

GENERAL SCIENCE

Science Forecast for 1966

Danger of food shortage will become apparent next year, Medicare will go into effect, slow acting viruses possible sclerosis cause, space program continues.

By WATSON DAVIS

► DURING 1966 apprehension will probably grow that instead of worrisome food surpluses, the world and the United States will need to grow more rather than less food in the coming years.

A continual rise in world population is creating more mouths to feed, and the amount of food that is being grown currently will not be sufficient to prevent shortages which may threaten or create famine in the most populated and least developed areas like China, India and Latin America.

There will be serious consideration of a reversal of our agricultural program. The drive will be to increase food production rather than limit it. This is imminent because some of the surpluses built up over the last two decades are being used to prevent hunger in other parts of the world. A minimum food surplus is needed to provide an "ever normal granary" against an always possible reduction of crops due to drought and other disasters.

Better varieties of food plants, control of insect pests, and greater utilization of land available, including use of fertilizer, will be accented during the year, probably in a broad Federal program and international action.

Population Control

Along with greater agricultural production, there will be intensive efforts to bring about population control by education and the application of birth control methods in all parts of the world, using relatively new devices such as intrauterine loops that allow families to have children when and if they wish them.

Medical research will be intensified on drug resistance and on new drugs that could meet the challenge posed by new, resistant forms of bacterial and protozoal infections. Work also will expand on viral chemotherapeutic agents needed to control a number of infections at the onset of illness.

Reports could be forthcoming on the possible role of slow-acting viruses on chronic degenerative neurological diseases in man, such as multiple sclerosis and amyotrophic lateral sclerosis. Both multiple sclerosis and muscular dystrophy could be found closely related to a virus-caused disease "scrapie," in sheep or to a disease in mink.

Efforts to learn more about German measles, or rubella infection, will be intensified. A good start may be made toward an effective vaccine against this disease that causes abnormal babies when women contract it in the early months of pregnancy.

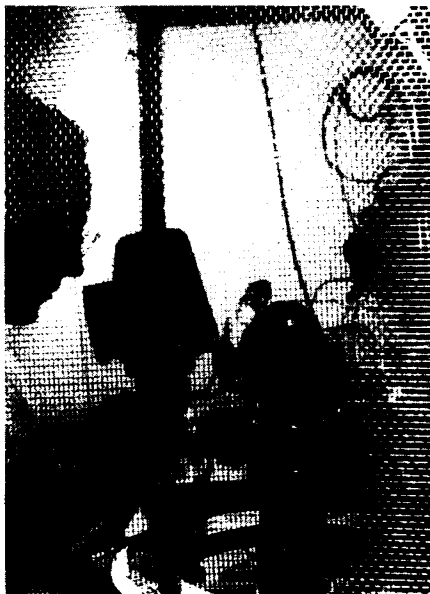
There will be efforts to find ways of controlling some of the more serious parasitic infections, such as schistosomiasis and filariasis, which cause a vast amount of debilitating disease in many areas of the world.

Medicare, coming into operation at mid-year, will bring better medical attention to many over 65. The new and improved services will be accompanied by some changes in the organization of medical practice, but physicians and hospitals will soon readjust to the new situation.

In the agricultural field, a painless and harmless method for using super-cold for branding livestock is expected to be put into use.

Continued exploration of the mechanisms of heredity and the chemical constitution of living matter will bring us closer to understanding and perhaps exerting some control over live processes.

The most precise picture yet of the earth's size and shape will be given in a report from the Smithsonian Astrophysical Observatory, made possible in large part by satellite geodesy.



DuPont

THE ELECTRICAL activity of isolated nerve cells is being measured by Dr. Richard Yates, biochemist at Du Pont's Central Research, who is seeking ways to enhance learning and memory transfer. The Faraday cage surrounding the test apparatus insulates against stray electrical energy. The research will continue into the next year, at least.

New information about visitors from outer space that flash into the solar system will come from the 1965 Comet Ikeya-Seki, observed with new devices and instruments developed for space exploration.

The study of water on a global scale, being conducted in the international hydrological decade, will bring new information, some of which may be useful in connection with local weather conditions and climatic variations, such as the drought, which has lasted for several years in northeastern United States. There will be legislation aimed at better and wider coordination of water resources studies, development and management.

Volcano Prediction

Geological studies directed to the prediction of volcanic eruptions and earthquakes will progress. Part of this research has been stimulated by the worldwide distribution of seismographs needed to detect man-made earth vibrations resulting from atomic explosions.

The earthquake areas of California, Nevada and Alaska provide a natural laboratory for the development of earthquake prediction.

A site will be chosen by the U.S. Atomic Energy Commission during the year for the 200-billion-electron-volt accelerator, and funds may be authorized for a start of the construction, which will cost \$350 million.

The gigantic linear accelerator at Stanford University can be expected to begin operations at a level of 20 billion electron volts.

Greater use of the heat of fluorescent lighting as a primary source of building heating will be advanced, with architects planning such lighting to provide for both illumination and warmth for future major buildings.

Advance in Telescopes

The world's first large fused quartz mirror, 151-inch diameter, for Kitt Peak National Observatory, near Tucson, Ariz., will be cast, which will be an advance in telescope making because quartz is less sensitive than glass to temperature changes.

There will be progress in attempts to modify the weather locally to bring needed rain, abort storms and change atmospheric conditions for special purposes such as sports competitions and other public events. There will be growing attention to the legal, political and social consequences of the new development.

Archaeologists will continue to explore the civilizations of the ancient peoples of the past, particularly in the Near East, East Africa and Middle America.

The exploration of space will continue during the year with three or four Gemini shots, numbers 8 through 10 or 11, preparatory to the attack on the moon by human astronauts about four years from

now. While Project Gemini is paving the way for the Apollo landing by providing practice time, a series of Surveyor spacecraft will soft-land on the lunar surface and radio data back to earth. The first two or three should be launched in 1966.

No planetary probes are planned, nor will any more spacecraft be sent to Mars until 1971.

The Communications Satellite Corporation may launch two more Early-Bird-style satellites, but they will be capable of carrying many more channels simultaneously.

• Science News Letter, 88:403 December 25, 1965

GENERAL SCIENCE

President Names 1965 Medal of Science Winners

► PRESIDENT LYNDON B. JOHNSON has named 11 scientists as recipients of the National Medal of Science. Among those selected is the late Dr. Hugh L. Dryden. It is the first time the award has been made posthumously.

The National Medal of Science, established in 1959 by the 86th Congress, is awarded by the President to persons "who in his judgment are deserving of special recognition by reason of their outstanding contributions to knowledge in the physical, biological, mathematical or engineering sciences."

The recipients were chosen on the basis of recommendations received from the President's Committee on the National Medal of Science, chaired by Dr. H. E. Carter of the University of Illinois. They are:

Dr. John Bardeen, professor of physics and electrical engineering at the University of Illinois and co-recipient of the Nobel Prize in Physics in 1956 for his "contributions to physics," especially in the "theory of electrical conductivity in solid materials."

Dr. Peter J. W. Debye, professor emeritus of chemistry at Cornell University and winner of the Nobel Prize in Chemistry in 1936, for "his contributions to the use of X-ray and light scattering analysis that have given man clear insight into the structure of complicated large molecules."

Dr. Hugh L. Dryden, deputy administrator of the National Aeronautics and Space Administration until his death on Dec. 2, for his work that contributed to the "fundamental understanding of boundary layer phenomena," and also for his outstanding efforts toward international scientific cooperation and understanding.

Dr. Clarence L. Johnson, vice president for advanced development projects at Lockheed Aircraft Corporation, for his designs of advanced aircraft, such as the A-11, that are "revolutionary and have opened up new domains in the possibility of flight."

Dr. Leon M. Lederman, professor of physics at Columbia University, for his studies on the properties and interactions of mesons, and "his participation in experiments involving asymmetry of beta decay and the discovery of two different kinds of neutrinos."

Dr. Warren Kendall Lewis, professor emeritus of chemical engineering at the Massachusetts Institute of Technology, who is generally regarded as the "father" of modern chemical engineering, for "his dis-

coveries in distillation and catalytic cracking which have been responsible for the modern development of the petroleum industry."

Dr. Peyton Rous, Rockefeller Institute, the world's foremost proponent of the virus theory of cancer for his work that led to the "first observation that a virus was responsible for the development of cancer in a mammal."

Dr. William W. Rubey, professor of geology and geophysics at the University of California, Los Angeles, for his contributions to the "discovery and definition of basic geological principles to an extent equaled by few others."

Dr. George Gaylord Simpson, Agassiz professor of vertebrate paleontology at Harvard University, for his pioneering work in "synthesizing the findings of genetics and paleontology to the end of approaching the 'how' rather than the 'what' of evolution."

Dr. D. D. Van Slyke, research chemist at the Brookhaven National Laboratory, for his development of "a large number of analytical methods which have been fundamental to the practice of modern biochemistry."

Dr. O. Zariski, professor of mathematics at Harvard University, for the very difficult task of "organizing algebraic geometry on a solid basis."

• Science News Letter, 88:404 December 25, 1965

ECOLOGY

Some Alaskan Reindeer Unfit for Santa's Sleigh

See Front Cover

► A HERD of 200 reindeer that arrived in Hagemester Island, Alaska, last month are unlikely to find themselves assigned to Santa Claus' sleigh, since they had to be flown most of the way by the Air National Guard.

Everyone is familiar with Santa's rare flying reindeer (of which only eight—nine, including Rudolph—are known to exist), but for many years even the conventional variety have been scarce.

Introduced from Siberia in 1890, reindeer numbered 600,000 by 1936, only to have indiscriminate hunting and poor management deplete their number to 19,000 by 1952. The Bureau of Indian Affairs of the U.S. Department of the Interior then stepped in and has managed to roughly double the count since that time.

The Hagemester Island group, seen on this week's front cover, came from a herd maintained by the Bureau on Nunivak Island. They were given as a loan to three Eskimos, who will care for the herd and pay back the loan, in reindeer, as the herd grows.

If the experiment is successful, judging next June by the number of fawns, similar projects will be started in other areas.

The purpose of the reindeer loan is not only to preserve the reindeer, but also to boost the Alaskan economy, which the Interior Department estimates could handle three times the present reindeer production. No one hunts the reindeer—they are considered livestock, not big game—and only Alaskan Eskimos may own them.

• Science News Letter, 88:404 December 25, 1965

Questions

ASTRONOMY—When and where will the eclipses of the sun occur in 1966? p. 406.

GENERAL SCIENCE—Why is quartz more suitable for telescope mirrors than glass? p. 403.

MEDICINE—What food is believed to be a possible cause of cancer of the stomach in Japan? p. 402.

In what two ways may vitamin E deficiency occur? p. 402.

METEOROLOGY—What legal problems may arise from artificially changing the weather? p. 405.

ZOOLOGY—From what area were the Hagemester Island reindeer imported? p. 404.

SCIENCE NEWS LETTER

VOL. 88 DECEMBER 25, 1965 NO. 26

Edited by WATSON DAVIS

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N.W., Washington, D. C. 20036. North 7-2255. Cable Address: SCIENSERV.

Subscription rates: 1 yr. \$5.50; 2 yrs., \$10.00; 3 yrs., \$14.50; ten or more copies in one package to one address, 7½ cents per copy per week; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage. Change of address: Three weeks notice is required. Please state exactly how magazine is addressed. Include zip code.

Copyright © 1965 by Science Service, Inc. Reproduction of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicated services issued by Science Service. Science Service also produces and distributes THINGS of science (monthly), produces and publishes books, and conducts the National Science Youth Program. Printed in U.S.A. Second class postage paid at Washington, D. C. Established in mimeograph form March 13, 1922. Title registered as trademark, U. S. and Canadian Patent offices. Indexed in Reader's Guide to Periodical Literature, Abridged Guide, and the Engineering Index. Member of Audit Bureau of Circulation.



SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Wallace R. Brode,*** Washington, D.C.; Bowen C. Dees, National Science Foundation; Athelstan F. Spilhaus, University of Minnesota. Nominated by the National Academy of Sciences: Harlow Shapley, Harvard College Observatory; Detlev W. Bronk, Rockefeller Institute; Henry Allen Moe, The Clark Foundation. Nominated by the National Research Council: Leonard Carmichael,* National Geographic Society; Eric A. Walker, Pennsylvania State University; Glenn T. Seaborg, U.S. Atomic Energy Commission. Nominated by the Journalistic Profession: Gordon B. Fister, Allentown (Pa.) Call-Chronicle; Ralph B. Curry, Flint Journal; O. W. Riegel, Washington and Lee University. Nominated by the Scripps Estate: Ludwell Denny, Scripps Howard Newspapers; Edward W. Scripps II,** Edward W. Scripps Trust; Edward J. Meeman, Memphis Press-Scimitar. *President, **Vice President, ***Treasurer.

Staff—Director: Watson Davis. Assistant Director: Dorothy Schriver. Writers: Elinor Betters, Jonathan Eberhart, Ann Ewing, Faye Marley, Patricia McBroom, Barbara Tufty, Judith Viarst, Ruby Yoshioka. Science Youth Division: Joseph H. Kraus, Lloyd Ulmer. Photography: Fremont Davis. Production: Marcia Nelson. Syndicate Sales: Forrest L. Snakenberg. Librarian: Margit Friedrich. Interlingua Division in New York: Alexander Gode, 80 E. 11th St., GRamercy 3-5410. Advertising Manager: Fred A. Moulton, METropolitan 8-2562, Washington, D.C.