

VITAL STATISTICS

Population Only Slightly Affected by Longevity

► THE WIDELY ACCEPTED belief that man's capacity to survive to a ripe old age is creating an oversized older population appears to be mythical.

In an analysis of the U.S. population at the American Public Health Association meeting in Chicago, it was revealed that mortality rates in themselves really have little effect on the population. Major changes in population growth and age result mainly from the birth rate.

The relative importance of mortality and fertility was reported by Albert I. Hermalin of Princeton University, who made a study under a partial grant from the National Institute of Mental Health.

Mr. Hermalin surveyed the effect of fewer deaths from 1900 to 1960. Using these statistics, he estimated the future effect of long life-spans on the U.S. population.

He concluded that a decline in death rate from 1960 figures will not change the population to any great extent, either in size or age.

In the first half of the 20th century, the greatest advances in staving off death benefited the young—especially young women capable of having children. The effect of declining mortality was to increase the population considerably and also make it younger. One life saved actually meant three or four.

Now advances are expected to occur primarily in the over-50 segment of the population. Their increased longevity will have very slight effect on population growth, reports Mr. Hermalin.

For instance, if not a single woman should die between 1965 and 2000 and if there were a low birth rate—about 2,600 babies per 1,000 women—the female population would increase only by 5 million or three percent, over what would be the case should current trends continue. Women now have something like 3,500 children per thousand.

Longer lives among persons in their 50's and 60's also have small effect on population age.

Mr. Hermalin estimates that there probably will be a smaller proportion of people over 65 in the year 2000 than there are now.

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CONSERVATION

Forests Have Vital Role In Developing Countries

► FORCEFUL MANAGEMENT of wooded areas and forest industries is essential to close the widening gap between the "have," or developed countries, and the "have-not," or newly developing countries.

Many developing countries have, or can economically create, a raw material base for developing forest industries to greatly boost their economies, the North American Forestry Commission meeting in Washington, D.C., was told by Dr. Nils A. Osara, director of the forestry and forest products division of the Food and Agriculture Organization of the United Nations.

Canada, Mexico and the United States are members of the Commission, which is one of six regional forestry groups organized by FAO to facilitate international cooperation and rapid exchange of information on forest resources.

The "have-not" countries can greatly benefit from counsel, capital and assistance in learning how to develop their forests and to combat such destructive forces as insects, fires and careless depletion of trees, Dr. Osara said.

The forest lands of the United States are a cornerstone of our Great Society, said Edward P. Cliff, chief of the Forest Service, U.S. Department of Agriculture. For three centuries, U.S. forests have been among the major building blocks of our society. Today one out of every three acres in the U.S. is forest land that gives the public such benefits as timber, water, wildlife, livestock forage and recreation opportunities.

Much progress has been made in the last few years to retain the beauty and benefits of the forests, Mr. Cliff said. Research is underway to develop biological or improved chemical controls to destroy forest-blighting insects without danger to other forms of life.

Forest managers are considering better methods of caring for and preserving wilderness areas, of using land for recreational purpose as well as for timber.

Tree stocks are being improved, and greater care is being taken in cutting trees to insure an adequate supply of quality timber for the future.

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TECHNOLOGY

Sodium Vapor Used for Efficient Light Source

► A SODIUM VAPOR electric lamp, reported to give 50% more light than mercury vapor tubes, will be available in January for industrial and outdoor lighting.

The new lamp is made possible by a white, translucent ceramic that can be shaped into a tube looking like a king-sized cigarette.

Stadiums of the future can have two or three times as much light with the same number and size of fixtures being installed today if the new lighting is used.

Called Lucalox, the new lamp was developed by researchers at General Electric Company in Nela Park, Ohio. The lamp's high output allows a reduction in the number of bulbs, fixtures and wiring needed to light a specific area.

One 400-watt Lucalox lamp provides as much light as 13 fluorescent tubes, each of 40 watts. The light produced is golden white. The lamp is not expected to compete immediately with the familiar 25-cent light bulb for home use.

This initial, 400-watt Lucalox bulb has a rated life of 6,000 hours and will burn almost as brightly at the end of rated life as when it was first turned on, they said.

When the current is turned on, metallic sodium on the inside walls of the tube is converted into a gas and the light is created as the electricity jumps through the vapor.

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IN SCIENCE

PUBLIC HEALTH

Economic Growth Brings Industrial Diseases

► "CIVILIZING" the underdeveloped countries can bring diseases which result from industrialization.

It would be tragic indeed if technologic and economic growth meant the replacement of the diseases of scarcity by the diseases of affluence, Prof. Rene Jules Dubos of Rockefeller University, New York, warned in Washington, D.C.

He said that industrialization and urbanization will bring such environmental stresses as air and water pollution, to underdeveloped countries.

Disruption of ancestral customs and emotional upsets arising from unfamiliar working conditions also follow the establishment of new industries.

"Adaptability is by definition an asset for survival," Dr. Dubos said. "But paradoxically it constitutes in certain cases a heavy handicap for cultural and economic growth. . . . Unfortunately, adaptation to the stresses of the present often has to be paid for by physiological misery in the future."

Both the pollution problem and the problem of malnutrition can have "distant consequences of far-reaching importance," the scientist pointed out. Unconsciously people who have adapted to low food intake tend to restrict their physical and mental activity so as to reduce their nutritional needs. They become adjusted to undernutrition by living less intensely.

Physical and mental apathy and other forms of indolence often constitute a form of physiological adjustment to malnutrition, especially when this has happened very early in life.

That these traits are of racial or climatic origin is merely an assumption.

Dr. Dubos sounded a warning that "social action must be guided by biomedical wisdom" and said that without this guidance social reforms are likely to be misdirected or fail altogether. At best they can benefit only a very small percentage of the population.

"Contrary to general belief, life expectancy past the age of 45 has not increased significantly anywhere in the world—not even in the social groups that can afford the most elaborate medical care," the scientist stated.

Cancer, heart and vascular diseases and other prevalent ailments are keeping the majority of people from living really long lives even in the richest countries.

What people of the emerging nations need in order to improve their health is not great modern new hospitals but modern medicine, sanitation and education in the basic elements of public health, Dr. Dubos said.

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E FIELDS

PUBLIC SAFETY

Autumn Bird Migration Brings Hazards to Planes

► THE ANNUAL AUTUMN "bird warning" has been issued to pilots by the Federal Aviation Agency.

During the next several weeks, pilots will need to be especially alert to the dangers of the large flocks of migratory waterbirds flying south for the winter.

Whistling swans, Canada geese, snow geese, mallard ducks, pintail ducks and double-crested cormorants are some of the large birds which may run interference.

Whistling swans are one of the largest species of migrating waterfowl in North America, averaging more than 15 pounds in weight. They often fly in a V-formation, below 10,000 feet and in flocks of 50 to 100. Several years ago a whistling swan smashed through a horizontal stabilizer of an airliner and caused it to crash.

Pilots are urged not to fly directly below migrating flocks of these birds, since they tend to dive when closely approached by aircraft, the FAA warned.

Extensive biological studies on the dangers of migrating birds crashing into aircraft are being conducted for FAA by the Department of Interior's bureau of sport fisheries and wildlife. This research will provide more accurate information on the birds' habits of migrating, such as how high they fly, when they fly, what routes they take and in what formations.

Research is also underway at the FAA's National Aviation Facilities Experimental Center to improve the ability of aviation airframes and engines to sustain damage from birds.

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PUBLIC HEALTH

Animals Fed Sucaryl Grow More Slowly

► ANIMALS FED the artificial sweetener calcium cyclamate, or Sucaryl, did not grow as fast as control animals receiving the same amount of caloric intake. Their growth rate was actually 20% to 30% less.

This report from the Wisconsin Alumni Research Foundation, Madison, brings up the problem of human weight reducers. Do these test results mean that non-caloric sweeteners such as saccharin and Sucaryl will keep down the pounds?

The animal research, reported in *Nature*, 208:81, 1965, was done with rats. Although the researchers are not sure whether the cyclamate interferes with nutrient absorption in the gastrointestinal tract or has a toxic effect, they are sure that the animals' slower growth rate resulted from including cyclamate at 10% levels in their diet.

SCIENCE SERVICE reported in September 1964 (see SNL 86:196, Sept. 1964) that arti-

ficial sweeteners were considered safe by the U.S. Food and Drug Administration if used in small amounts for "special purpose foods."

Sucaryl is the trade name for either sodium or calcium cyclamate, without saccharin. It is available in bulk powder or granular form for the manufacture of dietetic products in diabetic, weight-reducing or other sugar-restricted diets. It is non-caloric, or nonnutritive, and side effects are said to be nontoxic.

But physicians were also warned to discourage the use of either saccharin or cyclamate for general consumption because artificially sweetened food and drink had become popular, even with those who did not need to limit caloric intake.

FDA bases its safety evaluation on a report originally made by the National Academy of Sciences-National Research Council in 1955 and revised in 1962. This policy statement warns that, since cyclamate is only one-thirteenth as sweet as saccharin, its concentration in foods in which it might be used as a sweetening agent could be relatively high. Also, sugar is considered to be an important source of energy for children.

Drs. Paul O. Nees and Philip H. Derse of the Wisconsin Alumni Research Foundation reported the animal study. They plan further investigation, including possible increased metabolic rates resulting from intake of cyclamate. The Sugar Research Foundation, Inc., requested the research and issued a contract for it.

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PUBLIC SAFETY

Seat Belts Can Cause Abdominal Injuries

► SEAT BELTS, although life-saving, can cause abdominal injuries in accidents if they are not properly adjusted, Dr. Elliott S. Hurwitt of Montefiore Hospital, New York, reported to the annual meeting of the American College of Surgeons in Atlantic City.

Asked if shoulder harnesses would be better than the customary seat belts, Dr. Hurwitt said that although the shoulder harness is supposed to be the best of any in use, reports from Sweden show abdominal injuries in persons using this type also.

A panel on life-endangering injuries included a discussion of head and chest wounds that take thousands of lives in this country and elsewhere.

Dr. H. Thomas Ballantine Jr. of Boston told of deaths from blood clots in the head of accident victims who even if they did survive would be doomed to a vegetative existence because of maimed central nervous systems.

In Tokyo, he reported, there are 86,500 traffic accidents a year with 1,050 resulting deaths in that city alone. Of these deaths 750, or 74%, were due to head injuries. This does not mean that all of the injured persons were hit on the head, but that some suffered injuries that affected the brain.

In the United States there were 43,000 deaths from traffic accidents in 1963 and more than 30,000 died from head injuries.

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MEDICINE

Pneumonia in Babies Diagnosed by X-Ray

► LIQUIDS AND FOOD particles taken into the lungs of babies and small children are the cause of some persistent cases of pneumonia. A simple X-ray procedure can confirm the cause, Dr. Olga M. B. Gatewood said in Washington, D.C., at the American Roentgen Ray Society meeting. Dr. Gatewood, with Dr. Jean J. Vanhoutte, both of the Johns Hopkins University Hospital, Baltimore, found that appropriate corrective treatment can be given once the diagnosis is made.

The examination involves watching the child swallow a small amount of barium fluid under a fluoroscope.

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INVENTION

175th Birthday of U.S. Patent System Marked

► THE U.S. PATENT OFFICE is stimulating economic progress by issuing an unprecedented 1,400 patents each week, Secretary of Commerce John T. Connor said in Washington, D.C.

He addressed the opening ceremonies of the 175th anniversary of the U.S. patent system, attended by businessmen, officials and representatives of some 30 countries.

Secretary Connor said the patent system benefits the economy in three ways: by stimulating inventions with rewards, by attracting capital to produce inventions, and by disclosing technological advances quickly as a basis for further progress.

Nearly three and one-quarter million patents have been issued since the bill establishing the system was signed 175 years ago.

Other opening ceremonies included a demonstration of jet-propelled human flight. Spectators were treated to the sight of a man flying 80 feet above the ground for 50 yards. The flight signaled the opening of the "Progress of Industry Through Patents" exhibit, featuring the latest technological advances of 30 participating companies.

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AGRICULTURE

Dissolved Carbon Dioxide Helps Some Plants Grow

► LEAFY TENDER LETTUCE and bright colored chrysanthemums have grown faster when sprayed with carbon dioxide gas dissolved in water.

In greenhouse experiments, scientists of the Kansas Agricultural Experiment Station and of the Agriculture Research Service, part of the U.S. Department of Agriculture, devised a spray system with a carbonator unit similar to those used at soda fountains.

The scientists believe the faster growth results because the plants have a larger supply of carbon for the food material which the plant converts during photosynthesis, releasing oxygen.

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