

NUCLEAR PHYSICS

Plan New Atom-Smasher

➤ A 70,000,000-volt synchrotron, one of the newest of atom-smashers, soon will be brought into the fight against cancer.

Such a machine has been ordered for the University of California Medical School at San Francisco. It will be financed by the Atomic Energy Commission and constructed by the General Electric Company.

The machine will be used to explore thoroughly the indications that very high energy radiations go through normal tissue without doing much harm to them, and have nearly all their effect deep in the body.

Experiments with X-rays up to 20,000,000 electron volts have already demonstrated that this happens. Scientists feel that this principle offers great promise in the treatment of deep-seated cancers, in which one of the greatest problems is to destroy the cancer without killing the normal cells essential to the patient's well-being.

Only recently have suitable machines of high enough energy for this purpose be-

come available. They are a product of postwar atom-smashing developments.

The director of the research program for the new machine will be Dr. Robert S. Stone, noted professor of radiology at the University's Medical School and wartime head of some of the important health and safety phases of the atomic bomb project.

The new concept has been demonstrated in animal experiments using X-rays produced by betatrons up to 20,000,000 electron volts. The new synchrotron will be the first such machine applied to this work, and it will be capable of adjustment to any energy between 5,000,000 and 70,000,000 electron volts.

Because the concept is still in the experimental stage, Dr. Stone will begin work with animals. Human applications will be made as soon as the animal experiments warrant.

The project, including the machine and building to house it, will cost about \$445,000. Completion is scheduled for 1951.

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MEDICINE

Foresee End of Malaria

➤ ONLY a depression will keep malaria from being wiped out in the United States in the next ten years, Dr. Ernest Carroll Faust of Tulane University School of Medicine predicted to the National Academy of Medicine of Mexico.

The tropical disease expert credited the present decline in the disease to attack on the parasite causing it and the anopheles mosquito which carries the parasite. The disease would be wiped out with the elimination of either the parasite or the carrier and this "appears near at hand," he said.

Danger lies in overconfidence or neglect to carry out the control program, he pointed out, for then malaria might gain a foothold again. A depression might foster such an attitude, Dr. Faust stated, pointing to the one in the 1930's, when drainage projects were neglected and the poor did not have enough money to buy food, clothing, medicine, or get decent housing.

That malaria has been reduced to less than 100 deaths per year today as compared with nearly 5,000 per year during 1933-1935, Dr. Faust felt, was due to the government employing men out of work for sanitation projects; improved eating habits that raised resistance to the disease; better medical care and use of new drugs such as atabrine; and better housing, with screens to keep out mosquitoes and pyrethrum sprays to kill those that got in.

The returning soldier with malaria proved to be no threat to the health of

the people, Dr. Faust stated. There were only one or two instances where civilians acquired the disease by transmission from infected soldiers. The fear of widespread infection was needless, he declared, because of the great reduction in mosquito breeding which had occurred a decade or so ago.

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AERONAUTICS

Fast Flight Temperatures Threat to Aluminum Alloy

➤ HIGH temperatures resulting from supersonic flight of airplanes appear to be the only important threat to the supremacy of aluminum alloy in aircraft construction, the Anglo-American joint aeronautical conference in New York was told by G. G. Green, Consolidated Vultee Aircraft Corporation, San Diego, Calif. These high temperatures are due to the friction between the air and the plane, and they become excessive at high speeds.

High-strength aluminum alloy is observed not only to be maintaining its position as the major structural material but also to be invading fields previously considered the province of steel, he said. At temperatures above 200 to 250 degrees Fahrenheit, the use of these alloys becomes doubtful. Stainless steel and what is known as Inconel X are among the best choices at 300 degrees and higher. Titan-

ium shows great promise in the range of temperatures to be encountered by aircraft flying at supersonic speeds, but it is still relatively new as a structural material.

The successful use of magnesium alloy in the structure of several current aircraft is noted as an indication of probable wider use of this material in applications not involving high temperatures.

Wing construction was also discussed by Mr. Green. The new delta wing, he said, is a logical solution of the problem of aircraft with performance extending into the supersonic range. This type of wing, already under flight test, is a triangular surface with equal sides, with the fuselage of the plane extending from the center of one side forward and beyond the opposite apex. It is an extreme swept-back construction, with the leading edge of the wing at an angle of only 30 degrees with the center line of the body of the plane.

The life of airplane structures was discussed at the same meeting by H. A. Willis of the Australian Council for Scientific and Industrial Research. His conclusion was that the factors involved are numerous, complex and interrelated, and that enough about them may never be known to make precise estimates of safe operating life. However, a thorough study of them will lead to sounder and more efficient design that will be reflected in fewer failures in service and greater safety.

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ORNITHOLOGY

Yellowstone Swan Census Shows Substantial Gain

➤ THE trumpeter swan, America's largest, most majestic waterfowl, has gained another lap in its race against extinction. The annual swan census, just completed in Yellowstone Park by flying biologists of the U. S. Fish and Wildlife Service, shows a total population of 75 birds—54 adults and 21 cygnets. The census takers also found 15 swans when they flew over the wilderness country on the Bechler river just south of the Park, making a total of 90 for Yellowstone Park and immediately adjacent areas.

This is the highest number ever recorded in a trumpeter swan census, representing a gain of almost 50% in cygnets and 8% in adults. Last year's total count was 62, including cygnets. This year's census was taken two weeks earlier than last year's, so that the cygnet count may not be strictly comparable—this is an especially critical time for the young birds.

This year's census was the second made mainly from the air, with a certain amount of work done on foot near two lakes. The official biologist of Yellowstone National Park accompanied the Fish and Wildlife Service party as an observer.

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