

PUBLIC HEALTH

**Iron Added to Bread
Combats Anemia in Man**

► IRON SALTS ADDED to bread and rice have been a highly effective health measure to combat anemia and improve the balance of iron in men and women, reported Dr. Clement A. Finch, University of Washington School of Medicine, Seattle.

Since women need twice as much iron as do men, an intake each day of about seven-thousandths of an ounce is required, Dr. Finch reported in *Nutrition Reviews*, 23:129, 1965.

Iron deficiency represents a major public health problem involving several hundreds of million people in the world today.

The adult male stores about four ounces of iron in his body, most of which is in the marrow of bones and the liver. The female stores only about half this amount, although these figures vary widely from person to person. These stores represent iron that can be rapidly available in event of bleeding or hemorrhage. Iron stores remain essentially constant in amount throughout adult life.

Current daily losses in the normal adult male range about seven-thousandths of an ounce and less, while losses in the female are considerably greater with such processes as menstruation and pregnancy.

Dr. Finch suggests that an intake of twice the available iron supply, by adding iron salts to food, might be highly desirable for today's world population.

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RADIOLOGY

**Bikini Fallout Victims
Show Slight Effects Now**

► VICTIMS of Bikini fallout radiation, accidentally carried by a wind shift to four inhabited atolls to the east, have been found free of leukemia or other forms of cancer.

The accident happened March 1, 1954, following detonation of a high-yield nuclear device in the Pacific proving grounds.

A report on 82 Rongelap Island residents who had been exposed showed comparatively slight effects. The general health and death rate has been about the same among the exposed persons and a group of relatives used as controls.

Noncancerous, or benign, thyroid nodules were removed from three teen-age girls 10 years after fallout exposure. In the current, 11th, year more cases of benign nodules have appeared, including one adult.

Reporting in the *Journal of the American Medical Association*, 192:457, 1965, two researchers said other possible residual radiation effects included slight retardation of statural growth and bone maturation in boys exposed at less than five years of age.

Possibly related to radiation exposure was the fact that during the first four years after exposure there was an increase in miscarriages and stillbirths among the exposed women (13 in 32 births), compared with 8 in 38 births in the unexposed women.

Also, possible radiation effects appeared

to be incomplete recovery of some peripheral blood elements and increased skin-growth lesions in previous beta radiation skin burn areas.

Beta radiation burns of the skin and scalp hair loss were widespread at first, particularly in the more heavily exposed group. Most of the lesions were superficial, but some showed deeper ulceration, the report stated. Most of them healed within a few weeks, and regrowth of hair was complete by six months.

During the first 24 to 48 hours after the 1954 detonation, about two-thirds of the Rongelap people experienced loss of appetite and nausea. A few vomited and had diarrhea, and many complained of eye and skin irritation, but these symptoms subsided in a few days.

Reporting the study on the Rongelap group of people in the Marshall Islands, were Dr. Robert A. Conard of the medical research center, Brookhaven National Laboratory, Upton, N.Y., and Arobati Hicking of the department of medical services, Trust Territory of the Pacific Islands, Saipan, Mariana Islands.

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ENGINEERING

**Longest Undersea Tunnel
Under San Francisco Bay**

► ELECTRONIC "BEEPS" are bouncing off the harbor floor under the San Francisco Bay to measure the bottom terrain as plans get underway for building a four-mile-long underwater tunnel, longest in the world.

As the course of the tunnel is being charted the beeps are sent out from the tugboat *Islas* ten times each second and bounce off the hard thin crust of sand and shell over the soft mud subfloor.

The tunnel, more than twice as long as New York's Holland Tunnel, will be made of binocular-like tubes of precast concrete in steel shells set in a deep trench beneath the bay. It will be constructed to resist earthquakes, said project manager George Murphy of the San Francisco engineering firm of Parsons, Brinckerhoff, Quade and Douglas.

Lightweight electric trains operating at speeds up to 80 miles an hour will carry commuters beneath the bay between Alameda and downtown San Francisco in eight minutes.

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GEOPHYSICS

**Greatest Land Upheaval
Recorded in History**

► THE LAND ROSE more than 50 feet high when the mighty Alaskan earthquake shook the earth last March 27—the greatest uplift of land ever recorded in history.

Parts of the ocean floor heaved to this height in the area between Kodiak and Montague Islands, not far from Prince William Sound, where the Good Friday earthquake was centered, the Coast and Geodetic Survey, U. S. Department of Commerce, reported. The exceptionally high rise was measured by researchers aboard the Coast and Geodetic ship, *Surveyor*.

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IN SCIENCE

TECHNOLOGY

**Biggest Brain Built
At Spacecraft Center**

► THE LARGEST COMPUTER memory ever built by International Business Machines Corporation has been installed at the Manned Spacecraft Center in Houston, the control complex from which all the remaining Gemini and Apollo flights will be run.

The memory unit consists of almost 20 million tiny ferrite "doughnuts," each about the size of the head of a pin. It can "remember" 524,000 36-bit words, and can recall any of them in eight one-millionths of a second.

Bigger things are yet to come, however. Soon the memory bank, heart of NASA's Real Time Computer Complex (RTCC), will grow to five times its present size. The first super memory, all by itself, can handle four IBM 7094 computers at once.

Even when the monster installation is complete, the computers will be taxed almost to the limit by the huge task of coordinating data from a whole network of tracking stations all over the world. As a Gemini or Apollo spacecraft orbits the earth, flight controllers must be kept abreast of its position in "real time," which means that information must be processed and displayed almost as it happens.

The huge memory, called the 2361 Core Storage Unit, required soldering and welding 360,000 separate connections, all of which then had to be tested.

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MEDICINE

**Tooth Decay Control Near
But Gums Still a Problem**

► DENTAL DECAY will no longer be a serious problem in the near future, but the control of gum disease is urgent, a dental public health officer reported in Bethesda, Md.

Dr. W. J. Putnam, division of dental public health and resources, U.S. Public Health Service, told dental public health officials from 50 states and four territories that mouth cleanliness is the most important single factor in preventing periodontal, or gum, disease. The disease is an old problem, he said, that requires public attention now with "dental caries under better control than ever before."

At the beginning of the Christian era, a prescription for pounded rose leaves, gallnuts and myrrh was used for treating the teeth and gums.

The dental health officers met jointly with the Public Health Service and the Children's Bureau, U.S. Department of Health, Education and Welfare.

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CE FIELDS

AERONAUTICS

Flight Over Both Poles Planned for October

► THE FIRST FLIGHT circling the world over both poles is now planned for next October.

The high-flying jet will take off from Honolulu, heading over the North Pole to London, where it will land for fuel. From London it will fly over the equator to Buenos Aires, where another fueling stop is scheduled.

The jet will then be flown over the tip of Palmer Peninsula in Antarctica, the South Pole and McMurdo Sound, landing at Christchurch, New Zealand. It will re-cross the equator on the return flight to Honolulu.

Plans for the around-the-world flight were reported by Dr. Serge A. Korff, president of the Explorers Club, New York, which is sponsoring the expedition. Primary purpose of the flight is to obtain scientific data on meteorology, cosmic radiation and atmospheric physics.

The plane will carry so much gear there will be room for only 30 working passengers.

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PUBLIC SAFETY

Some Quake-Resistant Building Designs Poor

► CURRENT ENGINEERING theory and design of earthquake-resistant buildings have been sharply criticized by a prominent New York consulting engineer.

Reporting on an investigation made for the U.S. Air Force right after the 1964 Alaskan tremor, Dr. Jacob Feld disclosed that engineering errors in the design of quake-resistant structures resulted in much of the damage in the Alaskan tremor. Dr. Feld cited these design errors before engineers at Purdue University in Lafayette, Ind., in the first public report of his Alaskan study.

"A quiet modification of previously accepted design criteria," he said, has since occurred among engineering departments and organizations responsible for some of the Alaskan installations.

Dr. Feld, who believes that open discussion of building failures could help engineers improve current design theory, described three major types of damage which he observed in Anchorage and Seward:

1. Collapse of foundations and structures in landslides occurring when the quake's vibrations made the supporting soil unstable.

2. Collapse or damage of buildings not specifically designed for quake resistance. This kind of design is expensive and many builders of smaller structures avoided the

extra expense, gambling that there would not be a serious tremor.

3. Collapse or damage of buildings designed to resist the lateral forces of quakes but weakened by deficiencies either in workmanship or in design.

Dr. Feld also criticized a number of reports by representatives of certain building materials companies "proving" that their materials were safest.

One of the clear-cut lessons engineers have drawn from the evidence in Alaska is that special construction materials manufactured for stress resistance, if not used correctly in design, provide no more protection than any other materials, he said.

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PUBLIC HEALTH

Mosquito Cause of Fever Outbreak in Malaysia

► THE MOSQUITO *Aedes aegypti*, which transmits viruses causing both yellow fever and dengue fever, is "tentatively" blamed for the first outbreak of hemorrhagic fever in the new Federation of Malaysia.

The outbreak began in George Town, also called Penang, a city on Penang Island, shortly before the new Federation was formed in 1963. The disease had formerly been linked with several types of dengue virus in the Philippines, Thailand and Singapore. It also has appeared recently in Calcutta, India.

(SCIENCE SERVICE called attention to Bolivian hemorrhagic fever in a feature article, SNL, 87:74 Jan. 30, 1965, but the definite carrier had not been established. Suspected rodents, bats, fleas, ticks, mites and mosquitoes are being studied.)

A report of the Malaysian outbreak of hemorrhagic fever reported in the British Medical Journal, May 15, 1965, was based on 61 patients hospitalized during a two-year period. The median age of patients was seven and one-half years, and there were five deaths, occurring in children from five to seven years old.

Mosquito surveys on Penang Island revealed the presence of *A. aegypti* mosquitoes in abundance in city areas. The urban distribution of the disease in crowded poorer central districts of Penang was typical of such an infection. The fact that more females than males got the disease may be due to the fact that the girls spend more time than boys do around the home, where exposure to the day-time biting of *A. aegypti* is greatest, the researchers said.

Prominent features of hemorrhagic fever include high fever, vomiting, abdominal pain, bleeding signs in the skin and circulatory collapse.

Collaborating in the study were Dr. Albert Rudnick of the University of California International Center for Medical Research and Training, San Francisco; Eleanor Eu Tan, medical officer, General Hospital, Penang, Malaysia; Dr. James Lucas, senior pathologist, Institute for Medical Research, Penang; and Mohamed Bin Omar, senior laboratory assistant in virology, Institute for Medical Research, Kuala Lumpur, Malaysia.

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TECHNOLOGY

Floating Bed Relieves Suffering From Pressure

See Front Cover

► A "FLOATING BED," originally developed to simulate weightlessness for manned space flight research, may soon be used in the care of hospital patients.

In the device, called a "dry immersion bed," a patient lies on a waterproof sheet and literally floats on a tank of water. Controls at the foot of the bed maintain water circulation and temperature. A person lying on the bed feels as though he were free-floating. Since he is buoyantly supported, he has minimum pressure on any part of his body.

Seen on this week's front cover is the device being demonstrated by its designer, Dr. Robert C. Armstrong, Convair Division of General Dynamics Corporation in San Diego. It is useful for relieving suffering caused by body pressure on an ordinary bed, improving therapeutic techniques and hastening recovery of certain patients.

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ZOOLOGY

Oyster Decline Fought By Salt Water Pampering

► OYSTERS are being coddled in salt-water nurseries where scientists are controlling such factors as temperature, salinity, diseases and pollution, reported William N. Shaw, Bureau of Commercial Fisheries in Oxford, Md.

By carefully tending the oyster crop in artificial and natural salt ponds, scientists hope to help the oyster industry thrive.

Oyster production along the East Coast has continually declined since the turn of the century, and unless drastic revisions are made soon, the Eastern oyster, *Crassostrea virginica*, could become even rarer.

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METALLURGY

Gold Coating Helps Steel Keep Toughness

► AN ULTRA-THIN coating of gold can be deposited on steels to help them keep their toughness.

Gold films, as thin as 50 millionths of an inch, have been deposited on steel samples in recent experiments by a University of Florida professor. They will provide resistance to hydrogen embrittlement, a process that leads to lowering of a steel's strength properties and promotes cracking, reported Dr. F. N. Rhines.

"The gold films should be of particular benefit to machinery, aircraft and chains, which often break when hydrogen embrittlement sets in," he said.

A vacuum depositing process was used in the experiments to place the gold on base metals in order to avoid the possibility of hydrogen pickup from acids or other aqueous solutions.

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