

Whole blood was shipped successfully across the Pacific in an insulated container in which the bottled blood is placed in racks around a large compartment of cracked ice, Mr. Belshaw said. Although temperatures inside planes in the Pacific

often go as high as 130 degrees, this method keeps the blood to be used in treating the wounded at a temperature between 40 and 45 degrees which is necessary to keep it in usable condition.

Science News Letter, August 25, 1945

PHYSICS

Atom Force Due to Brisance

The suddenness of change from solid to gaseous state is responsible for the explosive force which makes the new atomic bomb the most terrible weapon yet devised.

► THE EXPLOSIVE force which makes the new atomic bomb the most terrible weapon man has yet devised for his own destruction comes from sudden release of energy. In most explosions energy makes itself known as heat and as shattering of nearby objects, caused by expansion of hot gases. This suddenness in release of power, known to explosives experts as brisance, depends largely on the speed with which the reaction takes place. Nitroglycerin has more brisance than gunpowder because it burns so much faster.

The new bomb is known to be powered with atomic energy. The feature of atomic energy which makes it a promising field for research is that, although the amounts of material available for use in the whole world are very minute, the amount of energy they can release is relatively enormous.

Conventional explosives are chemicals which burn very quickly, forming products which are wholly gases. These gases expand very fast in the heat their burning generates. They do not depend on air for their combustion. They carry in their own formulas the proper kinds and amounts of chemicals to form destructive masses of expanding gas, which push everything out of their way. They have to be mixtures which are relatively safe to handle, but which let go with a bang when set off by a detonator. The detonator supplies the margin of extra energy necessary to start the reaction.

Explosions due to sudden firing of small particles, like the dust and chaff in grain elevators, no less than those caused by explosives of the ammunition type, result in waves of hot gases. When confined in small space, these gases expand in every direction, and any part of their surroundings that can be moved is thrown or shattered violently by the blast. Dust is explosive because the large surface of its fine particles makes contact

with plenty of oxygen in the air to burn it. Any chance spark can set it on fire.

Not all explosions result in release of energy. An overheated steam boiler explodes because the pressure of the gas inside has become greater than the walls of the boiler can support. The escaping steam becomes cooler, as contrasted with the hot combustion products of the dust and ammunition types. But whatever the cause, the shattering effect is capable of doing great damage.

Judging from the reports of the experimental explosion in New Mexico, both the brisance and the heat developed by the atomic power bomb are tremendous. If the steel tower which is reported to have disappeared is not found far away in the form of twisted scrap, or a melted puddle of iron at the site where it stood when the experiment started, it must be presumed to have vaporized. This would indicate temperatures hotter than 3,000 degrees Centigrade, or 5,400 degrees Fahrenheit. Astronomers are more familiar with temperatures in this range than are furnace men who work with molten earth materials. At even half that temperature, around the melting point of iron, life would vanish instantly in a puff of smoke.

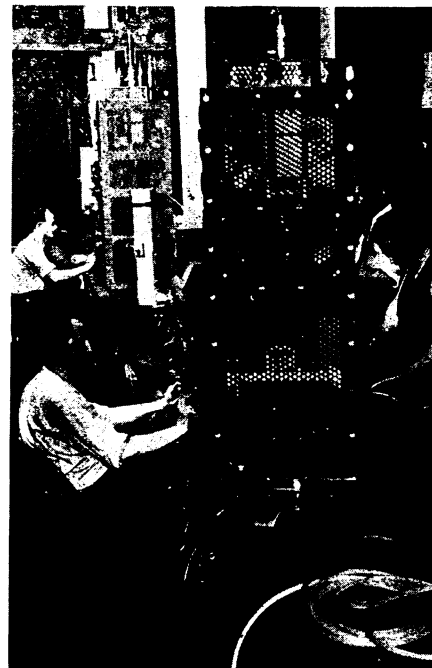
Science News Letter, August 25, 1945

POPULATION

Small Town Girls Likely To Marry in Their Teens

► GIRLS living in small southern towns in the United States are most likely to marry before they are 20; those living in large northeastern cities are least likely to marry young.

One-ninth, or 11.1%, of the native white girls between the ages of 15 and 19 were married at the time of the 1940 census, the Metropolitan Life Insurance Company points out in its statistical bulletin. In the South, 18% of the young



TESTED—The radar transmitter set up for testing in a General Electric plant.

girls of the region were married before they were 20, and 20.6% of the girls in communities of less than 2,500 inhabitants.

In the larger cities only 6.3% of the girls from the ages of 15 to 19 were married, while in the smaller towns and villages throughout the country 15.1% had been married. The farther west a young girl goes along the northern tier of the country, the better appear to be her chances for early marriage.

Although girls in our small towns and villages may have a better chance for early marriage than those in large cities, figures of the U. S. Bureau of the Census show that the probability of eventual marriage is greatest for those who remain on the farm.

Girls in the West have a better chance of eventual marriage than girls in other sections of the country, irrespective of whether they are living in cities or whether they have remained on the farm.

Science News Letter, August 25, 1945

Frogs croak mostly during the breeding season.

Metallic salts of *quinine*, added in tiny quantities to materials used in artificial teeth, give them fluorescence and make them glow under ultraviolet light similar to natural teeth.