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'MIT Science Reporter'

Thermionic Converter Is TV Topic

By James Vellieux

Personnel of the Thermionic Engineering Corp. in Wallingford, Conn., were the guests of "MIT Science Reporter" on Channel 2 last Thursday night. In a program entitled "Electron Bulbs," they revealed the latest methods of converting heat directly to electricity.

Director of Research Ned Raser explained the thermionic converter, a device now being developed by the Wallingford firm. It consists of two electrodes surrounded by plasma gas and enclosed within a glass or metallic casing. When one electrode is heated to a temperature of about 1300 degrees Centigrade, electrons will be emitted.

A cathode coating on the hot electrode produces the hot plasma needed to conduct the flow of electrons to the cold electrode. The use of a magnetic field directs the current into a narrow beam.

This method of producing electricity is advantageous because it involves no mechanical moving parts, as opposed to the immense machinery involved in a conventional stream converter.

Pierre Remero, Director of Development, showed many of the practical applications for this device. In one model a solar reflector concentrates heat radiation on a cluster of converters. This arrangement might well place solar cells in space vehicles, because it is sturdy and provides more power for its weight.

Another application of the converter uses radiokiloves for a small space as a source of heat energy. A device of this kind might also be employed in space vehicles, where compactness is essential.

A recent experiment by Dr. George Haitz, President of Thermionic, practical models of thermionic converters will find a ready market in the near future. To the Army, for example, is seeking more compact and portable means of producing electricity in its field.

Individual homes may, some day, have their own generating stations by heating thermionic converters with natural gas. What now remains is the task of making these converters economically feasible for competition with conventional methods.

MIT and NASA Produce Satellite

(Continued from Page 2)

ried space ship was a NASA-sponsored space probe vehicle. This experiment provided valuable knowledge about directions, densities and velocities of plasma winds. The satellite bearing that equipment, however, transmitted data for only 60 hours. The scientists expect the new experiment to produce a far greater amount of data.

The MIT scientists will have two gyrotronic detectors aboard the "satellite" satellite. One, rigged to detect protons, will be located on one of the satellite's solar paddles—like extensions from the satellite body that contain solar cell matrices that convert sunlight into electricity to power minimal equipment. The other particle detector—this one rigged to react to electrons—will be located on the satellite body. The proton detector will weigh 5½ pounds, the electron detector 4½ pounds.

Communication equipment sent aboard the satellite will sends data back to earth periodically.

The solar wind experiment is a part of the research programs of the LNS Cosmic Ray Group, which is headed by Professor of Physics Bruce Bond. Dr. Herbert B. Bridge is in charge of the Group's atmospheric plasma research. Assisting him are Dr. Frank Schwamb and Dr. Alan I. Liebman, associate professors of physics and astronomers at LNS.

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