aid of the radio compass. By this means the position of the ship at all times was accurately checked, and it was found that the valley was more than 500 miles away from the epicenter of the earthquake, and the point where the cable breaks occurred. For this reason it is believed that the valley has nothing to do with the quake; apparently it has been there a long time, but with no careful surveys of the region having been made in the past, its existence was unknown.

Many modern ships, especially the large liners, are equipped with sonic depth finders, so that a sounding can be taken in a few seconds, instead of the much longer time required when a line had to be lowered and hauled in again. For this reason, accurate depth surveys are important. Thus it will now be possible for a navigator, when entering the region of the Georges Bank, to tell his position closely, if he finds a sudden drop below him of 400 fathoms.

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ARCHAEOLOGY

Byzantine Relics Found at City of Saul's Disgrace

Building, Possibly Chapel or Villa, Is Dated By Greek Inscription in Mosaic Pavement

BEISAN, the Biblical Bethshan where the body of King Saul was hung up on the wall after he had killed himself in the lost battle of Mt. Gilboa, has now yielded treasures of a much later date to the spades of archaeologists. Gerald Fitz-Gerald, in charge of the Palestine expedition of the University of Pennsylvania Museum, has just reported to Curator Horace H. F. Jayne the discovery of a building of Byzantine date. This represents the period after the fall of Rome, when the seat of the Empire was at Byzantium, modern Constantinople.

The building, believed to be a chapel or a villa, still retains much of the original mosaic pavement of its rooms. There were also found gold jewelry and coins of the Byzantine Empire, as well as articles of bronze, glass and terra cotta of sixth-century Roman date.

In his report to Mr. Jayne, Mr. Fitz-Gerald says:

"Since beginning its work at Beisan this season the expedition has concentrated its efforts chiefly on the excavation of a cemetery, and we have succeeded in excavating about thirty tombs thus far.

"Nearly all of them have proved to be either of Roman or Byzantine date but one tomb we discovered was of a different type, namely a ledge of rock on which lay five of the pottery sarcophagi of the 'slipper' type with the lids representing human heads, which have been associated with the Philistine or other Egyptian mercenaries of about the 12th century B. C.

"These sarcophagi were much broken, but the head of one of them was preserved in good condition. The burials had evidently been looted, but a scarab and some rude figurines as well as some stirrup vases and other remains of sub-Mycenaean pottery were found with them.

"The principal finds in the Roman and Byzantine tombs consist of lamps, glass vases, and small objects of bronze. An extremely graceful figurine is a noteworthy find. Some gold earrings and a large number of carnelian beads were also unearthed."

The discovery of numerous little figures of terra cotta in good condition is regarded as important evidence for the undisturbed state of much of the find. Looted tombs in this region usually had figurines that accompanied the burial pretty thoroughly scattered or destroyed by the treasure-hunting vandals.

"A wholly unexpected discovery," the report continues, "was made of the cemetery slope, when a stone gateway, over three meters wide, was uncovered leading into a room paved with a mosaic floor. On the threshold the mosaic bears a Greek inscription, obviously of the Byzantine period. Beyond the inscription part of a pattern has been uncovered, including figures of birds in square panels, apparently arranged around an octagonal figure.

"The walls surrounding the mosaic figure have been traced, and it proves to extend for over fifteen meters towards the north, and nearly ten meters from east to west. Moreover, at the east of it there lie three smaller rooms, all paved with mosaics, beyond which similar paving has appeared, as is also the case on the west side of the big room.

"It is too early as yet to speak with certainty of the nature of this building, for, while the inscription appears suitable to a church or a tomb, the disposition of the room would rather suggest a house or villa. In any event the finding of so large an extent of mosaic paving at this point is a most gratifying surprise."

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WITNESS OF TOMB'S SECURITY

Figurines like this found undisturbed in graves at Beisan, the Biblical Bethshan where the body of King Saul was hung up on the wall after he had killed himself, show that looters had passed them by.

STATISTICS

1930 Population Found From Figures 20 Years Old

HOW FAST yeast or flies grow may seem to have little relation to the 1930 population figures, but Profs. Raymond Pearl and Lowell J. Reed, of the School of Hygiene and Public Health of the Johns Hopkins University, Baltimore, with a background of extensive and thorough studies of yeast and fly as well as human populations, predicted with great accuracy just how many people Uncle Sam's census enumerators would find in the United States this year.

Ten years ago, using only population data of 1910 and earlier, Profs. Pearl and Reed drew a "logistic curve" of population growth of the United States which predicted that the population in 1930 would be 122.4 millions.

The official census figures were 122.7 millions, which means that the prediction was correct to within only 2.5 parts per thousand. This is probably the most accurate forecast of a population of a large country ever made on the basis solely of data twenty years in advance of the event.

In a statement to *Science*, the official journal of the American Association for the Advancement of Science, Profs. Pearl and Reed explain their "logistic" theory of population growth which has been elaborated by them during the past decade. They have shown that human and other populations have a tendency to grow slowly at first, then rapidly, then slowly again until they become stationary. The curve of growth under given conditions can be expressed as an equation.

In the original forecast, it was suggested that the population of the United States would become stationary at about the year 2100 with a census figure of about 197 millions.

The authors now reaffirm this estimate, which assumes that the earlier growth of the country will be continued according to their law, provided there are no serious or cataclysmic alterations of climatic, geological, biological, economic or social conditions.

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CHEMISTRY

Woodworking Plants Become Source of Dust Explosions

Fine Wood Flour Used in Plastics is More Easily Ignited And Produces Higher Pressures Than Some Grain Dusts

WOOD not only burns; it also explodes. The fact that wood dust is one of the most serious sources of dust explosions and that it is more easily ignited than some of the grain dusts which have been the cause of many fatal disasters, is a part of the latest information learned from investigations by dust explosion engineers.

Linoleum, bakelite, dynamite, tooth paste tube tops, and ash trays are largely responsible for the recent increase in the hazard of wood dust explosions. These articles frequently have in their composition quantities of wood flour, which is much finer than saw dust—so fine that it will pass through a 200-mesh screen.

"The finer wood dust is made the greater the danger of explosion from it," explained Hylton R. Brown, of the U. S. Department of Agriculture, who has made extensive studies of dust explosions. Mr. Brown discussed dust explosions in woodworking industries before the annual meeting of the American Society of Mechanical Engineers in New York this week.

"The first dust explosions occurred in flour mills," he said, "and for many years such explosions were the only ones reported. Now the hazard is recognized in grain elevators, starch factories, sugar refineries, woodworking plants, textile mills, and factories in which rubber dust, sulfur dust, metallic dusts, powdered milk, chocolate and cocoa or other combustible materials in the form of dust are manufactured or handled.

"In the laboratory, tests have shown that wood dust is more easily ignited and produces higher pressures than some of the grain dusts which experience has taught are capable of producing tremendous pressures and completely destroying concrete and steel structures when the proper mixture of dust and air is ignited."

Mr. Brown has measured the force of test explosions caused by the dust of different woods and he finds it difficult to say which wood causes the greatest explosion. From a concentration of two ounces of dust per cubic feet, an explosive force as great as 26 pounds per square inch has been obtained.

"If any comparison can be drawn," he said, "it is that softwoods as a rule produce higher pressures than hardwoods when the concentration is low, but as the concentration increases the pressures increase more rapidly for hardwood than for softwood."

Cleanliness, elimination of sources of ignition and prevention of static electricity were suggested as safety measures.

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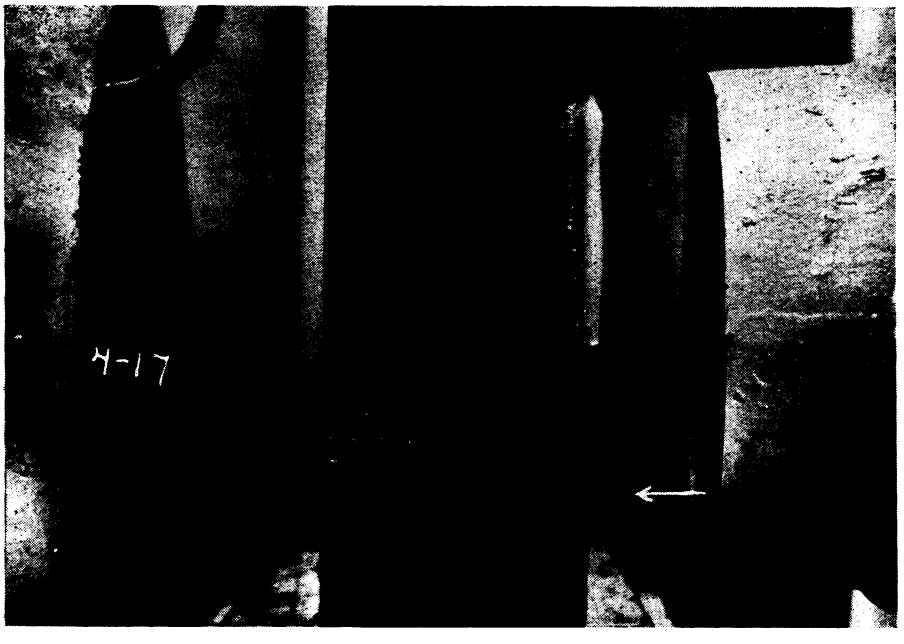

AIR SPEED, 70 MILES PER HOUR

Temperature, 24.8 degrees Fahrenheit, in the refrigerated wind tunnel of the Langley Memorial Aeronautical Laboratory, Langley Field, Va. Ice, which often brings unexpected disaster to aviators, has formed on the untreated upper half of the model wing while the lower half is protected from ice formation by a coating of "Karo" syrup. Engineers working under the auspices of the National Advisory Committee for Aeronautics have found such soluble compounds as corn syrup helpful in preventing the formation of ice on airplane wings.

Forty carloads of quick-frozen 1930 Georgia peaches are now being distributed in large cities.