PSYCHOLOGY

Alcohol Affects Judgment

Even relatively small quantities of alcohol were found to affect a driver's judgment and his willingness to "take chances" while on the road.

➤ AFTER TWO WHISKIES, even some long-experienced bus drivers are willing to try to take their buses through a gap 14 inches narrower than the bus.

This was disclosed when a test was made on the effect of small and large doses of alcohol on the willingness of drivers to take chances on the road.

Results of the experiment are reported in the *British Medical Journal* (June 21) by Dr. John Cohen, E. J. Dearnaley and C. E. M. Hansel of the University of Manchester, England.

The effect of alcohol, they found, was not to make the drivers willing to take what they regarded as a bigger risk, but to make them see only the same risk in what was actually a much more difficult, or impossible, task.

The men taking part in the experiment were bus drivers for the Manchester Corporation Transport Department. They had an average of about 12 years experience driving a bus and another eight years driving other vehicles.

As each man sat in the driver's seat of his bus, two white posts three feet tall were placed 12 feet in front of the bus. The space between the posts was gradually increased two inches at a time from a gap of seven feet four inches (the bus was eight feet wide) until the driver said he thought he could drive through it safely five times out of five tries. The same procedure was repeated, increasing the gap one inch at a time to see at what width the driver would actually attempt to drive through.

One group of drivers had consumed no alcohol, another group had had two British fluid ounces, and a third group had six British fluid ounces.

No alcohol-free driver tried to drive his eight-foot bus through a gap less than seven feet, five inches in width, but three of the men who had had two ounces of alcohol were willing to attempt to drive through a gap 14 inches narrower than the bus.

The trustworthiness of a man's judgment of his driving skill is impaired, it was found, when the alcohol concentration in the blood is lower than 0.5 milligram per milliliter, the concentration set by the U. S. National Safety Council as safe.

Neither the blood alcohol of any individual driver nor his score on a reaction time test or test of skill indicates his safety on the road, it was found.

Science News Letter, July 5, 1958

PHYSICS

Electricity From Heat

A thermionic converter has been developed that has a potential efficiency of 30%. It could be used wherever a high temperature source of heat is available.

➤ A DEVICE that converts heat directly into electricity, the thermionic converter, has a potential efficiency of 30%, its inventor reported to the American Physical Society meeting at Cornell University.

Dr. Volney C. Wilson of the General Electric Research Laboratory, Schenectady, N. Y., said the latest working model of the device uses a combination of metal and ceramic disks surrounding a high vacuum. It is the size of a quarter and produces electricity when the flame of a blowtorch is played upon it.

The first thermionic converter made by Dr. Wilson in 1957 was filled with gas. Its efficiency was about eight percent.

The vacuum device has the advantage of operating at a lower temperature than the gas-filled converter, Dr. Harold F. Webster and James E. Beggs, also of the GE laboratory, have found.

The thermionic converter could be used wherever a high temperature source of heat, nuclear or conventional, is available and an electricity supply is needed, including aircraft, missiles and satellites.

It is estimated converters the size of those described should be able to operate in the one- to ten-watt range.

In the thermionic converter, two electrodes are held at high, but different, temperatures. Electrons are "boiled out" of the hotter cathode and collected by the relatively cool anode. They can then flow through an external circuit and do work.

Dr. Wilson said the gas used in the first converter was cesium vapor, which partially ionizes, thus neutralizing the space-charge effect that would otherwise block the flow of electrons from cathode to anode.

Another way of reducing the internal resistance, Dr. Wilson said, was to place the electrodes extremely close together, as is done in the vacuum converter.

Dr. John M. Houston, also of GE, reported his studies of the theoretical efficiencies that can be expected of all types of thermionic converters.

Science News Letter, July 5, 1958

CONVERTER—The new high vacuum thermionic converter (left) is compared with the gas-filled experimental model announced earlier. James E. Beggs, its inventor, holds the devices. Dr. Volney Wilson invented the gas-filled type.

● RADIO

Saturday, July 12, 1958 1:30—1:45 p.m., EDT

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio network. Check your local CBS station.

Brig. Gen. William M. Thames, commanding general, U. S. Army Combat Surveillance Agency, Clarendon, Va., will discuss "New Eyes for Our Army."

EDUCATION

University Offers First Science Teaching Degree

➤ WHILE THE DEBATE progresses on the best way to improve science teaching, American University, Washington, D. C., has pioneered a new approach by offering a Master of Science in Science Teaching degree.

Few institutions give a comparable degree, but ten or 12 colleges and universities, including Harvard, Yale, Ohio State and others, are now working on plans for similar graduate programs.

Significantly, only six hours of the 30 required for an M.S.S.T. are to be in education. At least six hours must be in the student's major field, eight in another science, and three in the history or philosophy of science.

Science News Letter, July 5, 1958