

PHYSICS

Make Synthetic Fallout

► **SYNTHETIC RADIOACTIVE FALLOUT** by the ton has been produced in the laboratory by Government scientists, it was revealed in Philadelphia at the Fifth Hot Laboratories and Equipment Conference.

The man-made fallout has already been used to study ways and means to combat the deadly afterbirth of an A- or H-bomb attack without actually detonating a test bomb, L. W. Weisbecker and W. B. Lane of the U. S. Naval Radiological Defense Laboratory, San Francisco, told the conference.

Up to now, they pointed out, research on decontamination and defenses against "death producing and industry crippling" fallout has been difficult to control and dependent on the fallout produced by a bomb explosion either at Eniwetok or in Nevada.

"To obviate these difficulties," they reported, "methods of producing synthetic fallout in ton quantities have been developed at USNRDL. This synthetic fallout may then be used in carefully controlled decontamination experiments to check the theory and to develop effective counter-measures."

The synthetic radioactive fallout is produced in a "hot" laboratory by processing

the radionuclide, lanthanum 140. This was chosen as the tracer material because it is easily detected; has a 40.2-hour half-life, which is long enough to allow some flexibility yet short enough to die out in a reasonable period of time; and is an abundant fission product.

The Navy scientists disclosed that in the fall of 1956 a joint effort by the Army Chemical Corps and USNRDL resulted in an open-field experiment of the synthetic fallout at Camp Stoneman near Pittsburg, Calif.

Three different simulated bomb explosions were tested: underwater, shallow harbor and dry land surface. The experiment, which used mud dredged from the bottom of San Francisco Bay and soil from Camp Stoneman for the bulk carrier of the fallout, required one to two tons of the synthetic fallout per day for 20 days.

The tests, the scientists concluded, were highly successful. They proved to be "quite satisfactory for the job;" were safe for use in the open under field conditions; and make it possible to produce large amounts of synthetic fallout for any sort of experimental study for civil and defense training.

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ARCHAEOLOGY

Early Peoples Migrated

► **GREAT MOVEMENTS** of ancient Americans more than 3,000 years ago have been traced by archaeologists, it was announced by the Smithsonian Institution in Washington.

Evidence of the ancient migration of early peoples was found in the distinctive patterns of dishes and pots unearthed by Dr. Clifford Evans, associate curator, division of archaeology, U. S. National Museum; Miss Betty J. Meggers, research associate of the Smithsonian; and Sr. Emilio Estrada, director of the Museo Arqueológico "Victor Emilio Estrada" of Guayaquil, Ecuador.

The oldest pottery found by these scientists in the Guayas Province of coastal Ecuador was identified by them as being of the Valdivia culture. The Valdivia pottery has distinctive traits of finish and decoration that are very similar to the earliest pottery of Mexico and Central America.

Similar pottery has also been found southward in Peru. But the Peruvian examples are not so much like the Mexican ware as is the pottery of Ecuador.

This would indicate, the scientists conclude, that the people traveled southward from Mexico or Central America to Ecuador and then from there to Peru.

The Peruvian examples of the ancient pottery have been dated by the radiocarbon method as between 1500 and 1000 B.C. The

Valdivia culture in Ecuador, therefore, must be at least that old, probably considerably older.

Another style of pottery, somewhat more recent than the Valdivia culture, was also unearthed by the scientists. This has been named the Chorrera culture. Like the Valdivia culture, the Chorrera pottery is like that of early cultures in Mexico and also in Peru. But, again, the style is more nearly like the Mexican work than is the Peruvian pottery.

The Chorrera culture also seemed to move from north to south. This culture is dated at from 1000 to 500 B.C.

Still another movement of ancient peoples has been traced by the archaeologists through their distinctive pottery. Excavations on the Rio Napo, a river in eastern Ecuador and a tributary of the Amazon, revealed large villages and a well-developed ceramic art with elaborate vessel forms and complex decoration with incising, painting and designs cut back from the surface. This pottery has close similarities to pottery found on the Marajo Island at the mouth of the Amazon in northern Brazil.

The Marajo pottery is alien to that part of Brazil and seems out of place at the mouth of the Amazon. The new discoveries in Ecuador indicate that this culture originally came from the headwaters of the

Amazon tributaries in Ecuador and Colombia.

This is the first time that archaeological evidence has pointed to such an extensive downriver migration in prehistoric times. The movement probably took place a few hundred years before the coming of the Spanish.

When Orellana made his voyage down the Napo and the Amazon in the middle of the 16th century, the sites just unearthed had already been abandoned. He found no Indians living on the Napo within the boundaries of what is now Ecuador.

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MINERALOGY

Think "Lost Jade Mines" Of Mexico Located

► **WHAT** has been called "one of the best-kept secrets of our time," may have been tracked down through a clever piece of detective work by Dr. Thomas Clements, curator of mineralogy at the Los Angeles County Museum and head of the geology department at the University of Southern California.

The secret is the location of the rich veins of jade which have provided gem stones for Mexican artists since Aztec times. Dr. Clements is convinced that he has located at least one of the "lost mines" and hopes to uncover the actual site when he returns to the area next July.

The first steps toward hunting down the "lost mines" were taken by the late Dr. Raymond J. Barber, who preceded Dr. Clements as curator of mineralogy at the County Museum. Dr. Barber made an intensive study of ancient Mexican archives, some of which listed the tribute paid to Montezuma by the various provinces of his empire.

By plotting on a modern map those cities that made yearly contributions in jade, or "chalchihuitl" as it was then called, Dr. Barber identified a narrow belt of some 68 towns. He then compared this belt with contemporary geological surveys of Mexico to find the location of metamorphic rocks where jadeite is most likely to be found.

Following Dr. Barber's death in 1955, Dr. Clements continued his researches. Recently he went on an expedition to Mexico during which he and his wife traveled 10,000 miles in a jeep. They interviewed local Indians, examined specimens, and tracked down countless clues. They finally found specific evidence of a deposit outside Taxco in the state of Guerrero.

Dr. Clements is convinced that the deposits really exist and that some of them are still being worked by modern Indians, who continue to bring in raw stones to the cities for sale to local craftsmen and traders.

"It is more than possible that the jade mines of Mexico were never really lost at all," he concludes, "but are simply one of the best-kept secrets of our time."

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