

GENERAL SCIENCE

Fair View of Future

Colorful, mobile, awe-inspiring exhibits at the New York World's Fair reflect great advances of men's minds in science and technology throughout the ages.

By BARBARA TUFTY

See Front Cover

► THE COMMON MAN is being given a splendid opportunity to stand in awe at what he can do and comprehend, now and in the future.

The New York World's Fair offers many brief vistas into secrets of the earth and universe which science is probing and technology is using.

—In one hall, a huge mechanical brain shows the birth of a thought.

—In another, for the first time in history, the layman can actually watch a demonstration of nuclear fusion, the violent process that lights the stars and heats the universe.

—Sleek rockets and spacecraft gleam in towering majesty under the sun in an open-air park.

—High above the visitor's head in another section, the world's largest mobile twirls gently in the four winds.

—And another time capsule is being prepared with mementos of our modern world, ready to be deposited in the earth for future man to inspect 5,000 years from now.

Science to the Stars

Science on land, under the sea, in the air, through space and into the stars and reaches of time—exhibits on various phases of our scientific knowledge are being rushed for completion for the opening day of the New York World's Fair, April 22.

On 646 acres of Flushing Meadow Park, 12 miles from midtown Manhattan, every man, woman and child can take a careful look at himself as a member of the human race and learn much about science—if he or she can thoughtfully separate basic educational aspects from lush extravaganza.

Brilliant displays depict almost every aspect of science from dinosaurs and cavemen of an ancient world to today's age of lasers, rockets and nuclear microscopes and tomorrow's projected world of television-telephones and trips to the moon.

Symbolic Sphere

The shining 250-ton stainless steel sphere of the world, presented to the Fair and the city by U.S. Steel as a permanent addition to the Park, is the symbol of the Fair whose motto is "Peace Through Understanding."

The sphere is the focus point for these five basic areas:

1. The International Area, with more than 50 nations exhibiting aspects of their culture, arts and ways of life.

2. The Federal and State Areas where

spiritual, scientific, educational and other aspects of America's story will be told.

3. The Industrial Area where major businesses and industries will present exhibitions on the history and application of scientific thought and technology.

4. The Transportation Area where industries engaged in moving people and products in a "shrinking planet within an expanding universe" will offer spectacular rides, movies and exhibits.

5. The Amusement Area beside the lake, with a circus, musicals, dancing, shows and rides on monorail vehicles, boats and a helicopter.

Of the five, the Industrial and Transportation Areas contain the majority of scientifically attuned displays.

Human Brain

Perhaps the symbol of the scientific aspect of the Fair should be the Brain—an electrified model of the human brain, seat of the intelligence that has created all the vast array of implements, vehicles, medicines and thoughts surrounding us today.

Housed in a transparent half dome 12 feet high in the Hall of Science, the Upjohn Company brain model tracks some of the complex processes that take place during a single moment when a person sees a singer and hears a few notes of her song.

With an ingenious system of 38 miles of wiring, 30,000 tiny light bulbs and huge aluminum discs representing different parts of the brain, the layman can learn just how the sight and hearing processes of his brain work.

A series of moving lights follow nerve impulses, and flashing images record reactions as the brain receives information from the eyes and ears, correlates and evaluates this information, and responds.

Nuclear Fusion

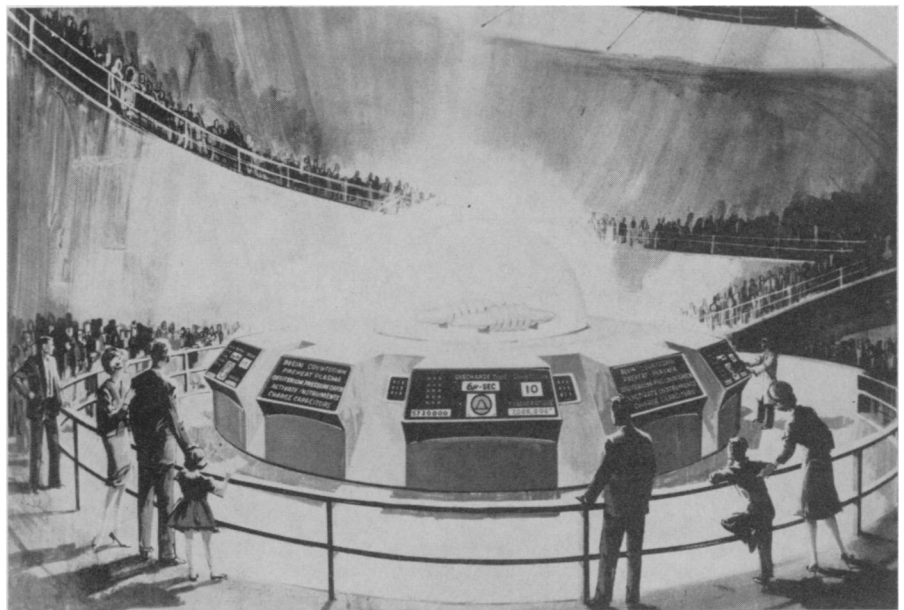
For the more curious spectator, a nearby series of panels depicts the history of man's probing and investigation of the brain, from Albert Magnus in the early 13th century, through da Vinci, Vesalius, Pavlov and Berger, who developed the study of electrical impulses in the brain.

For the first time in history, the layman can watch a demonstration of the sun's power reproduced by man.

In the center of General Electric's Progressland, heavy water nuclei, deuterons, are suddenly and violently changed into heat and light energy.

Nuclear fusion is a process wherein atomic nuclei collide and some of their matter is turned into energy in the form of heat and light.

In the actual demonstration, two quartz tubes containing deuterons are encased within a ten-foot high transparent dome, 30 feet in diameter. Around each of the tubes is an electrical coil to produce an intense magnetic field. At the end of a three-minute countdown, a tremendous elec-



General Electric

THERMONUCLEAR FUSION—For the first time in history, the layman can watch a demonstration of the violent processes that light the sun and stars. The nuclear fusion comes as climax to a ride through General Electric's Progressland.



Westinghouse

TIME CAPSULE—Contents of the 1939 Time Capsule, a 10,000-year calendar of important events in the past and future, and the world's progress during the past 25 years are exhibited within the three circular housings of the Westinghouse pavilion.

trical current of a million amperes is re-leased into each of the coils. Within these tubes, the rapidly increasing magnetic field created by this current produces many deuterium nuclei with energies equivalent to those existing at a temperature of 100 million degrees Fahrenheit.

As 60,000 volts are suddenly discharged, the deuterons inside the quartz tubes collide and fuse, releasing several hundred times the energy that was required to make them react.

The reactions take place in about six-millionths of a second.

For every deuterium taking part in the fusion, however, over a billion deuterons do not. In this demonstration the energy put into the system far exceeds the energy given out.

Spacecraft

In an open-air park around the Hall of Science stands the most imposing array of full-scale Air Force and National Aeronautics and Space Administration rockets and spacecraft ever assembled outside of Cape Kennedy, Fla.

One giant of our Space Age, the 110-foot Titan II booster, with the Gemini capsule on top, points toward the sky as if ready for launching. An 85-foot boattail section of the massive Saturn V rocket stands in splendor, as do full-scale models of the Apollo command and service modules, Atlas-Mercury and Thor Delta launch vehicles, an X-15 rocket plane and the actual Mercury capsule that carried Astronaut M. Scott Carpenter into space for the second U.S. manned orbital flight.

Hall of Science

Among notable exhibits in the rising Hall of Science, located in the Transportation Area, is a simulated pool-type research reactor. It is part of "Atomville, USA," a special children's display by the Atomic Energy Commission. The reactor emits an eerie bluish-white glow from the charged particles passing through water.

Children will be allowed to manipulate the reactor's "controls." They also can handle make-believe radioactive materials with mechanical hands, create patterns of different atoms with another control board, "shoot" a "neutron" into a "uranium-235 nucleus" with a pinball machine, and read their weight in atoms on an atomic scale.

Nuclear Energy

Adults can learn about basic nuclear energy in the AEC exhibit "Radiation and Man," which emphasizes radiation effects on living tissue.

You need not leave the Science Hall to enter the ocean—just walk into the American Chemical Society exhibit. Here darkened scenes illuminated with black light give the impression of the ocean's deep, dark world, source of vast mineral and chemical riches.

Other Hall of Science exhibits include lecture demonstrations by the American Cancer Society on cytology, or cell science, and causes and cures of cancer; a giant fireproof glass fiber shell of the Abbott Laboratories, with color motion pictures telling about the wondrous chemistry of the human body; a Tree of Color, feature of Interchemical Corporation's Color Center, using laws of lights and physics to brighten and entertain the world; a model air terminal, with a complete ground control system and model airplanes demonstrating how planes land in all types of weather under advanced landing systems now being built by Airborne Instruments Laboratory, division of Cutler-Hammer.

Time Capsule

Weighing 300 pounds, the shining new Time Capsule II stands seven feet, six inches high and is eight and three-fourths inches in diameter. When the Fair closes in October 1965, significant objects depicting life as we know it today will be sealed in an airtight glass envelope. The capsule will then be buried for the next 5,000 years
(Continued on p. 237)

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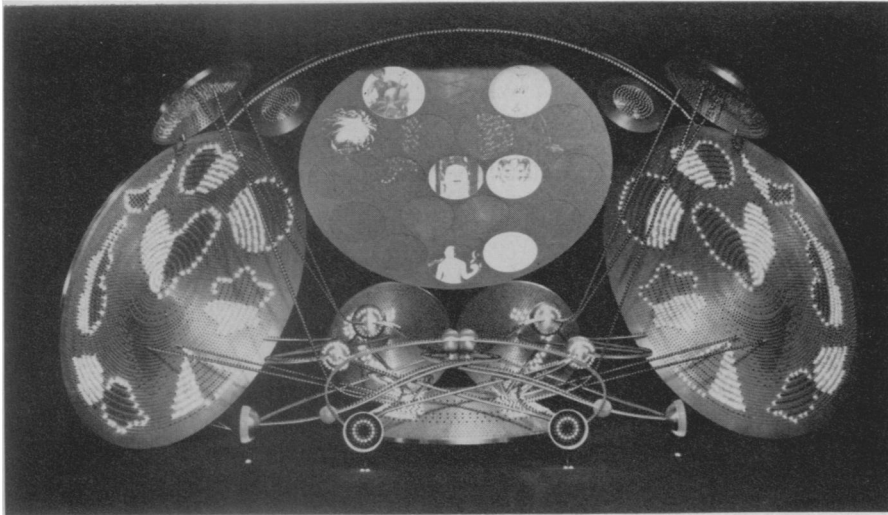
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Fair View of Future

(Continued from p. 235)

—a record of what we eat, do and think for future generations. A model of the capsule hangs between spires from the three circular housings of the Westinghouse pavilion, over the spot where, 25 years ago, Time Capsule I was buried.

Within the soaring white wing of the Bell System pavilion, the communications story is told from primitive drums and smoke signals to today's lasers and masers of world and space communications and the future's television-telephones.

A ride through the General Motors' Futurama unfolds exhibits of the polar regions, the ocean, jungle and deserts, cities of tomorrow and a trip to the moon. Seen on this week's front cover is an exhibit of a modern city in Futurama which solves many traffic problems by sending streets through the air above existing thoroughfares.

Around the glass-enclosed rotunda-like structure of Ford Motors, electrically powered convertibles carry riders around a magic skyway, past exhibits of cavemen and prehistoric animals, present-day cities and vistas of the future.

A starburst of nighttime splendor, the Tower of Light is bathed in changing pastel shades of light. Designed for Electric Power and Light, this Gothic "cathedral of light" is formed of triangular prisms of aluminum, illuminated by 12 searchlight beams of 12 billion candlepower.

• Science News Letter, 85:234 April 11, 1964

Nature Note

Flowering Dogwood

Famous for its beautiful spring blossoms is the beloved flowering dogwood, *Cornus florida*, of the eastern United States. But the true flowers of this ornamental tree often go unnoticed, except to a trained eye.

What look like broad white or pink flower petals are in reality silvery gray bud scales that cover the actual flowers at the branch tips during the winter. Beginning in March in the southern part of the country the scales begin to unfold and grow at their base into four white bracts.

The true flowers of the dogwood are small and greenish-yellow, inconspicuously located in the center of the showy bracts. And what is mistakenly believed to be one dogwood flower is in reality a cluster of many flowers.

The dogwood is called an "understory" tree or shrub by botanists because it is one of the smaller trees, such as some cherries, hawthorns and hop hornbeam, that grow under the taller canopy or upper story of beeches, maples and hickories. The dogwood usually grows from 10 to 20 feet in height, spreading its branches in thick, horizontal layers.

The tree is beloved not only for its showy "flowers" but for its rich green summer foliage that turns a deep red in the fall. In autumn and winter it attracts birds when its branches are filled with scarlet berries.

• Science News Letter, 85:237 April 11, 1964

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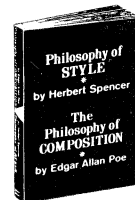
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