

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.

Science News Letter, December 6, 1930

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



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.