MEDICINE

Disabler Preventive

Rheumatic fever may yield to vitamin P, a plant pigment in red pepper and lemon peel. Effects of the treatment appear consistently favorable.

➤ RHEUMATIC FEVER, dread cause of heart disease in children and young adults, may yield to a chemical found in red pepper and lemon peel. According to a report by Dr. James F. Rinehart, professor of pathology in the Medical School on the San Francisco campus of the University of California, a plant pigment, flavone, known as the permeability factor or vitamin P, has shown considerable promise as a treatment for the great disabler, rheumatic fever.

"To date 19 cases (15 children and four young adults) have been treated for periods of one month or longer by administration of vitamin P," Dr. Rinehart said. "Ten of the 19 cases studied had shown persistent activity of the rheumatic process for periods ranging from six to 17 weeks prior to treatment."

The effects of the treatment were not dramatic but appeared consistently favorable, Dr. Rinehart noted. All cases showed a slowing of the rate at which the red blood cells settled out from the blood serum. This rate is greatly accelerated in rheumatic fever, and a slowing of this rate is a gauge of improvement.

"As urgent as the need may be for an effective treatment for rheumatic fever, an even greater one exists for a preventive," said Dr. Rinehart. "Complete control of streptococcic infections, such as sore throats, is not possible at this time. If nutritional deficiency of vitamins C and P prove to be conditioning factors which prepare the soil for rheumatic fever, prophylaxis can be carried out.

"It seems improbable that improvement noted in these cases was coincidental. It is recognized, however, that rheumatic fever tends to run an unpredictable course and that spontaneous remissions may occur at any time. Consequently this must be considered a preliminary report and final judgment regarding the effectiveness of vitamin P as the treatment of rheumatic fever withheld until a larger number of cases have been studied."

While the bacterial cause of rheumatic fever has not been definitely established, the common occurrence of respiratory infections with various strains of group A hemolytic streptococci preceding the rheumatic fever leads most doctors to believe that this organism is at least one of the causes. However, only a few streptococcic sore throats are followed by rheumatic fever which would seem to indicate that there are other contributing causes.

In a former paper Dr. Rinehart suggested that a mild condition of scurvy, caused by insufficient amounts of vitamin C, might be one of these contributing factors. Guinea pigs which had been deprived of vitamin C and then inoculated with hemolytic streptococci developed a condition similar to rheumatic fever in humans. Treatment of rheumatic fever patients with large amounts of vitamin C, although possibly beneficial, showed no pronounced effect on the course of the illness.

Subsequent investigations on a new factor, vitamin P, lead Dr. Rinehart to believe that the guinea pigs had probably been deprived of this vitamin as well as vitamin C. Also the new P vitamin was found to affect the capillary strength; lack of it caused the walls of the capillaries to become exceedingly fragile and to rupture easily, causing hemorrhage. Since it is known that vitamin P acts with vitamin C in certain body chemistry, Dr. Rinehart decided to test vitamin P as well as vitamin C on rheumatic fever cases.

Science News Letter, July 8, 1944

CHEMISTRY

Rubber Replaces Wood In Storage Batteries

➤ WAFER-THIN rubber is now replacing wood as a plate separator in the manufacture of storage batteries, making it possible to ship batteries to battlefronts in a fully charged condition without the acid and water once necessary to insure the electrical charge.

The new use of rubber eliminates the possibility of buckling of wood, which was one of the major causes of battery failure. The plate separators will outlast wood at the ratio of five to one in acid of normal battery strength, increasing the useful life of the battery.

The microporous rubber, made up of millions of tiny cells per square inch, permits complete charging of the battery at the point of manufacture, and shipment without the liquid. This material was developed by scientists of the United States Rubber Company.

After the battery has been completely charged, the acid mixture is removed. The plates and separators are removed and completely dried. After taking off all moisture, they are replaced and the

RUBBER FOR WOOD—As the last step in the manufacturing of the new rubber battery separators, hot water is poured on the material to insure the removal of any foreign matter.

battery is re-sealed ready for shipment. Batteries thus treated have been found to retain 75% of the original charge after being in storage for more than a year.

The battery can be used immediately at the battle-front after distilled water and acid have been added.

The new method reduces the danger of loss of electrical charge from spilling the acid mixture in transit. Freight charges are lower too, because of the reduced weight due to elimination of the acid and water mixture.

This new battery development will make possible large shipments of batteries in the postwar world without the weekly recharge that is now necessary.

Science News Letter, July 8, 1944

AERONAUTICS

Robot Planes Not New

Two decades ago, the Army had unmanned, bomb-carrying planes that were, on the whole, successful. They did not have jet propulsion.

➤ OVER TWO decades ago the U. S. Army had experimental models of unmanned, gyroscope-steered, bomb-carrying planes that as a whole were successful, but the experiments were discontinued because of the plane's inaccuracy in reaching specific targets.

An Army photograph of one of these models published a few months ago (see *SNL,* Jan. 1, 1944) shows that its appearance was not unlike the reported German pilotless planes now being directed at England. The early American flying bombs were propelled by a propeller driven by an engine, not by jet propulsion. It was a biplane, not a monoplane.

The records in the U. S. Patent Office also show that robot planes were invented here in America as early as 1918 at the time of the first world war. The Office of War Information issued information supplied by the National Inventors Council and the U. S. Patent Office of the U. S. Department of Commerce which details two early inventions.

On April 18, 1918, the late Lawrence Burt Sperry, of the Sperry Gyroscope Company, filed an application with the U. S. Patent Office for a gyroscope robot plane. Sperry's plane was driven by an electric motor, and was so controlled that it could change course in flight. It carried a heavy load of explosives which was automatically detonated when the robot plane reached its predetermined destination. The electric motor and the explosive units were separate. When the plane was over the target, the explosive charge was released, as a modern bomber now drops its load.

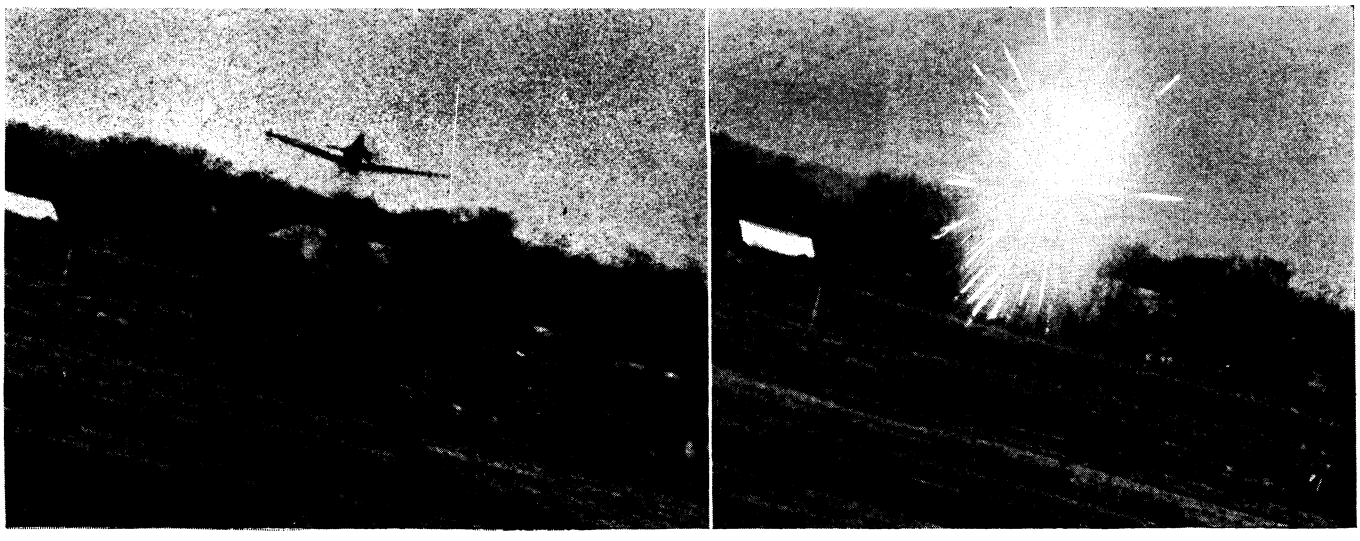
Foreseeing that the robot plane might be shot down by enemy aircraft, Sperry included a special mechanism which would cause the entire plane to explode if brought down before it reached its destination "so that the chance of doing damage to the enemy is greatly enhanced." U. S. patent 1,670,641 was granted on Mr. Sperry's invention on May 22, 1928.

A second patent application was made April 25, 1919, by Dr. Charles F. Kettering, now chairman of the National Inventors Council and Vice-President of General Motors Corporation, for an aerial torpedo.

Dr. Kettering's aerial torpedo is described in the patent application as, ". . . carrying a large charge of explosive, and having control mechanism adapted so to direct its movement that it may be caused to travel over a desired path and land upon a predetermined objective."

The mechanism had a biplane type fuselage, and was thrust through the air by a two-cycle gasoline motor operating a propeller. A gyroscopic compass controlled the altitude and direction in flight.

The Kettering aerial torpedo carried several hundred pounds of explosives. Like the modern German robot planes, it was launched from an inclined plane, or from a catapult. The torpedo was held to the catapult by a thin wire, just sufficiently strong to keep it from jumping off when the motor was turned on. As soon as the motor had developed suffi-



FLAMING PLANE—These pictures, taken by a camera installed under the guns in the nose of a plane (see SNL for June 10, p. 371), tell the death story of one Nazi plane. The left picture shows the aircraft skimming the tree tops before the hit. To the right, the Nazi craft is seen exploding in mid-air from shells shot from the same gun that was synchronized with the camera.