



**TUBE IS ASSEMBLED**—The heart of the machine is this doughnut-shaped vacuum tube of glass. The doughnut has an over-all diameter of 74 inches, while the elliptical tube itself measures eight inches horizontally and five inches vertically.

five inches vertically. The inner surface of the tube is electrically conducting, so that it will not accumulate a charge that would upset the paths of the electrons within.

Projecting into the doughnut at one point is an electron gun, consisting of a heated filament from which electrons are boiled off. These have an initial impulse of several thousand volts to start them in their orbits inside the doughnut.

The machine operates on ordinary 60-cycle alternating current. Acceleration of

the electrons is confined to the first quarter of each cycle lasting  $1/240$  of a second, during which the current goes from zero to its maximum in one direction. Then it goes back to zero, before building up in the opposite direction.

Just as the end of the quarter cycle is reached, a pulse of current passes through two smaller auxiliary coils on the pole faces. This causes the electrons to spiral away from their orbit and to hit a tungsten target. This causes the generation of X-rays. (See SNL June 3, 1944.)

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#### MEDICINE

## Anemia Remedy

Newly synthesized vitamin, folic acid, gives a "definite upsurge of well-being" to weak, gaunt sufferers from this robber of red blood cells.

► PATIENTS weak, gaunt and waxy-white, whose blood was thinned to half or less the normal number of red cells, felt a "definite upsurge of well-being" as they gained fresh red blood from doses of a newly synthesized vitamin, folic acid, Dr. Tom D. Spies of the University of Cincinnati reports. (*Southern Medical Journal*, Nov.)

Associated with Dr. Spies in the studies, conducted at the nutrition clinic at the Hillman Hospital, Birmingham, Ala.,

were Dr. Carl F. Vilter, Mrs. Mary B. Koch and Mrs. Margaret H. Caldwell.

The synthetic folic acid which swiftly increased the number of immature red blood cells and brought the count of mature red cells and hemoglobin content towards normal is the first synthetic substance to produce this response.

The discovery of its effect is therefore hailed by the editor of the *Southern Medical Journal* as "another milestone in the study of macrocytic anemia."

Macrocytic anemia occurs not only as pernicious anemia but also with liver disease, pregnancy, sprue and pellagra. Liver and liver extract, dried hog's stomach, kidneys and brain have heretofore been the only substances which remedied this macrocytic anemia. Various B vitamins were tried by Dr. Spies and associates. These included niacin, thiamin, riboflavin, calcium pantothenate, inositol, pyridoxine, para-aminobenzoic acid, choline, pyridoxamine and pyridoxal. They had little or no effect.

Synthetic folic acid may not produce all the results that are obtained by doses of potent liver extract. Further studies may show whether this vitamin is the anti-pernicious anemia material in liver or closely related to it.

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#### MEDICINE

## Nobel Prize in Medicine Awarded for Penicillin

► THE NOBEL prize in physiology and medicine for 1945 has been awarded to Sir Alexander Fleming, discoverer of penicillin, and Sir Howard W. Florey and Dr. Ernst B. Chain, who fathered its development into a life-saving remedy. The story of penicillin has been brought to SCIENCE NEWS LETTER readers beginning with the announcement of its discovery (*SNL*, May 10, 1930), and in numerous other reports such as those in the following issues: Dec. 4, 1943; Mar. 24, 1945; May 29, 1943; July 4, 1942; Nov. 22, 1941.

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SIR ALEXANDER FLEMING