GENERAL SCIENCE

Urge Publication Method To Break Science Log Jam

➤ USE OF a method of getting scientific reports into use without the expense of costly printing is being urged by a committee of the American Documentation Institute, headed by Malcolm Rigby of the American Meteorological Society.

The technique consists of depositing typewritten reports, tables and photographs, with the Library of Congress, which will issue them upon demand in a photographic form. The availability of the research reports is made known by publication of a notice in a scientific journal.

This method of Auxiliary Publication, under the auspices of the American Documentation Institute, was started by Dr. Watson Davis of SCIENCE SERVICE in 1937 as an attempt to solve one of the most vexing problems then facing scientific societies and institutions.

The present number of documents on deposit under this plan is nearly 6,000 and the additions are at the rate of 500 a year.

Auxiliary Publication plans should be more widely used, Mr. Rigby feels, because of the explosive growth in manuscript material awaiting publication as compared to the less sensational growth in publication outlets. This is the result of an increase in the backlog of unpublished material necessitating either the reduction or condensation of lengthy papers.

It is believed because of this scientific publication log jam, many important research results are lost to industry, defense, and other fields of possible utilization.

• Science News Letter, 80:272 October 21, 1961

SPACE

Ecosphere May Shape Life on Distant Planets

➤ THE EXISTENCE of advanced forms of life in outer space is judged not only possible, but extremely probable, by a Polish astronomer whose theories are drawing international attention.

"Highly developed civilizations on the planets of our galaxy should be the rule, rather than the exception," according to Dr. Jan Gadomski.

Dr. Gadomski believes that 90% of the stars in our galaxy have planetary systems. In order for organic life to grow from simple cells to intelligent beings, a planet must have spent 3.5 billion years in what the Polish expert calls the "ecosphere" of a star—a temperate zone of habitability that can be found at a given distance from most stars.

As many as 90% of the stars in the galaxy may have planets that have met this basic condition and, therefore, could have fostered advanced life forms such as man, he states.

Investigations have already shown that 25% of the stars nearest the sun have very massive "planetary satellites," he points out.

For our own solar system, Dr. Gadomski calculates the life-permitting ecosphere between 107,000,000 and 221,000,000 miles from the sun. This would include the earth, Venus and Mars, but takes in only one ten-thousandth of the entire system. The temperature would range from minus 94 degrees to 226 degrees Fahrenheit.

The planetary zone does not always coincide with the ecosphere, so all planets cannot be assumed to be capable of supporting life. For large or superhot stars, the ecosphere is larger than for dwarf-sized stars or near-dwarfs such as the sun. Subdwarf stars may have planets far beyond the limits of the ecosphere, and too cold to be habitable.

Dr. Gadomski's theory, originally published in Moscow, is included in the Soviet-Bloc Research in Geophysics, Astronomy and Space, translated by the Office of Technical Services of the U.S. Department of Commerce.

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MEDICINE

Pancreas Cancer to Kill 14,000 This Year

➤ AN ESTIMATED 14,000 persons will die this year from cancer of the pancreas, the same incurable disease from which Speaker of the House Sam Rayburn is suffering.

Cancer specialists say there is no known cause—not even a suspicion of what causes it. X-rays do not show the soft tissue shadow of the pancreas, a large gland lying across the back wall of the abdominal cavity.

In itself, cancer of the pancreas can cause death because it interferes with the production by the gland of a digestive juice that helps break down proteins, fats and carbohydrates, which it empties through a duct into the small intestines. Only about one percent of all patients operated on for this type of cancer survive.

Even a small cancer of this gland can spread to the point in which surgery is impossible. It can spread to almost any organ, but the liver and lungs are most frequently affected.

When it has spread as far as the groin, the condition is hopeless and inoperable.

Dr. William McDermott of Harvard Medical School and Massachusetts General Hospital, Boston, several years ago did research under an American Cancer Society grant that led to a successful operation on a spreading cancer of the pancreas in a human.

But Speaker Rayburn's cancer has spread beyond the body parts removed by Dr. McDermott.

The greatest number of patients suffering from cancer of the pancreas are men in their fifties and sixties. Back pain, such as the Speaker reported as possible lumbago, is one of the first symptoms along with fatigue from insomnia. Jaundice and loss of weight usually follow.

In the meantime research goes on which some day may be applicable to this hidden type of cancer that has such a high death rate.

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IN SCIENC

MEDICINE

Lung Clot Diagnosis Can Lower Death Rate

➤ A QUICK new method of diagnosing blood clots in the lung can help lower the present high death rate attributed to the disorder.

By measuring the rise and fall of certain enzymes and pigments in the body, a team of Harvard Medical School and Peter Bent Brigham Hospital scientists found that lung blood clots could be differentiated from other ills with similar symptoms.

Previously, doctors had much difficulty determining whether a patient had suffered a heart attack, pneumonia, or pulmonary embolism (lung blood clots). All three have similar symptoms of heart failure, chest pain, irregular heart beat and fever.

The new method is described in the Journal of the American Medical Association 178:108, 1961, by Drs. Warren E. C. Wacker, Philip J. Snodgrass, Miriam Rosenthal and Elias Amador of Harvard Medical School and Peter Bent Brigham Hospital, Boston.

A word of caution is sounded in diagnosing the presence of lung clots in patients with severe liver disease, however, as liver ailments cause abnormal activity of all three blood substances.

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NUTRITION

Liquid Diet Eliminates Football Squad Tension

➤ FOOTBALL PLAYERS who get "butterflies" in their stomachs before the big Saturday football game can banish them by eating a pre-game calorie-rich liquid diet. The diet also improves their physical capabilities, but no results have been announced on the number of games won.

The traditional steak dinner was eaten after the games and football practice at the University of Nebraska, Lincoln, where the tests took place last year. The only other solid food taken was toast and sliced peaches at nine a.m.

To replace salt lost during perspiration, a harmless solution of water with a pinch of salt was given during games to prevent heat exhaustion.

The liquid meal was composed of a commercial product called Sustagen, a "surgical" type meal given to patients who cannot retain solids. It was given at 10:30 a.m. before the game.

Dr. Kenneth D. Rose and George F. Sullivan of the University Health Service and Paul J. Schneider of the Department of Athletics report the study in the Journal of the American Medical Association, 178:130, 1961.

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E FIELDS

ASTRONOMY

Star Watchers Approach 2,000,000 Observations

➤ A BAND of sky watchers, many of them amateurs who observe stars with big and small telescopes, are celebrating the half century mark of their organization, the American Association of Variable Star Observers, which has made one of the most fruitful explorations of the heavens.

Nearly 2,000,000 observations have been made and reported in the past 50 years. The stars watched are those that vary in brightness in such a way that it is possible to tell much about their life, behavior and composition.

Many of the 250 active observers and 600 members gathered for a three-day meeting at the Harvard Observatory, Cambridge, Mass.

In the last few months 803 variable stars have been viewed methodically by members with the help of identification charts and listings of stars of known brightness with which the variables are compared. Some of the observers with larger telescopes can record stars as faint as 15th and even 16th magnitude. The unaided eye can see down to about sixth magnitude.

There are still hundreds of variable stars to be observed and Mrs. Margaret W. Mayall, director of AAVSO, is constantly adding to the list of observers.

Continued volunteer observations of more than 600 long period variables give spectroscopists and other professional astronomers essential information for their studies. In addition to visual observations, some members are beginning to make readings of the light of stars by photoelectric means.

Old and new exploding stars, called novae, are also observed, as are flare stars and eclipses of the moon.

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AERONAUTICS

Vice President "Flies" Supersonic Plane

➤ VICE PRESIDENT Lyndon Johnson crashed twice in attempting to land a supersonic aircraft at Ames' Research Center, Moffett Air Force Base, Calif. No damage resulted, however, either to the craft or to the Vice President, since the landings were simulated efforts in a research test facility aimed at designing landing gear for future supersonic craft.

On the third try, with expert guidance and instruction from a pilot from the Ames flight systems and simulation branch, the Vice President made a perfect landing, demonstrating a talent for flight guidance.

The Vice President, who heads the Space Council, and Chairman George P. Miller (D.-Calif.) of the House Science and Astronautics Committee were on a two-day tour of space research centers in the United States.

The Vice President saw for the first time the X-14 jet-propelled vertical air transport, demonstrating characteristics required for vehicles to land on the moon. He also saw a C130 cargo aircraft take off and land in 600 feet.

The Vice President was impressed with the practical potential of both crafts, which might be adapted to current aircraft, eliminating the necessity for long and expensive runways now demanded for safe landings and take-offs by jet aircraft. He expressed the view that money now being spent on expensive runways might be better used for further research in this area.

During the tour the Vice President received a "tektite" made at Ames in the arc-jet chamber, where research is being conducted on a heat shield to be used to protect space ships going to the moon. Natural tektites are pieces of glass found in various areas of the world that supposedly come from outer space.

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GENERAL SCIENCE

Research Advised for Utopian Community

➤ A SCIENTIFIC experimental community should be set up where various kinds of living conditions could be tried out experimentally and the people living there could tell what their needs are and what new measures they like or dislike. This scientific way of building a utopia was suggested in a lecture at the University of Maryland, College Park, Md., by Dr. B. F. Skinner, psychologist of Harvard University.

This plan for utopian research was first suggested by Dr. Skinner in a fictional work entitled "Walden Two" published first in 1948. In Walden Two a committee made a study, for example, of the best type of vessels for serving tea buffet style. They concluded, after experiments, that a tall glass vessel in a basket-like covering with a bale that could be carried like a bucket would keep the tea hot longer with less chance of spilling than with the conventional cup and saucer. Because it would hold two or three cups, return trips to the tea urn for replenishing were avoided.

Plates for the little cakes were made square with turned over lips for easy picking up and carrying.

Buildings in Walden Two were connected by roofed, enclosed corridors. Many alcoves along the corridors contained floral decorations, stages where brief entertainment was offered, or tables where tea was sipped at appropriate times.

Dr. Skinner is well known for his original psychological research. He developed a teaching machine to speed and facilitate learning. He also added to the learning theory by experiments with rats that he taught to play with marbles, and with pigeons who learned to play table tennis and pick out tunes on a small piano.

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MILITARY SCIENCE

Military Space, Atomic Research Stressed

➤ A VIGOROUS effort in atomic and space research for military purposes is needed for the defense of the free world, a former undersecretary of the U.S. Air Force said.

Trevor Gardner said the threat to world peace is great due to Soviet advances in large thermonuclear bomb development "resulting from the present test series" and in the current Soviet ICBM test program.

Mr. Gardner, present board chairman and president of Hycon Mfg. Co., Monrovia, Calif., spoke at the Air Force's 8th Symposium on Science and Engineering in San Francisco.

"We have delayed the development of our military space program long enough." He blamed national emphasis on space for peace for the lag in the space program. The "decision makers have assigned a secondary role to the development of military space systems. This philosophical limitation should be removed," he said. He urged coordinated planning with the U.S. Department of Defense and the National Aeronautics and Space Administration to "assure maximum militarily useful results will be achieved."

The present booster lag that keeps the United States from the large efforts in space could be removed if a crash program in the military were initiated, he declared. The debate over solid versus liquid fuel boosters is shortsighted, he said.

"Both technologies should be developed. The $90,000,000 now allotted for solid-fuel rocket research is not adequate," he said. He urged more funding for such research as well as for nuclear rocket engine research. Mr. Gardner predicted that if enough emphasis were given to nuclear engine research, this would ultimately push us far ahead in space.

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TECHNOLOGY

New Computing Center To Be World's Largest

➤ GROUND WAS BROKEN in Cambridge, Mass., for a building to house the world's largest and most powerful commercial electronic computing center.

It will be the first building erected in Technology Square, an area adjoining the Massachusetts Institute of Technology, which the Institute is developing jointly with commercial concerns. It will house an array of computing machinery costing $15,700,000 that is scheduled to be in full-scale operation by January, 1963.

This will include a STRETCH computer that can multiply a 14-digit number by itself in 2.7 millionths of a second and work on as many as nine different programs simultaneously. The computer will select those problems having the greatest priority and schedule its own work load.

This and other computers will be operated by C-E-I-R, Inc., a data processing firm with headquarters in Washington, D. C.

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