ELECTRONICS

Electron Tube Display

➤ MORE THAN 6,000 electron tubes, ranging from an example of the pioneering Edison tube to a gigantic modern 600,000 watt tube, told the history of the electronics industry at the national convention of the Institute of Radio Engineers at the New York Coliseum March 18 to 21.

The exhibit, known as the Princeton Tube Collection, commemorates the 50th anniversary of the patenting of the original electron tube. Thirty original tubes made by Edison, Fleming and de Forest are included.

Examples are shown from among the 40,000 different types of electron tubes developed for radar, television, X-ray, radio and other electronic applications.

Thomas A. Edison, in 1883, was able to pull a current of electricity from the vacuum of his incandescent lamp, but he never put it to successful use. Sir John Fleming, in 1904, added a control plate to the Edison Effect tube, and his Fleming "valve" increased the power and range of radio communications. Not until 1907 when Lee de Forest added a third element, a grid of platinum wire, was the first "audion," functioning as a rectifier, amplifier or oscillator, patented.

Though no one has ever seen an electron, the control of free electrons or particles of negative electricity has made a significant contribution to the shaping of man's destiny, it was explained in New York by Jerome Taishoff, president, Mycalex Corporation of America, which sponsors the exhibit. "Electron tubes open doors, sort merchandise, match colors, gauge thicknesses to millionths of an inch, detect tiny solids in liquids and gases, operate elevators and timing devices, ring alarms, calculate faster than any human brain and magnify what is otherwise invisible to optical instruments," he said.

"Though we are now celebrating the golden anniversary of Dr. de Forest's invention, the electronics industry is still in its infancy and promises even more fantastic wonders for the future."

Howard E. Schrader, who assembled the collection of electron tubes for the exhibit, has devoted most of his spare time since 1919 to the project. Interested in the infant art of radio, Mr. Schrader invested $6 in one of the early electron relays to improve his equipment and it promptly burned out. Feeling that tubes were too valuable to be thrown away, he started collecting them. His research unearthed material bypassed by Edison biographers and broadened the understanding of the significant Edison contributions to electronics. Mr. Schrader is a member of the staff of the Palmer Physical Laboratory at Princeton University.

The Mycalex Corporation of America, sponsoring the Princeton Tube Collection display, is the world's largest manufacturer of glass-bonded mica and ceramoplastic products, and a major supplier of insulating materials for the electronics industry.

Science News Letter, March 23, 1957

ZOOLOGY

Ancient Jellyfish Follow Civilized Behavior Rules

➤ HOW an ancient form of jellyfish follows the same basic rules of behavior as do civilized people has been studied by Dr. Sears Crowell, professor of zoology at Indiana University, Bloomington, Ind.

These bell-shaped *Campanularia* were among the first forms of life to have their cells specialized for particular duties, and they exist as either free-roaming individuals or as citizens of tree-like colonies with individual rights and responsibilities.

By heaping upon them man-made disasters like the starvation periods that have affected life since the beginning of time, Dr. Crowell has found new clues to the fundamental processes that govern growth, reproduction, aging, and the survival of organized society.

Dr. Crowell maintains colonies of *Campanularia* under a variety of conditions. Some have abundant food all the time, some go through "boom and bust" cycles, and some exist on starvation rations. Temperature is also varied from 50 to 70 degrees Fahrenheit.

In general, life looks to the distant future, Dr. Crowell reported. When times are good, growth and reproduction in the colony are in direct proportion to the available food. Young and old alike seem to reproduce at will and at about the same rate.

But when times are lean, the colony goes on a very different but very efficient economy. The older members that make up the trunk of the colony grow very little or none at all. Food priority goes to the young members, and the old are sacrificed to the younger ones' needs.

When the famines subsides, the young, vigorous members of the colony then reproduce and grow.

The colony is essentially motivated by the preservation of life, although it does prey on other forms of life for survival and growth. Some *Campanularia* keep single-celled algae inside themselves which feed on their wastes and in turn give off the oxygen that the larger animal needs for its respiration.

Dr. Crowell's research was supported by the American Cancer Society.

Science News Letter, March 23, 1957

Do You Know?

A recently discovered 4,000-year-old pine tree probably attained the greatest *age* of any living thing.

The nation's petroleum *pipeline* system, which began less than a century ago as a five-mile length of wrought iron tubing, is now long enough to circle the earth seven and a half times and will hold 3,000,000,000 gallons.

Glycerine has been produced experimentally by fermentation of wood sugar.