tween distribution of population and agricultural productivity, Jacks points out. By and large, land fertility increases with the size of towns, not with the number of persons engaged in farming. At first, crop land does little more than supply food for the actual cultivators. Little or nothing is left to put back into the land out of which something is taken by each successive crop. Exhaustion comes soon and the people must find new land.

Then a surplus population flocks together to establish towns supported by industries. They require some of the farm products, and this need tends to make agriculture more stationary in the neighborhoods of towns. Actual money flows back to the farmers. They are able to buy fertilizers or apply more effective measures to prevent soil depletion and raise bigger crops. The process is continuous as long as the industrial centers continue to pour more and more back into the land. Jacks continues:

"Will the world of a hundred years hence be able to feed the 6000 million people who will then be in it? The answer is yes, provided most of them live in towns and produce enough wealth to pay for the food they need. If they offer enough money for their food, the food will be produced."

Coeducation in Turkey

Robert College and the American College for Girls in Istanbul, Turkey, have merged, paving the way for a Western-style coeducational college, effective next September. Two of the oldest American schools in the Near East, the colleges have a combined enrollment of 1800. Robert College this year has 1150 men students, while 650 women attend the College for Girls. Alfred Ogden of New York City was elected chairman of the new board. Duncan S. Ballantine will continue as president.

Although courses were designed primarily for young Turks, students from 50 nations have studied at the two colleges. Robert, founded in 1863, claims to be the first American college established overseas. It is chartered under the Board of Regents of New York State. The American College for Girls was given a charter under Massachusetts law in 1891. The campuses lie less than 3 miles apart on heights overlooking the Bosphorus.

Homicide in the United States

In contrast to the marked increase in other major crimes, the incidence of homicide in the United States has decreased in the period since World War II, according to statisticians of the Metropolitan Life Insurance Company. The homicide rate fell about one-fifth between 1946–47 and 1955–56, from 6.1 to 4.8 per 100,000 of population.

The relative decline was greater for white than for nonwhite persons, and for each race was considerably greater for males than for females. Among white males, the decrease amounted to one-fourth; among nonwhite males it was one-fifth.

Among white people, the homicide rates vary but little in the range of ages from early adult life through middle age, and decrease only moderately at the older ages. Among nonwhites, and particularly for males, the toll from homicide rises to a definite peak in the late 20's and early 30's, and then falls rapidly with advance in age.

Despite the marked increase in juvenile delinquency in recent years, the homicide rate at ages 15–19 decreased. Moreover, the rate at these ages is much lower than that for most adult age groups.

Germ-Free Laboratory

A new and simplified germ-free laboratory, believed to be virus-proof as well, has been successfully tested at the University of Michigan Medical Center. A goal of biological scientists since the turn of the century, the apparatus is an outgrowth of two other systems developed in the United States and Sweden.

Guinea pigs born in the sterile laboratory last September have survived. The achievement recalled stormy debates that raged early this century on the proposition that all animal life depends, for its very existence, on certain "beneficial bacteria" prevalent in normal life. The apparatus is a sealed metal and glass box about the size of a deep-freeze cabinet. It was designed by Richard Horton, a former postgraduate student at Michigan who is now with the National Institutes of Health.

Nothing rots inside the miniature laboratory. Excess food and animal feces have remained for weeks without decomposing and without odor. Guinea pigs were delivered by Caesarean section directly into the cabinet, employing an intricate surgical procedure that used a plastic membrane to prevent possible contamination by the mother's body. By means of sealed-in rubber gauntlets, investigators can work in the sterile area.

A pressure compartment attached to one end of the unit permits steam sterilization of food and equipment. All air entering the cabinet is first heated to temperatures above 750°F and then cooled. These precautions kill all living organisms, and have prevented contamination for more than 4 months. It is believed, though not tested, that the apparatus will prove as invulnerable to environmental viruses as it is to germs.

News Briefs

The AAAS has received a $250,000 grant from the Carnegie Corporation of New York to continue until 1961 its nationwide program to improve the teaching of science and mathematics in the secondary schools. The Science Teaching Improvement Program is headed by John R. Mayor, director of education for the AAAS. For details of the program's first years—it was launched in 1955 with Carnegie support—see the article on page 1262 of the 21 November issue of *Science*.

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Dedication exercises were held on 5 December for the U.S. Department of Agriculture's new National Seed Laboratory, just completed at Colorado State University at Fort Collins. The laboratory will provide storage for seeds of thousands of different plants—representing the world's most valuable food, feed, pasture, fiber, and tree crops—for use as breeding stock. The Crops Research Division of USDA's Agricultural Research Service will administer the new facility. Operations will be supervised by Edwin James, director of the laboratory and Louis N. Bass, seed physiologist.

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The Woods Hole Oceanographic Institution reports that its new 214-foot research vessel *Chain,* the fourth ship in the institution's ocean-going fleet, left on 6 December for a 16-day cruise between Nova Scotia and Bermuda. The *Chain,* equipped with four large laboratories, has accommodations for a crew of 33 and 28 scientists. She has a cruising range of 10,500 miles. On 2 January she will begin a 3½-month trip for the International Geophysical Year in the southern South Atlantic, and on 1 May she will depart for a 3-month cruise to study the bottom of the Mediterranean.

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Two vocational guidance booklets on careers in chemical engineering and chemistry have recently been published by the Chemical Institute of Canada. The booklets discuss job opportunities, salaries, and the two professions in general. For free copies, write to the institute at 18 Rideau Street, Ottawa 2, Ontario.

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The Medical Research Center at Brookhaven National Laboratory was dedicated on 16 December, following a 2-day conclave of deans of medical colleges. The dedicatory address was de-

livered by Shields Warren, pathologist at New England Deaconess Hospital and professor of pathology, Harvard Medical School. John A. McCone, chairman of the Atomic Energy Commission, also spoke at the ceremonies. The $6,500,000 center includes a tank-type reactor, a 48-bed hospital for research patients, and laboratories for studies in biochemistry, medical physics, microbiology, pathology, and physiology. The reactor is the first in this country to be designed specifically for medical research purposes.

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The Soviet Union has converted one of its submarines into a scientific laboratory and is sending the vessel on its first prolonged mission this month. An article in *Pravda,* which did not provide an itinerary, said that the submarine will be in the service of the Research Institute of Marine Fishing and Oceanography. The report announced that the vessel would collect data in the seas and oceans and would gather information on new fishing districts.

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Approximately 18,000 high school and college teachers of science and mathematics will benefit during the summer of 1959 from teacher training programs sponsored by the National Science Foundation at 350 institutes in 255 educational institutions. Some $21 million has been awarded for the support of the summer institutes, which will be held in all 49 states, Hawaii, Puerto Rico, and the District of Columbia. Roughly 300 of the institutes will be open only to high school teachers. Approximately 30 will be for college teachers only, and about 20 will be for both high school and college teachers. Sixteen thousand high school teachers and 2000 college teachers will participate.

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Televiewers will see the first rocket observations of a solar eclipse and the first above-the-atmosphere views of the sun's activity during an eclipse, when "High Adventure with Lowell Thomas" is broadcast on 10 January, 10 to 11 P.M. (E.S.T.) on the CBS Television Network. The television film was recorded by Thomas and two cameramen from the decks of the U.S.S. *Point Defiant* off the coast of Puka-Puka, an atoll in the Cook Island group in the South Pacific Ocean. The expedition was conducted by the Naval Research Laboratory.

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Herbert Kubitschek of Argonne National Laboratory has modified a commercial electronic cell counter so that it can be used for the counting and sizing of bacteria as individuals. This has opened the way for the counter's use in geological, meteorological, and agricultural studies.

Scientists in the News

RENATO DULBECCO, professor of biology at California Institute of Technology, has been named by the Board of Directors of City Trusts of Philadelphia, Pa., to receive the John Scott Award for his development of a method for demonstrating the presence of viruses in tissues. His method provided a technique for the production of plaques with animal cells. This technique permits an accurate determination of the activity of animal viruses and has played an important part in the effort to combat virus diseases. Salk and others have used this method, or modifications of it, in the preparation of vaccines. The award will be presented at the zoologists' dinner meeting that is to be held on 29 December in Washington, D.C., as a part of the AAAS annual meetings.

The John Scott Award was established by an obscure Scotch chemist of the same name, who resided in Edinburgh until his death in 1816. He bequeathed $4000 to the city of Philadelphia, the income of which was to be "laid out in premiums to be distributed among ingenious men and women who make useful inventions. . . ." By 1917, the fund had grown to $100,000. This year, awards of $2000 may be made, but the standard award has been set at $1000.

PAUL GYORGY, professor of pediatrics at the University of Pennsylvania and chief of the Pediatric Service of the Philadelphia General Hospital, is to receive the degree of honorary medical doctor from the University of Heidelberg, Germany, of which he is an alumnus and former faculty member. The degree is conferred rarely, usually in recognition of a particularly outstanding achievement in the field of medicine. Gyorgy is being honored for his many scientific achievements, which include the discovery of riboflavin.

Another recipient of the special degree will be OTTO WARBURG of Berlin, Germany, a Nobel laureate and developer of the Warburg apparatus, which is used in research laboratories all over the world.

Major General JOHN B. MEDARIS, commanding general, U.S. Army Ordnance Missile Command, received the Michael I. Pupin Anniversary Medal of the Columbia Engineering School Alumni Association on 2 December for "distinguished service to the nation."

MAURICE ROY, director, Office National d'Etudes et de Recherches Aeronautiques, accepted the invitation of the Institute of the Aeronautical Sciences to deliver the 22nd Wright Brothers Lecture on 17 December, 55th anniversary of the Wright's famous flight. The lecture, "Means and Examples of Aeronautical Research in France," was heard at the Smithsonian Institution, Washington, D.C. It will be repeated at IAS section meetings in Cleveland, Ohio, on 18 December; Dallas, Tex., on 19 December; and Los Angeles, Calif., on 22 December.

ALEXANDER H. LEIGHTON, professor of psychiatry at Cornell University, delivered this year's Thomas William Salmon lectures at the New York Academy of Medicine. His subject was "An Introduction to Social Psychiatry," which he discussed in an afternoon and evening lecture on 4 December.

In celebrating its 100th anniversary this year, E. R. Squibb & Sons is sponsoring visiting lectureships in the United States by foreign scientists, all well-known specialists in particular disciplines. Outstanding American scientists are also included in the program. Virtually every medical school in the country has arranged to have one of the lecturers appear before faculty and student groups sometime during the 1958–59 academic year.

Lecturers from abroad who have already completed their tours are as follows: MACDONALD CRITCHLEY of the National Hospital, London, England, "The Study of Language Disorders Past, Present and Future"; and LUIS F. LELOIR of the Biochemistry Research Institute, Buenos Aires, Argentina, "The Role of Uridine Nucleotides in Metabolism."

In February and March, JOHN C. ECCLES of the John Curtin School of Medical Research, Australian National University, Canberra, will discuss "Problems of Organization and Plasticity at the Simplest Levels of the Mammalian Nervous System"; JAMES DANIELLI, professor of zoology at King's College, University of London, London, England, will discuss "Designing of Drugs for the Chemotherapy of Cancer"; FEODOR LYNEN of the Max Planck Institute for Cell Chemistry, Munich, Germany, will discuss "The Function of Coenzyme A in Fat and Lipid Metabolism"; and ANDRE M. LWOFF of the Institute Pasteur, Paris, France, will discuss "Factors Influencing the Evolution of Viral Diseases at the Cellular Level and in the Organism."

In April and May, JOHN H. GADDUM of Edinburgh University, Edinburgh, Scotland, will speak on "The Pharmacological Analysis of Tissue Extracts," and JOHN F. BROCK of the University of Cape Town, Wirnher & Beit Medical Laboratories, Observatory Cape, Union of South Africa, will speak