

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—in-capable, at least, of functioning normally when there is but a very small amount of iodine in the water," Dr. Davenport said.

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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.

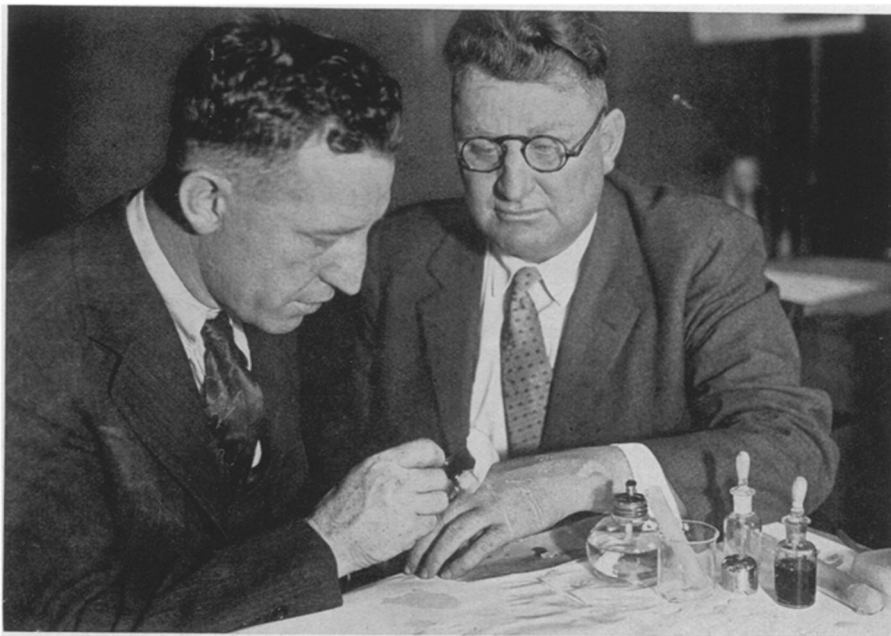
Illustrating the use of the test, Mr. Gompert said:

"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.

"We must remember, in justice to the suspect, that he might possibly be a laboratory employe, a pharmacist or a farmer who has been handling fertilizer and therefore accumulated chemical deposits on his hands similar to those made by gunpowder gases and yet be utterly innocent of guilt."

The efficiency of the test depends, as in so many other fields of investigation, upon the proper interpretation of results, Mr. Gompert warned.

"We soon discovered that the gunpowder nitrates were deposited in very minute quantities over the back and upper part of the hand in a sort of 'peppered pattern,' he said.

A total of 234 tests of the method gave positive results in every case, Mr. Gompert claims.

The method is not in general use by police departments throughout the country, and, so far, other criminologists have not confirmed the results obtained in Los Angeles. If the method proves to be successful, even for the detection of murders planned so as to look like suicide, it will be of great service to crime detection officers.

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SEISMOLOGY

Radio Timing Aids Earthquake Study

RADIO time signals from a powerful central station enable seven seismological observatories in southern California to work as one, thus clocking very accurately the rate of travel of earthquake waves. This is one of the modern refinements in earthquake study now being conducted at the California Institute of Technology, at Pasadena, as described by Dr. Harry O. Wood of the Carnegie Institution of Washington, which cooperates in the research, along with the U. S. Coast and Geodetic Survey and other organizations.

California, being a land of many geologic "faults" or slip-lines in the rocks, is also a land of many earthquakes, most of them small, a few of them great. For this reason it has been selected as a favorable huge-scale laboratory for intensive seismological study.

Many of the seismographs used in this study are of a type designed especially for the recording of the less intense "local" quakes, as distinguished from the long-range instruments that catch the waves from "world-shakers" that occur in distant lands.

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ARCHAEOLOGY

Secrets of American History Sought to Aid Unemployed

Civil Works Funds Will Employ 1,000 Men at Five Sites; Recent Public Works Grants Aid Other Fields of Research

A THOUSAND unemployed men will soon be disinterring secrets of aboriginal history in five different states. A new Federal Civil Works project approved by Harry L. Hopkins, Federal Civil Works Administrator, thus provides unexpected opportunities for scientific excavation on a large scale. All but one of the sites to be excavated are in the South, in Florida, Georgia, North Carolina and Tennessee. One is in California.

The sites to be explored are selected by the Smithsonian Institution, and are important to an understanding of America's ancient history. Heretofore, they have been considered projects too large to be undertaken by the Institution.

Scientists who will direct the work have been tentatively selected.

Reconstructing the lost story of what happened in Southeastern United States in the days before Columbus will be speeded by this new research in that section. Matthew W. Stirling, chief of the Bureau of American Ethnology, points out that not long ago the ancient story of the American Southwest was as confusing as that of the Southeast seems today. But today, through systematized research, the story of the Southwest is told in remarkable detail from a time before the Christian era down to the Spanish conquest.

Amazing Earthworks

One site in Florida, where 229 men will be put to work, consists of a system of prehistoric earthworks built by unknown Indians who lived in the Everglades before the Seminoles came there. These elaborate earthworks were discovered two years ago by Mr. Stirling. So great was the pattern of earthen ridges that he declared it amazing that no one had previously reported their existence.

Mr. Stirling will supervise the exploration of this important site near Lake Okeechobee to see what may lie buried there. He may also supervise excavation at the other two sites where work is to be done in Florida, one in

Brevard County, the other in Manatee.

In Georgia, Dr. Arthur Kelly, formerly of the University of Illinois, will direct the project of exploring the contents of a large mound in the city limits of Macon. The site, believed to be an old Hitchiti village, will call for 205 excavators.

In North Carolina, 104 men will explore a large mound near Murphy, believed to be the old Cherokee village of Guasili visited by the Spanish explorer De Soto. William B. Colburn from the University Museums, Ann Arbor, Michigan, will direct this project.

In Tennessee, Dr. Frank H. H. Roberts, Jr., of the Smithsonian will take charge of a project to excavate and restore Indian mounds in Shiloh National Military Park. The identity of the Indians who built these prehistoric mounds, and the age to which they belonged, have never been discovered.

California, the fifth state chosen for the research, will have 208 men at work opening up the Yokut Indian mound near Taft, in Kern County. Dr. William D. Strong of the Smithsonian is expected to direct the project. The mound is one of the key sites in California's prehistory, with a story extending indefinitely back into the past.

Public Works Allotments

Among the Federal projects just approved by the Public Works Administration, five allotments indicate a recognition of the value of scientific research as part of the recovery program.

Two allotments were made to the National Planning Board. One of \$35,000 provides for a program to discover, correlate, and study the researches and surveys now being made throughout the country on such projects as natural resources, population distribution and trends, health problems, local planning, and any other field which has a direct bearing on national welfare.

A second allotment of \$250,000 to the National Planning Board is to stimulate the preparation of (*Turn Page*)