

MEDICINE

Save Mothers and Babies

► **RADIOACTIVE ISOTOPES** can now diagnose placenta previa, a serious complication of the birth process, in time to save the lives of mothers and babies.

The placenta, which connects the mother with her unborn baby to permit passage of food, oxygen and waste products, is normally located above the fetus. But in placenta previa it is attached to the lower part of the mother's uterus near the birth canal.

Medical literature reports approximately one out of 200 pregnancy cases show this complication, with a high mortality rate for both mother and child.

Now, by introducing radioactive iodine into the mother's blood stream and applying an isotope counter to locate the placenta from its heavy concentration of blood, the condition can be discovered in time for treatment.

The treatment includes blood transfusions

as needed, confining the patient to bed and performing Cesarean section for all but the most minor degrees of placenta previa.

Drs. Denis Cavanagh, Charles E. Powe and Albert J. Gilson of the University of Miami School of Medicine and Jackson Memorial Hospital, Miami, Fla., report a new study in *Obstetrics and Gynecology*, Oct., 1961, official journal of the American College of Obstetricians and Gynecologists.

The investigators report accurate vertical location of the placenta in 29 of 30 mothers studied by using radioactive iodine.

They also say that during a three-year period, 632 women were admitted to Jackson Memorial Hospital with bleeding symptoms during the last three months of pregnancy, of whom 80 had placenta previa, but none died with this complication. Four out of five babies were saved.

• Science News Letter, 80:285 October 28, 1961

PUBLIC HEALTH

Fallout Less Than in 1958

► **THERE IS LESS** fallout now in the United States from the recent Soviet nuclear explosions than immediately resulted from the series of nuclear tests by the United States and the United Kingdom in 1957-58. But this does not mean that the Soviet explosions are either "cleaner" or less of a health hazard than the Western tests.

It only means that most of the Soviet tests were in excess of 1,000,000 tons of

TNT (1 megaton) and thus were powerful enough to inject the radioactive debris into the upper atmosphere, the stratosphere, Dr. Lester Machta of the U.S. Weather Bureau told *SCIENCE SERVICE*. The contaminated particles, including the cancer-causing strontium-90, produced by the 19 Soviet tests, will remain in the stratosphere until late winter or early next spring when seasonal exchanges of air in the atmosphere, and

precipitation occur. Only a very small fraction, perhaps only one percent, has settled to earth.

Most of the U.S. and U.K. 1957-58 tests were in the lower atmosphere, the troposphere, and the debris settled to the ground quickly. However, larger Soviet tests in 1958, as well as some by the West, sent debris into the stratosphere. This was washed down in the spring of 1959, accounting for the sudden rise in radioactive fallout reported then.

Next year's spring showers, therefore, will bring larger amounts of the dreaded fallout as well as the more welcome flowers, Dr. Machta predicted. Greater concentrations of strontium-90 as well as other harmful radioactive elements probably will settle in the northern areas of the world. These will include the Scandinavian countries as well as Canada where presently high levels of radiation are causing official concern. Reports are that the Red Chinese also have expressed concern to the U.S.S.R.

In hearings before the Joint Committee on Atomic Energy in 1957, a seminar of scientists suggested that the maximum permissible release of radiation from nuclear explosions into the world's atmosphere be limited to that from 10 megatons. The tests by the United States, Great Britain and the Soviet Union in 1957-58 alone reached a total of 35 megatons. The present Soviet series has been estimated at over 10 megatons, bringing the total of known nuclear explosions since 1957 to 45 megatons. Much of the resulting debris such as cesium-137, carbon-14 and strontium-90, are potentially harmful and the latter two are long-lived.

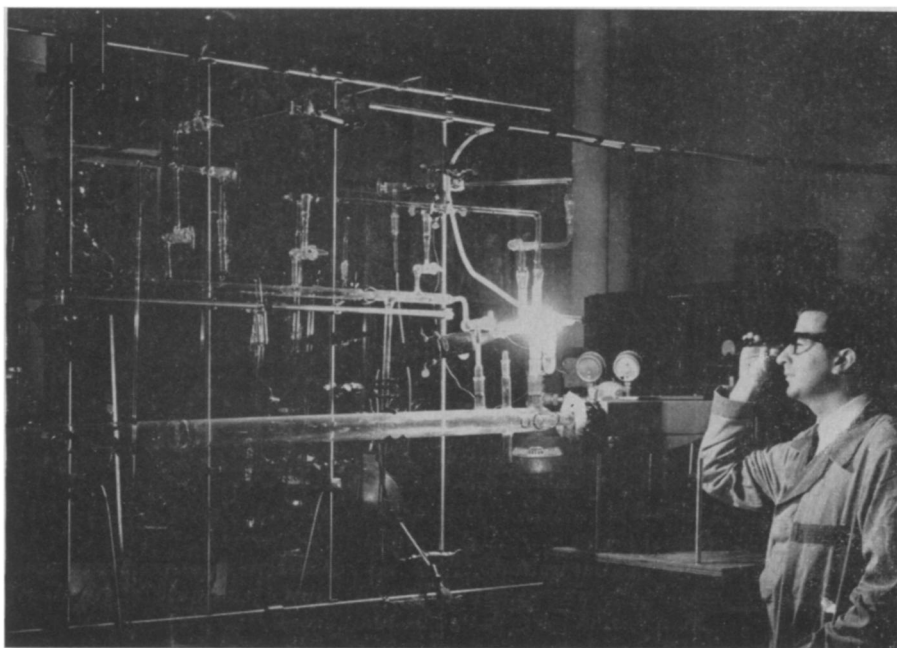
How dangerous is this fallout to the total population? According to the U.S. Public Health Service, "at present fallout levels in this country, and for that matter even at considerably higher levels, this risk in the total group is relatively small and since this total risk is divided among all the exposed persons the hazard to any single individual is extremely small."

The Public Health Service, however, has noted that fallout is neither uniformly distributed throughout the earth nor uniformly absorbed by each individual. Therefore, the hazards will vary from place to place and from individual to individual.

The risks from absorption of strontium-90, a cause of leukemia and bone-cancer, are infinitely greater in infants and children whose calcium formation is not complete. Experiments have shown that even low-level doses of radiation are harmful to the nervous systems of the more highly developed animals, such as man. The hazard of genetic damage from cesium-137 and carbon-14 is greater for the unborn child.

According to Dr. Linus Pauling, distinguished biochemist and Nobelist, exposure to cesium-137 resulting from the Soviet tests, could result in 160,000 children being born in the next few generations with physical and mental defects. The carbon-14 debris might cause in the next 12 generations as many as four million stillbirths, embryonic, neo-natal or childhood deaths, and living children with physical or mental defects.

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HOT-COOL GAS—The effect of plasma, an ionized gas capable of conducting an electric current, on such chemicals as nitrogen, hydrogen, oxygen and nitric oxide, is studied by Dr. Gene G. Mannella at the Battelle Memorial Institute, Columbus, Ohio. The "low-temperature" plasma is estimated at more than 10,000 degrees Fahrenheit.