly 40% larger than the B-29. It made its first test flight in the summer of 1946. It has a wingspan of 230 feet, is 163 feet long, and has a rudder height of over 37 feet. It is powered with six 3,000 horsepower Pratt and Whitney engines mounted on the trailing edge of the wing which operate pusher-type propellers. The Air Force now has eight of these bombers and 94 are on order.

An important feature of the B-36 is its newly-developed four-wheel main landing gears which distribute its weight over a greater runway area than single-wheel or dual-wheel gears. Because of this it can operate from any base suitable to accommodate the B-29 Superfortress.

The XB-48, built by Glenn L. Martin aircraft company of Baltimore, is powered with six General Electric-Allison jet engines that give it a speed approaching 500 miles an hour. It has a combat radius of more than 800 miles. Its bomb-carrying capacity is over 10 tons. It has a wingspan of 108 feet and a length of 85 feet. A notable feature is its bicycle-type landing gear.

The new Consolidated-Vultee bomber has a brother cargo or troop-carrying plane. It is the C-99, which is capable of transporting 100,000 pounds of cargo or 400 fully-equipped combat troops. It has the same wingspan as its bomber counterpart but is higher and 19 feet longer. In speed and range it equals the bomber.

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CE FIELDS

AERONAUTICS

New U. S. Jet Fighter Is Black for Night Safety

➤ ADD "BLACKHAWK" to your aviation vocabulary. It is the official name of the U. S. Air Force's newest jet fighter, which is black in color to make it less visible at night and can swoop like a hawk with its four jet engines.

The new airplane is a product of Curtiss-Wright Corporation of Columbus, Ohio. An experimental version has undergone extensive tests at Muroc Base, Calif., and 88 planes of the type have been ordered by the Air Force.

This four-jet fighter, powered by Westinghouse engines, is officially the F-87 in military parlance. Its engines are grouped in pairs away from the fuselage on the wings. It operates with a two-man crew and is designed to be usable under extreme weather conditions. Among other equipment it has the most modern anti-icing devices. Its wingspan is 60 feet, and its length slightly greater. Its speed and range are not yet revealed.

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AERONAUTICS

New Antenna for Planes Eliminates Former Drag

➤ A NEW and unique antenna, for sending automatic or other radio signals from flying objects ranging from planes to rockets, lies flat in the surface of the object and eliminates the drag that is caused by ordinary projecting airborne antenna. An important application will be in planes designed to beat the speed of sound.

The new antenna consists of a rectangular notch cut in the tail surface of the test vehicle which will excite certain portions of these surfaces but will not affect their aerodynamic quality, it is explained by Ralph O. Robinson, Jr., of the Applied Physics Laboratory of Johns Hopkins University at Silver Spring, Md., where it was developed.

It is called a notch antenna, and was designed to provide a radiation pattern suitable for sending automatic radio signals from a test vehicle in flight without interference with its aerodynamic configuration, he states. To do this it seemed essential to use the vehicle's surface, or a portion of it, as the antenna rather than to use a trailing wire or other external structure.

The notch antenna has properties different from the conventional slot antenna and the usual aperture antenna. It consists of a rectangular opening in the leading or trail-

ing edge of a thin portion of the test vehicle structure. It projects into the surface with its long side perpendicular to the edge. It may be filled with suitable plastic material so that it conforms to the original shape of the surface and does not reduce its strength. The notch is fed by a coaxial cable from the transmitting instrument.

The size of the notch is measured in radio wavelengths rather than in the more familiar inches or meters. Its length may range from a quarter to a sixtieth of the wavelength under consideration. Its width is usually less than one hundredth of a wavelength. A single notch in a rocket or plane may be enough for a particular job, or two or more may be used as elements of directional antenna for certain applications.

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ELECTRONICS

Synthetic Quartz Crystals May Add to Vital Supply

➤ QUARTZ CRYSTALS, grown in the laboratory, may add to the supply of these crystals which are vital to radio communication and electronic apparatus.

These crystals are used in radio transmission and long-distance telephony because they can convert mechanical energy such as sound waves into electrical energy—and back again. During the war, tiny wafers of quartz, smaller than a postage stamp, were used to control the frequency of military radios. In the past this country has imported most of its raw quartz from Brazil.

Ernest Buehler and Alfred C. Walker of the Bell Telephone Laboratories told the International Congress of Crystallography at Harvard University how they had been able to produce quartz crystals more than an inch long in a month. They placed silica, a mineral which is found in sand, and a small quartz crystal in an alkaline solution inside a steel bomb. The bomb was then heated to 750 degrees Fahrenheit at a pressure exceeding 15,000 pounds per square inch.

Crystals produced in this way are not substitutes. They have the same composition as quartz crystals found in nature. Since they are grown under specially controlled conditions, they even tend to be superior to most natural crystals.

Experiments have been so successful, the Bell scientists said, that commercial production of quartz crystals in the near future seems likely.

Danforth R. Hale of The Brush Development Company of Cleveland told of experiments in which silica, a small crystal of quartz and water were placed in heavy pressure vessels at a pressure of several thousand pounds per square inch and cooked at a temperature close to that of a very hot flat iron. In one of these experiments the small crystal increased in size 12 times in about 60 days.

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MEDICINE

Plenty of Anti-Polio Drug At Hand in Epidemic Area

➤ PLENTY of Darvisul phenosulfazole, new anti-polio drug now getting clinical trials, is available for three medical centers in North Carolina for trials on polio victims during the current infantile paralysis epidemic in that state, a spokesman for Lederle Laboratories, American Cyanamid Company, said. Lederle Laboratories make the drug which is also undergoing trials in Texas, scene of another polio epidemic this season.

The medical centers in North Carolina are the Bowman Gray Medical School of Wake Forest College at Winston-Salem, the University of North Carolina Medical School at Chapel Hill, and Duke University School of Medicine at Durham.

Presumably the drug will be used not only for patients at these medical centers but also will be sent to physicians in other parts of the state who will cooperate with the medical centers in proper testing of the drug.

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PHYSICS

Atoms Are Pushed Out of Place in Smashed Metal

➤ IF YOU HIT a piece of metal with a hammer you are actually knocking the tiny atoms in it out of position.

Drs. B. L. Averbach and B. E. Warren of the Massachusetts Institute of Technology reported at the International Congress of Crystallography held at Harvard University that smashing metal broke up the arrangement of atoms in the material.

The scientists placed blocks of deformed and normal metal in an X-ray beam and measured the amounts of energy scattered in various directions by the atoms in the metal. The blocks that had been damaged scattered more energy in certain directions than the unharmed ones, indicating that groups of atoms in the metal had been broken up.

A metal which is so sensitive that even light shining on it will cause the atoms to rearrange themselves was described to the conference by a group of British and American scientists.

The metal, barium titanate, was discussed by H. F. Kay and R. G. Rhodes of the University of Cambridge, England; Elizabeth A. Wood, B. T. Matthias and G. C. Danielson of Bell Telephone Laboratories, and P. W. Forsbergh, Jr., of M. I. T.

Sensitive atoms of barium titanate show a remarkably quick response to the slightest changes in pressure, temperature or electricity. Although the substance is now classed as a laboratory curiosity, the scientists predicted that important applications may be found for its unique properties.

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