ENGINEERING

Speed of Average Driver on Highway Found to Be 35 m.p.h.

Ordinary Traffic Moves Best Without Lights or Policemen; Alcohol Held Part Cause of One-Third of Fatal Accidents

A "SPEED detector" spying on motorists driving along the roads of Maryland revealed that the average speed of the 41,000 vehicles observed was 35.5 miles an hour, members of the Highway Research Board meeting in Washington learned from a report by Prof. A. N. Johnson of the University of Maryland.

The speed detector consists mainly of a square box containing a mirror. When you drive by it a reflection is flashed to an observer stationed a measured distance down the road. He then times you until you cover the distance to him.

Eight per cent. of the vehicles were going only 15 to 25 miles an hour, Prof. Johnson said. Only 1 per cent. traveled over 55 miles an hour; 12 per cent. between 45 and 55; 43 per cent. between 35 and 45; and 36 per cent. between 25 and 35 miles per hour.

Ordinary traffic, not including that of rush hours, gets along with least delay when there are no lights or policemen at the intersection, it was revealed by tests reported by E. H. Holmes, of the U. S. Bureau of Public Roads.

Of the various means for controlling traffic, the policeman caused the least delay, but the lights, when changed rapidly, and when operated by the traffic itself, were nearly as efficient.

Drinking of alcoholic beverages interferes with driving ability in four different ways, Dr. Walter R. Miles, of the Institute of Human Relations, Yale University, told the Board.

"A man may keep his car right side up and on the road when he is too intoxicated to walk, but this fact is not reassuring to others on the highway," Dr. Miles said.

Although alcohol is generally thought of as a stimulant, and gives the feeling of stimulation to the person drinking it, its real effect is depressing on most of the functions of the body, he pointed out. The driver who has been drinking gives a poorer grade of attention to what is going on around him, including other traffic and traffic signals. His eyes, hands, and feet are slower to respond. His muscular responses are less dependable, more variable. But he has an increased self-assurance which prompts him to assume the right of way and be willing to take a chance.

"Although alcohol is directly mentioned in only 7 to 10 per cent. of fatal highway traffic accidents, it is the belief of informed traffic officials that one-third of such accidents are at least partly chargeable to use of alcohol by the driver," Dr. Miles said.

Two pounds of calcium chloride treated sand or cinders to each square yard of pavement, is the recipe recommended for icy highways, by the Committee on Maintenance of the Highway Research Board. For city streets, two pounds of that salt alone should be used per square yard, and the resulting slush removed as soon as practicable.

Science News Letter, December 16, 1933

ARCHAEOLOGY

Speedy Action Rescues Relics Of "Lost City"

ARCHAEOLOGICAL treasures of the so-called Lost City of Nevada, doomed to be lost indeed beneath the water impounded by Boulder Dam, are to be rescued for posterity, at least in part, through the combined forces of the National Park Service, the Southwest Museum of Los Angeles and the Civilian Conservation Corps.

The arrangements were made through efforts of Congressman J. G. Scrugham of Nevada, who, when Governor of his State, was responsible for the discovery of this important group of Early Pueblo ruins. The present project is in charge of M. R. Harrington, of the Southwest Museum, who led the first expedition to work on the site in 1924-26, at Governor Scrugham's invitation. Work began November 15, and is slated to continue until about May 1.

The old city, occupied some fifteen hundred years ago, was unusually large, for its ruins can be traced along the Muddy River near Overton for a distance of nearly five miles. The houses were built mostly of adobe, or of alternate layers of adobe and stone, and were only one story high. One, however, contained more than fifty rooms. In exposed situations the walls had weathered down to the foundations, but where protected by sand-dunes standing walls four or more feet high were found.

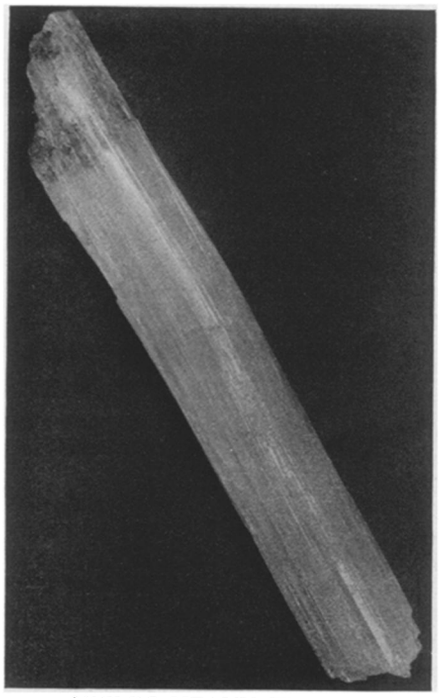
The first expedition uncovered many skeletons of the ancient people, and collected many fine specimens of artistically decorated pottery.

Science News Letter, December 16, 1933

PHYSICS

Pound of "Heavy Water" Being Manufactured

IN A FEW WEEKS, there will be at Columbia University a supply of about 400 grams (approximately a pound) of heavy water, similar to familiar ordinary water but with practi-



YIELDS HEAVY WATER

The U. S. Bureau of Standards has found that razorite (native borax tetrahydrate) from Southern California, a crystal of which is shown above, contains chemically bound water heavier than normal by seven parts per million. Razorite was probably deposited from the last mother liquors remaining after the complete evaporation of an ancient sea. With special laboratory evaporating equipment, heavy water with a density difference of forty parts per million has been quickly obtained

cally every hydrogen atom in it double the weight of ordinary hydrogen.

Prof. Harold C. Urey, Columbia University chemist and one of the group that two years ago discovered the existence of deuterium or heavy hydrogen, described the production of heavy water on a scale and at a low cost hitherto unattained.

Water particularly rich in heavy hydrogen is obtained from a commercial water electrolysis plant and concentration is effected in a laboratory plant that produced eight to ten grams (approximately one-third ounce) per day. The production cost is about $15 a gram, which is about a tenth of the costs reported from other laboratories.

The heavy weight isotope of hydrogen should be christened "bar-hydrogen," Prof. R. W. Wood of Johns Hopkins suggests in a letter to *Science*.

The symbol would be H with a bar above it, if Prof. Wood's suggestion were adopted, and compounds would be called bar-benzol, bar-ammonia, etc. Deuterium which has been suggested as the name of the double-weight hydrogen suggests a new element rather than an isotope, in Prof. Wood's opinion.

Science News Letter, December 16, 1933

GENETICS

Resistance To Disease May Be Inherited

RESISTANCE to disease or susceptibility to it may be inherited. Proof of this appears in a study by Dr. Charles B. Davenport, director of the department of genetics of the Carnegie Institution of Washington.

Inefficient thyroid glands, for instance, tend to run in families, Dr. Davenport found in a study of goiter in a mountain valley of Western Maryland. While all the population there ate essentially the same food and drank essentially the same water, which was poor in iodine, the majority of the population did not have goiters, although lack of iodine is a factor causing goiter.

However, many of the people do have goiters and studies of their relationship showed that the goiters appeared only in certain families.

"One reaches the conclusion, then, that there are strains in the valley characterized by inefficient thyroids—incapable, at least, of functioning normally when there is but a very small amount of iodine in the water," Dr. Davenport said.

Science News Letter, December 16, 1933

CRIMINOLOGY

New Paraffin Test To Detect Hand That Fired Gun

THE "PARAFFIN test," a chemical means of detecting the guilty hand which fired a revolver or pistol in the commission of a crime, has been officially adopted as a standard crime detection method, it was announced at Los Angeles, by Frank Gompert, criminologist of the county sheriff's office.

Based upon chemical research, the test, according to Mr. Gompert, fundamentally consists of nothing more than the color reaction of a solution of sulfuric acid and dythenylamine to the nitrates and nitrites which are the combustion products of gunpowder.

These chemicals are deposited in very small quantities on the hand of a person who fires a revolver or pistol by the gases which escape either from the cylinder of a revolver or the ejection mechanism of an automatic pistol, Mr. Gompert says.

The test was developed independently and apparently simultaneously by Dr. Fernandez Benitez, chief legal chemist of Havana, Cuba, and Prof. Benjamin Martinez of the Department of Identification and Criminal Research, Mexico City, and was first introduced into the United States by Deputy Sheriff Ed Ayres of Los Angeles County.

Illustrating the use of the test, Mr. Gompert said:

"If a suspect is arrested either on the scene of a shooting or shortly after commission of a crime involving the use of firearms, his hands are painted with soft, melted paraffin of a bearable temperature in order to avoid placing the reagents directly on the skin and also that the resulting 'cast' may be of permanence for court and other purposes.

"After the paraffin has hardened, it is removed with tweezers, carrying with it the deposits made by the combustion gases. This cast is then treated with the solution.

"If the suspect had nitric or nitrous substances on his hands, deep purple splotches will appear on the wax and we have a positive result," says the criminologist.

"A mere positive result does not mean, however," he adds, "that we have proof that the suspect is guilty of the crime for there is no infallible road to crime detection any more than there is a royal road to learning.

MAKING THE PARAFFIN TEST

Criminologist Gompert peels hardened paraffin from the hand of Deputy Sheriff Ayres. It will be tested with a chemical solution for tell-tale purple stains.