

of surgery at New York Medical College, reports. (*Journal, American Medical Association*, May 5.)

The patient had suffered from a chronic osteoarthritis of her right knee for four years. A few days after warming her feet near an oven, a blister opened by itself and discharged a yellow, watery fluid. Shortly thereafter almost the whole leg became involved in a serious infection and gangrene set in.

Sulfadiazine failed to help and had to be stopped because a rash developed on the patient's arms and face. At this time her doctor advised amputating the leg through the middle of the thigh to save her life. Dr. Kross, called as surgical con-

sultant, believed the operation should not be done, as it would involve cutting through infected tissue. Either gangrene of the stump or general poisoning seemed likely to result. Refrigeration treatment was tried, with success.

The 89 days during which the low temperature treatment was carried on is the longest on record for such treatment, Dr. Kross believes. He reports the case for this reason and because he found that when the treatment was stopped after shorter periods, the inflammation and gangrene started up again. The case, he states, shows the necessity for continuing the treatment until the infection is fully overcome.

Science News Letter, May 12, 1945

AERONAUTICS

Automatic Take-Offs

High-precision gyroscopes may make completely automatic flight, including take-off and landing, a reality within a short time.

► HIGH PRECISION gyroscopes can hold a plane on its preset course more accurately than a human pilot, and it is possible that within a short time completely automatic flight, including take-off and landing will be a reality. Flights have already been made with a gyroscopic device that permits automatic control of turns, banks and other aerial maneuvers, reports the General Electric Company.

All this means that one day you may be able to sit down in the cockpit, throw a few switches and set a dial or two, turn over the engines then lean back and let the plane fly itself. The gyroscopes that may make this kind of flying a practical reality are the same as those that are being used on ships and in certain types of aircraft instruments today and in war they direct torpedoes to their targets. Essentially, they all consist of a wheel, or a body, mounted on a shaft and arranged to be spun around at great speed. The first instrument built around a gyroscope was constructed in 1744, the report states.

One of the most recent uses for gyroscopes is in computers for aerial guns on the Boeing B-29 Superfortress and other aircraft. Here they help calculate the factors between the gun and the target, determining how far ahead of the enemy plane the gunner must shoot to have the bullet hit the fast moving target in space.

Regardless of gravity, magnetism or the earth's rotation, the gyroscope main-

tains a fixed direction of the spin axis. It resists any attempt to change its direction while spinning. When a plane or ship deviates from its course, the gyroscope, mounted horizontally, still points in a pre-set direction, permitting the automatic calculation of how far the craft is off its course. This is the principle of the airplane's directional gyro. Another gyroscopic device tells the pilot whether he is nosing up or down, even when he may be traveling through thick clouds and unable to see the horizon.

Indicating information such as this makes the gyro adaptable to robot devices for completely automatic flying. In such an installation there would have to be several gyros, each designed to do a special job. For example, when a plane gets off its course or is not in straight, level flight, the gyro would sense this and send an electrical message to an amplifier, where the message is converted into greater electrical energy and sent on to a power unit, such as a servo motor, that will move the controls and bring the plane back to its proper flying position and correct course. All this can be accomplished without any attention from a human pilot.

While some types of gyroscopes are spun by air, most of those in use today are electrically driven. Electrically-driven gyros are not limited by extreme altitudes and temperatures, and will operate satisfactorily from plus 160 degrees Fahr-

enheit (which might be encountered on a desert) to minus 90 degrees Fahrenheit (a temperature sometimes experienced at high altitudes). These gyros can operate at all altitudes up to 40,000 feet and can run for 1,000 hours without servicing.

Science News Letter, May 12, 1945

Some *plants* flower only when the daily period of illumination is relatively short—that is, when the days are short and the nights long; when the light periods are long the plants remain vegetative.

SCIENCE NEWS LETTER

Vol. 47 MAY 12, 1945 No. 19

The weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C. North 2255. Edited by WATSON DAVIS.

Subscriptions—\$5.00 a year; two years, \$8.00; 15 cents a copy. Back numbers more than six months old, if still available, 25 cents. Monthly Overseas Edition: By first class mail to members of the U. S. armed forces, \$1.25 a year. To others outside continental U. S. and Canada by first class mail where letter postage is 3 cents, \$1.25; where letter postage is 5 cents, \$1.50; by airmail, \$1.00 plus 12 times the half-ounce airmail rates from U. S. to destination.

Copyright, 1945, by Science Service, Inc. Reproduction of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service.

Entered as second class matter at the post-office at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., PEnnsylvania 6-5566 and 360 N. Michigan Ave., Chicago, STate 4439.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Edwin G. Conklin, American Philosophical Society; Otis W. Caldwell, Boyce Thompson Institute for Plant Research; Henry B. Ward, University of Illinois. **Nominated by the National Academy of Sciences:** Harlow Shapley, Harvard College Observatory; Warren H. Lewis, Wistar Institute; R. A. Millikan, California Institute of Technology. **Nominated by the National Research Council:** C. G. Abbot, Smithsonian Institution; Hugh S. Taylor, Princeton University; Ross G. Harrison, Yale University. **Nominated by the Journalistic Profession:** A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Executive Editor, Sun Papers; O. W. Riegel, Washington and Lee School of Journalism. **Nominated by the E. W. Scripps Estate:** Max B. Cook, Scripps Howard Newspapers; H. L. Smithton, Executive Agent of E. W. Scripps Trust; Frank R. Ford, Evansville Press.

Officers—President: Harlow Shapley. **Vice President and Chairman of the Executive Committee:** C. G. Abbot. **Treasurer:** Frank R. Ford. **Secretary:** Watson Davis.

Staff—Director: Watson Davis. **Writers:** Frank Thone, Jane Stafford, Marjorie Van de Water, A. C. Monahan, Martha G. Morrow, Robert N. Farr. **Science Clubs of America:** Joseph H. Kraus, Margaret E. Patterson. **Photography:** Fremont Davis. **Sales and Advertising:** Hallie Jenkins. **Production:** Dorothy Reynolds.