

PHYSICS

Atomic Power for Future Super-Airliners

► URANIUM 235 and plutonium will power future super-airliners, if (and a very big if) successful international controls prevent diversion of atomic energy sources for purposes of war, prophesied Dr. Glenn T. Seaborg of the University of California and also of the Metallurgical Laboratory at the University of Chicago, co-discoverer of plutonium and of the new elements americium and curium.

"Denaturing" atomic energy materials, he told the American Chemical Society, will not turn the trick alone. It can only slow down possible conversion for military uses, but cannot wholly prevent it. For full control, to insure civilization's safety, only international agreements, firmly made and kept in good faith, will suffice. If this cannot be accomplished, it may be necessary to forbid completely all commercial applications of this revolutionary new energy source.

If the world can insure its own safety against misuse of atomic energy, revolutionary changes in industry such as the world has never seen are already at hand, the speaker declared. First will come application of atomic energy in large stationary plants, to generate electricity by driving turbine-connected generators. Then will come the propulsion of surface and submarine ships. Finally, after the atomic pile has been freed of the load of graphite now necessary for keeping the output of energy within safe bounds, the atomic-energy unit will sprout great wings and take to the upper air.

But none of these things can take place, without extreme peril to the whole world, until the necessary international controls can be worked out.

Science News Letter, April 20, 1946

ICHTHYOLOGY

Schools of Fish Studied By New Instrument

► ACTIVITIES of fish in the dark of night, deep in the water, under a coating of ice or in a muddy river will be brought to light by a new instrument. A combination light meter and photoelectric fish-detector, it incorporates the same "electric eye" that automatically opens doors and counts the number of passing autos.

Small and light in weight, this same

instrument can be used in determining the extent to which the time at which certain types of fish migrate is influenced by the amount of sunlight reaching them, Dr. Arthur D. Hasler of the University of Wisconsin and Dr. Lester V. Whitney of Southwest Missouri State Teachers College state. (*Journal of Wildlife Management*, April).

To get more information on the relationship between migration and light, Dr. Whitney was asked to devise an instrument that would measure small quantities of light reaching three to four yards below the surface of the water at sunset. The apparatus he developed has already been used successfully to chart migration times of schools of perch in Lake Mendota.

Light intensity is measured by directing the photocell upward. The number of fish passing by are clocked by directing the cell horizontally toward the light source—each interruption of the beam is recorded. The cell itself is rotated by a cord reaching to the water's surface.

A dim light is used so that the fish will neither be attracted nor repelled unduly by the light source. The photocell and light source were placed as far apart as conveniently possible with a rowboat four feet wide.

The number of deflections per minute recorded by the photocell was in keeping with the number of fish caught either in gill nets over definite periods or by hand lines from the same or nearby boats.

Science News Letter, April 20, 1946

AERONAUTICS

VHF Transmitters Ready For Private Flying

► WITH THE Civilian Aeronautics Administration equipping airport traffic control towers for VHF (very high frequency) radio communications, compact, lightweight VHF equipment will fit conveniently into small private airplanes.

Being shown to flyers throughout the country by Bendix Radio, Baltimore, Md., VHF for private planes includes a small transmitter with a 26-inch vertical rod antenna.

While ground-to-air communication is not ready for VHF, the CAA program provides for immediate use of the very high frequency transmission from planes to ground stations.

Advantages claimed for VHF include all-weather reliability, no atmospheric static interference and greater transmission range for less power.

Science News Letter, April 20, 1946

IN SCIENCE

MEDICINE

Rinderpest Vaccine Sent to China

► A MILLION doses of bacteriological warfare vaccine, which protects cattle against rinderpest, dread scourge of the Orient, has been sent to China through UNRRA, Maj. Gen. Alden H. Waitt, chief of the Army's Chemical Warfare Service, revealed.

Use of this war-developed protection against future famine in the Far East was made known when Gen. Waitt appeared as guest of Watson Davis, director of Science Service, on the CBS program, *Adventures in Science*.

"Rinderpest has many times decimated the cattle of great regions of Europe and Africa, leaving starvation in its wake," Gen. Waitt said. "The possibility existed that enemy agents would try to introduce this virus into the great cattle herds of the United States and Canada—and the paper balloons which floated over from Japan did not help to ease our anxiety. Our great difficulty was the lack of an effective vaccine, which could be produced in the quantity required to stop an epidemic."

Intensive research by our Special Projects Division, in collaboration with colleagues of the British Commonwealth, developed a revolutionary new method of producing the required vaccine in almost unlimited quantity.

"We no longer fear rinderpest in this country, for now its spread can be readily checked," Gen. Waitt said. "Of more immediate importance is the impact this discovery may have on the famine areas of India, China and the Pacific Islands. Now their cattle may be protected against this dread disease, and successfully employed as beasts of burden and as sources of food, in regions where they could not survive before."

A chemical that can save lives threatened by arsenic and mercury poisoning; an antidote to lethal doses of cyanide gas; and chemicals which promise to lead to better remedies for glaucoma, myasthenia gravis and Hodgkin's disease are also the peacetime benefits of wartime research in the Army's Chemical Warfare Service which were described by Col. John R. Wood, chief of the medical division, CWS, also a guest on the same program.

Science News Letter, April 20, 1946

CE FIELDS

MEDICINE

Vitamin Lack Seen As Cancer Factor in Women

► LACK OF VITAMIN B₁, or thiamin, may be the first link in a chain leading via the liver and female hormone to cancer of the uterus, it is suggested in a report by Dr. J. Ernest Ayre and Dr. W. A. G. Bauld, of the Royal Victoria Hospital and McGill University, Montreal. (*Science*, April 12.)

If the theory proves correct it should be possible, by two simple tests, to determine 1. whether the woman has cancer; 2. if not, whether she is likely to develop cancer; and 3. whether she has a deficiency of thiamin. If the tests show a dangerous precancerous linkage between low vitamin and high female hormone concentrations, prevention of cancer might be possible through corrective treatment.

The vitamin lack might operate to start cancer by damaging the liver, the Canadian investigators suggest. The damage might be too slight to be detected by present tests of liver function, yet might be severe enough to keep the liver from inactivating female hormone. This material might therefore accumulate in the body and cause cancer of the uterus.

Studies of 23 patients plus findings by various scientists from studies of animals gives, the Canadian scientists state, "excellent circumstantial evidence to suggest that the nutritional deficiency may have been a primary factor leading to the malignancy."

Science News Letter, April 20, 1946

PUBLIC HEALTH

Watch Out for Ticks As Weather Warms

► THOSE OF YOU living where warm weather has come unusually early this year need to watch out for ticks earlier than usual, because it is the warm weather that brings these dangerous disease carriers out of their winter quarters. Rocky Mountain spotted fever and tick paralysis are diseases that may result from tick bite.

If there are ticks in your vicinity, it would be wise to make night and morning tick inspection part of the daily

routine for the children and the family dog. Include any grown-ups who have been working in the shrubbery or underbrush or picnicking in the woods. Every part of the body and the clothing should be carefully inspected for ticks. If any are seen, use tweezers or piece of paper to remove them. Never use bare fingers as you can get the disease from handling infected crushed ticks.

Tick paralysis attacks children much oftener than grown-ups, the ratio being 10 to 1. It is thought to be due to a nerve poison which is produced by the tick and gets into the patient's body while the tick is attached for blood sucking.

The disease starts suddenly, sometimes with inability to walk or stand, sometimes with a kind of paralysis. Death may result in a few days. The important feature of treatment of this disease, physicians who have treated it state, is to find and remove the tick. If this is done early in the sickness, the patient will be well within one or two days. Delayed removal of the tick sometimes fails to save the patient.

Rocky Mountain spotted fever starts with a chill, headache, sweating, and pain in the abdomen, bones and muscles. Other symptoms are the mottled rash and fever. The sickness starts from two to 14 days after the virus causing it has entered the body.

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GENERAL SCIENCE

South Africa Organizes Research Council

► A SOUTH AFRICAN Council for Scientific and Industrial Research has been organized as a government body with Dr. B. F. J. Schonland, known for his researches upon lightning, as president.

The new body is an organization similar to councils that have been organized in Great Britain, Canada and Australia.

Attention will be given to development of agriculture, mining, and industry, as well as research in medicine, health and specialized scientific fields in universities and laboratories to be set up in the country.

While the new body is governmental in organization, it will administer research funds from industry and gifts intended to promote research.

Dr. Schonland will attend the British Empire Scientific Conferences in London in June as head of the South African delegation.

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GENERAL SCIENCE

Research Programs Need Governmental Support

► MAJOR RESEARCH programs must in future come to depend increasingly on government and industry for support, Prof. Hugh S. Taylor of Princeton University declared in an address before the University of Wyoming chapter of Sigma Xi, scientific research society of America. Privately endowed universities and other institutions, he explained, will no longer be able to carry the main burden of research because "the necessary techniques of modern science, involving the production and control of high energy sources, have become almost prohibitively expensive to endowed institutions."

Research looking to more or less immediate application to industrial problems can turn with confidence to industry for its support, Prof. Taylor told his audience. The first World War caused a general awakening to the wealth-giving possibilities of applied science, the interim between wars saw a great development of industrial laboratories and industrial fellowships in universities, and the second World War, just finished, added unmistakable emphasis to the lesson.

Support of basic research, without which the shorter-range programs of applied science must soon stagnate, offers somewhat more difficult problems, the speaker admitted. Fundamental research, he said, is rarely directly or immediately profitable, nor can it readily be made self-supporting. Its principal assets are long-range in nature; yet it is in such areas, free from the drive for profitable results, that freedom of inquiry and of spirit can best operate. Here, in Prof. Taylor's opinion, is where national and state support of research must come in.

Support of research, however, must not connote too close control by the supporting governments, he emphasized. Scientists must continue to be masters in their own households.

"But," he concluded, "masters in their own households, there lies upon them the paramount necessity of integrating their skills and their findings with the broad stream of life which flows outside the laboratories. In the free world to which we still dare to look forward we must integrate our skills with the social and spiritual aspects of human life and nature. That goal attained, we shall not lack either direction or support for the sciences."

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