GENERAL SCIENCE

Smithsonian Head Sees Museum as Lively Spot

➤ BEHIND THE QUIET facade lie the "guts" of the museum.

More than 90% of the people think of a museum as a rather dull, static exhibition hall—a place to go on a rainy day.

They do not realize that a dynamic dynamo of research is working behind these displays, stated Dr. S. Dillon Ripley II at his first news conference as eighth Secretary of the Smithsonian Institution.

"The real guts of a museum are in the people engaged in active research for a variety of projects," said the world-famous ornithologist, who believes that one of the main responsibilities of a museum is to make available many educational facilities to students of all ages, particularly in universities.

Museum resources are being drawn upon as never before for general education, he said. Thirty years ago, a mere 15% of museums in America were connected with education in some form. Today over 90% are involved, ranging from simple school extension programs to postgraduate fellowships.

The museum can and should be a tremendous force for education in the world today, he said, in the realm of humanities, art and history of our culture, and sciences.

Dr. Ripley, succeeding Dr. Leonard Carmichael who retired after 11 years as Secretary, defended the controversial architecture of the newly opened Museum of History and Technology, part of the Smithsonian Institution.

He believes the Museum is designed in the right manner in order to house the locomotives and huge machines. "A museum is a monolithic building," he said. "The simpler and larger it is, the better."

• Science News Letter, 85:120 Feb. 22, 1964

MEDICINE

Disease Development, Thymus Removal Linked

➤ POSSIBLE LINKS between the occurrence of diseases and the removal of the thymus, a lymph gland located beneath the breastbone, have been reported.

An 11-year-old girl suffering from myasthenia gravis, the muscular disease that becomes chronic and usually fatal, had her thymus gland removed at the Mayo Clinic, Rochester, Minn., in the hope of controlling the disease.

The operation succeeded but the immunity to development of several other diseases was lost in the process, the doctors suspect.

The thymus has important roles in developing the body's immunologic system. Although previous findings have shown no immunologic disability after the thymus' removal, the young patient developed systemic lupus erythematosus, a chronic disease in which a "butterfly" skin formation appears across the nose to the cheeks.

The patient also developed ulcerative colitis and cirrhosis, an inflammatory disease of the liver. Only the use of prednisone, a hormone drug, kept the girl in good health after a number of hospital admissions.

The physicians believe that the thymus may serve a purpose in maintaining a protective function against autoimmunization, or antibodies developing substances within a person's own body.

It has been thought that the main job of the thymus is done during development of the embryo, because the gland degenerates during the first two years of life. Whether or not it should be removed is one of the hottest of current medical questions.

Drs. Richard F. Galbraith and William H. J. Summerskill of the Mayo Clinic, and Dr. John Murray reported the study in the New England Journal of Medicine, 270:229, 1964. Dr. Murray is from the University of Minnesota Medical School, Minneapolis.

• Science News Letter, 85:120 Feb. 22, 1964

EDUCATION

New Machine Measures Instruction Absorption

➤ A NEW TEACHING MACHINE enables an instructor to determine how he is getting through to his students.

Dr. Charles Bridgeman, inventor of the machine, uses it in his anatomy classes at the University of California at Los Angeles Medical School. He designed and developed the device while at the Univeristy of Kansas Medical Center.

Students are provided with five-position response switches connected to a panel resembling a vertically elongated switchboard. Each student is represented on the panel by five lights and a counter for correct answers.

Multiple choice questions projected from slides may be interspersed throughout the lecture. The student indicates his answer by flipping his switch to one of the five positions. This lights up one of the five lights by each student's place on the panel and is seen only by the instructor.

A readout meter gives the instructor a precise percentage of right and wrong answers, thus enabling him to evaluate absorption of subject matter by his students.

• Science News Letter, 85:120 Feb. 22, 1964

PHYSICS

New Triode Laser Oscillates Without Glow

➤ A NEW TYPE of gas laser that, like a triode, can be modulated by varying the voltage on the grid in the tube has been invented. The triode laser, which is excited by a beam of electrons of nearly identical energies emitted from a hot oxide cathode, oscillates without the usual glow discharge present in ordinary gas lasers.

The new method of exciting laser oscillations is reported in Physical Review Letters, 12:30, 1964, by Ping King Tien, Donald MacNair, and Harold L. Hodges of Bell Telephone Laboratories, New York.

In the triode laser the electrons from the cathode are controlled by a grid and have an energy spread of only a fraction of a volt.

• Science News Letter, 85:120 Feb. 22, 1964

IN SCIEN

MEDICINE

'Slipped Disc' Wears Out, But It Does Not Slip

➤ THERE IS no such thing as a "slipped" disc.

"Degeneration of the disc" is now the approved name of this disorder, the most common of all types of rheumatism. The bones of the victim's spine wear out or the outside casing of a disc becomes damaged, but the disc does not slip.

This is the verdict of the British Empire Rheumatism Council in London.

Only about 30 years ago it was recognized that a disc could be the most common cause of backache and sciatica. About half the adults of the western world suffer from disc disorders in one form or another, whether or not they realize it.

Prehistoric monsters and early man suffered from this painful disorder, too, said M. C. G. Andrews, the Council's secretary, who found evidences of "slipped" discs in 5,000-year-old Egyptian mummies.

Persons 40 to 50 years old who live "soft" lives in cities are the most common sufferers, Mr. Andrews said.

Stooping leads all other causes of "slipped" discs. The lower part of the spine is where the "slip" usually occurs.

The spine is a series of bones cushioned by a tough, rubber-like material and is covered by powerful muscles to hold it together. Trouble starts when one of the bones—a disc—is wearing out and is subjected to great strain.

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ZOOLOGY

Untamable Opossum Can Be Tamed If Care Is Used

➤ THE WILD and bad-tempered Virginia opossum, the only U.S. animal that carries its babies in its pouch, can be tamed.

This relatively stupid and unresponsive creature that looks like an oversized rat is often considered to be untamable.

But by being exposed to the human touch and care at an early age, a young opossum can become successfully tamed, Dr. Herbert Friedman now at the College of William and Mary, Williamsburg, Va., has found in research at Duke University, Durham, N. C.

By observing the behavior of young opossums in three litters, Dr. Friedman found the animals could be raised to adulthood without a tendency toward defensive biting.

Separation from the mother at an early age is not necessary for taming, he reported in Nature, 201:323, 1964. Exposure to people each day, with little or no handling, is sufficient to tame an opossum.

• Science News Letter, 85:120 Feb. 22, 1964

CE FIELDS

ENTOMOLOGY

Indian Insect To Fight Wool Pest

➤ NOOGOORA BURR, Queensland's worst weed pest, and a pest of serious proportions in New South Wales, may be brought under central control by an Indian insect, 32,000 larvae of which are now in Brisbane.

The cost of the burr on Australia's wool clip is estimated at between $600,000 and $700,000 a year.

The scientist who collected the larvae is John Mann, director of the biological section of the Queensland Department of Lands, who has recently returned from India.

In his four-month mission he collected sufficient numbers of the burr-destroying insect, *Nupserha antennata,* to launch field trials in Queensland.

The trials will establish whether the insect, a boring beetle, will be effective under Queensland conditions in bringing noogoora burr under control.

The insects are in quarantine in the Lands Department's Sherwood laboratory, where they will be held to complete their development and emergence from the larval stage. They will be ready for field tests, which will begin less than a year from now.

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ENGINEERING

Improved Traffic Flow Can Save Many Lives

➤ MORE THAN 22,000 lives now lost on the nation's highways could be saved each year, if modern freeway design and operating characteristics were applied to more roads and streets, an automotive safety engineer predicted in Detroit.

About 12,000 deaths caused by one car leaving the road and overturning or striking an obstacle could be eliminated by removing trees, sharp ditches and steep slopes from the immediate area wherever possible.

Elimination of two-way traffic on all streets would save almost 11,000 lives lost due to collisions involving other cars and pedestrians. One-way traffic on all streets would also keep the traffic flowing faster.

These conclusions are based on a review of fatal accident statistics from 1900 until the present. Between 1920 and 1930 the number of fatal traffic accidents increased more than 2,000 each year. A sharp break occurred in 1930 and the increase since that time has been less than 500 per year.

Passenger car improvements have included the development of enclosed passenger areas, safety glass, improved brakes, steering and lighting, and a significant lowering of the center of gravity on modern cars. Improved driver training and further design improvements in the field of safety devices will help the situation somewhat.

But better vehicle design will only partly reduce the impact in collisions, K. A. Stonex, an engineer with General Motors, told the Automotive Engineering Congress and Exposition.

"The obvious solution is to eliminate the obstacles against which the car may impact," he said.

The use of modern highway design, as evidenced on turnpikes, toll roads, and freeways, where the death rate averages less than one-half that of other rural highways, would reduce substantially the $7 billion in damages caused yearly by traffic accidents, he said.

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METEOROLOGY

New Way of Making Rain: Organic Chemical

➤ A NEW WAY of making rain—sprinkling clouds with an organic chemical instead of inorganic dry ice or silver iodide—has successfully caused ice formation in clouds.

Use of organic materials to seed clouds could result in cheaper chemicals than now available. It might also mean that some organic chemicals produced naturally serve as a base around which ice crystals form.

Successful tests in real clouds are of definite experimental interest and may force a change in the way scientists believe rain and snow develop in clouds.

The organic chemical used was phloroglucinol, Dr. Roscoe R. Braham Jr. of the University of Chicago reported in the Journal of the Atmospheric Sciences, 20:563, 1964.

Although phloroglucinol produced visible snow showers, its action was considerably slower than with dry ice. Phloroglucinol acted much faster in artificial clouds in the laboratory.

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MEDICINE

Heart Attacks Predicted By X-Raying Arteries

➤ AN X-RAY METHOD called fluoroscopy "sees" inside the coronary arteries supplying the heart muscle and enables a physician to predict which persons are likely to develop a heart attack long before symptoms occur, a Veterans Administration doctor reported.

An enlarged picture of the new screening method was recorded on movie film. This allowed areas of calcification in the arteries to be spotted, Dr. Joseph Jorgens, chief of radiology service at the Minneapolis VA hospital, said.

As these areas are often in the same sites as the fatty patches or plaques that mark hardening of the arteries, the radiologist can estimate the extent of hardening.

Dr. Jorgens was assisted by Dr. Arthur Lieber, now assistant professor of radiology at the University of Kentucky, in performing 2,500 such examinations of the heart.

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BIOCHEMISTRY

Body Adjusts Quickly To Mountain Air

➤ A HEALTHY PERSON moving from sea level to high mountains adjusts quickly to breathing only one half the amount of oxygen he is used to inhaling.

Measurements taken among Colorado residents living at 10,000-foot altitudes and among those living nearly 15,000 feet above sea level in Peru showed adjustments could be made with no increased work for the heart, Dr. Robert F. Grover of the University of Colorado, Denver, reported in New York.

As the air thins in the higher autitudes, changes in the body take place, allowing a person to remove a greater proportion of the oxygen taken in with each breath, Dr. Grover told the New York Academy of Sciences meeting on respiratory failure. In addition, the capacity of the blood to carry oxygen increases.

Although the breathing process in man can withstand a variety of conditions, many diseases push it beyond its limits. Bronchial malignancies, tuberculosis, chronic bronchitis and asthma cause large areas of the lung to remain poorly ventilated.

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ASTRONOMY

Computer Helps Compile Astronomical Tables

➤ ASTRONOMICAL TABLES that may help scholars obtain new insight into the evolution of medieval mathematics and science have been compiled with the aid of an electric computer.

Research mathematician Dr. Bryant Tuckerman of International Business Machines' Thomas J. Watson Research Center, Yorktown, N. Y., has produced tables of planetary, lunar and solar positions from A.D. 2 to 1649 with an IBM 7094 computer.

Dr. Tuckerman carried out the project at the suggestion of Professor Otto E. Neugebauer, chairman of the department of the history of mathematics at Brown University, Providence, R. I. The compilation, known as an ephemeris, is being published by the American Philosophical Society, Philadelphia. It augments an earlier ephemeris covering the period from 601 B.C. to A.D. 1, also compiled by Dr. Tuckerman.

The ephemeris can be used by scholars in dating medieval horoscopes and other documents containing astronomical data. These historically interesting documents, by Greek, Byzantine, Arabic, Hebrew, Persian, Turkish and Hindu authors, are usually uncatalogued and not in chronological order. Since dates are missing, the astronomical observations or references contained in the documents are the best clues to their age.

The convenience, high degree of accuracy and completeness of the new IBM tables will save scholars a great deal of time formerly spent in tedious hand computation of dates from the astronomical references.

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