



SUB-MICROSCOPIC EXPLORER—The electron microscope will be available to smaller laboratories, schools, hospitals and factories in this new desk size. Shown in this picture are Dr. V. K. Zworykin (seated left), associate director of the RCA Laboratories, Dr. James Hillier (seated right), young pioneer in electron microscopy, and Perry C. Smith, engineer.

penicillin's action to small wrinkled kernels.

First showing in this country was also given an electron microscope picture of the malaria parasite in the salivary gland of a mosquito at the stage when the next person bitten by the mosquito would get the parasite in his blood.

A slime organism that grows on gasoline along the walls of piping that carries this now precious fuel and causes some trouble was also made visible to the bacteriologists by the electron microscope.

The action of bacteriophage, unique germ-eat-germ substance reported at the meeting as a potent weapon against dysentery, at least in trials on mice, was

seen in another series of electron microscope pictures. One or more phage particles, these pictures showed, become attached to a germ and possibly enter it. There they multiply by a still unknown process. The cell membrane of the germ becomes weakened and destroyed until finally it bursts, throwing out cell contents including about 150 newly formed bacteriophage particles.

An entirely new desk-size electron microscope, smaller, cheaper and easier to operate than the large model, is now in production. This and an improved universal model were introduced at the meeting.

Science News Letter, May 13, 1944

MEDICINE

Rabbit Cancer Antibody

Tumor growth of non-virus origin can be suppressed in animals. At this stage of the work, no human application, such as vaccination against cancer, can be seen.

► **DISCOVERY** of a specific antibody which suppresses the growth of the Brown-Pearce cancer in rabbits is announced by Dr. John K. Kidd, of the Rockefeller Institute for Medical Research. (*Science*, April 28)

No human application, such as vacci-

nation against cancer, can be seen in the work at this stage. In fact, Dr. Kidd stated in an interview that it is "vastly too far away to have any foreseeable effect in human cancer."

The scientific importance of the discovery lies in the fact that the Brown-

Pearce cancer is not caused by a virus. This is probably the first time that an anti-body has been found to suppress such a cancer. Antibodies are substances that develop in the blood in response usually to invasion by a disease germ such as a virus or other microorganism.

Rabbits of the blue-cross breed could be vaccinated, as it were, against the Brown-Pearce cancer by injections of watery, cell-free extracts of the tumor. They developed the specific antibody in their blood after three or four such injections and then proved resistant, generally completely so, to a small dose of Brown-Pearce tumor cells implanted into their muscles a week or 10 days later.

Rabbits that had not developed the antibody did not have this resistance to the cancer. Animals that were resistant to the Brown-Pearce cancer were as susceptible as other rabbits to cells of other types of cancer.

The Brown-Pearce cancer cells have a constituent which has some of the characteristics of a virus, but Dr. Kidd is of the opinion that this cancer is not a virus tumor. Its distinctive constituent, which may be a protein, can be detected in test-tube experiments through its reaction with the antibody that appears in the blood of certain rabbits in whose body the tumor has been implanted.

When the distinctive constituent and blood serum containing the antibody are incubated together for two or three hours and then injected into a rabbit, the animal usually fails to develop a tumor, though it will do so when the distinctive constituent has been incubated with normal rabbit blood serum.

Dr. Kidd is now seeking similar material in other animal tumors. One, he has already found, the V2 carcinoma, yields a distinctive constituent substance that is not detectable in extracts of normal rabbit tissues or in those of other rabbit tumors, including the virus papillomas of the type from which the V2 cancer originally derived.

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ELECTRICAL ENGINEERING

One-Pound Generators Float Weather Balloons

► **ONE-POUND** hydrogen generators now furnish the lifting power needed to float into the sub-stratosphere weather-recording balloons used by the Army Signal Corps to chart the weather accurately.

Inflation of these balloons under difficult conditions at the front lines has

been made possible by an ingeniously contrived device, the hydrogen generator container, designed in the laboratory of the American Can Company's war products division in collaboration with Signal Corps officers.

Adaptable to almost instant use in any field of action where water is available, this generator replaces the former hydrogen tank which, because of its weight and bulk, required trucking.

A companion device to the generator is a new battery can which makes it possible to fill automatically the batteries with acid by packing them in a vacuum, just as foods are packed for safe-keeping. When the can is punctured, acid is drawn by the vacuum into eighteen tiny holes in the battery which is held clear of the sides of the can by fluted partitions.

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AERONAUTICS

New Helicopter Has Stabilizing Device

► A NEW HELICOPTER, which incorporates important principles for stability and for precision control, has just been announced by the Bell Aircraft Corporation, where the stability principle was developed and the new flying machine constructed. The company plans to build helicopters for commercial and private flying after the war, but until the war is over the entire production will be for military uses.

The stabilizing device, developed by Arthur M. Young of the Bell Aircraft Corporation, is placed between the mast and the rotor of the helicopter, with the result that the rotor tends to remain in a horizontal plane regardless of the angle with the earth of the fuselage itself. This gives a stability that increases simplicity of controls.

The new Bell machine uses a Franklin air-cooled engine, rated at 160 horsepower, mounted vertically behind the pilot's compartment. It uses a two-bladed rotor with a simplified hub design. The rotor is free-wheeling, as on other helicopters, and when the engine stops the blades run free in autorotation.

Rotor, mast, transmission and engine are mounted integrally, and are set in the fuselage in soft rubber mounts in order to decrease vibration. The span of the rotor is 33 feet. A conventional anti-torque five-foot propeller on the tail is two-bladed, and is made of solid wood, as are the blades of the rotor.

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NUTRITION

One Year at Work Needed

► THE PATIENT who has suffered from pellagra or any other vitamin deficiency disease cannot be considered "cured" until he has been steadily at work for one year, Dr. Tom D. Spies, director of the nutrition clinic, Hillman Hospital, Birmingham, Ala., and associate professor at the University of Cincinnati College of Medicine, declared at the University's 125th anniversary celebration.

When these patients are treated only during a short phase of their disease and discharged and allowed to go back to their old environment as soon as they feel well, they break down again. This, Dr. Spies suggested, may have been the basis of the old saying, "Once a pellagriner, always a pellagriner."

At least 400 persons who were essentially invalids have been rehabilitated at the nutrition clinic to the point where they are now doing full-time work, Dr. Spies reported. Of the 400, 30 are in the armed forces, 82 are in agriculture, 97 in domestic service and 191 in industry.

Synthetic vitamins are often life-saving and are needed for critically ill patients. Eventually, however, patients with deficiencies have to have a suitable diet.

"We not only recommend it but see

that they get it," Dr. Spies stated in emphasizing the follow-up treatment of patients after they have recovered.

There were no deaths among the 16,121 patients who visited the nutrition clinic during the calendar years 1942 and 1943, although at the beginning of the studies there the mortality rate in a series of severe uncomplicated cases was 54%.

Persons with malnutrition have a number of deficiency diseases operating simultaneously, Dr. Spies declared. They recover much faster when all the deficiencies are recognized and treated.

Stressing the importance of early diagnosis, before the severe, textbook symptoms develop, he said that he suspects that these conditions often escape detection.

Most dramatic are the responses to specific nutritional treatment of persons with mental disease as a result of vitamin deficiency. Dr. Spies gave as an example of this the case of a man "who had been incarcerated in a custodial institution for the legally insane for 14 months. We were able to have his mind functioning properly within 72 hours after treatment was begun," he stated.

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POST-WAR FAMILY CAR?—The stability device incorporated in the Bell Aircraft Corporation's helicopter makes it possible for Arthur M. Young, who developed the new machine, to study its operation as it hovers motionless in gusty air.