Nature Note

Marsh Marigold

➤ A golden sheen of bright yellow blooms spreads across the drab marshes and wet places of the Northern Hemisphere—a welcome sight after the long dark winter.

These are the five-petalled simple flowers known as marsh marigolds.

Actually these plants are not marigolds. They are distant relations of the buttercups, of the Ranunculaceae family, which comes from the Latin name for butter cup but also means little frog, in allusion to the watery places where the species grows.

The marsh marigold, *Caltha palustris,* has other names too—Kingcup and May Blobs. It grows about four to six inches high, is hollow-stemmed and has kidney-shaped leaves. The bright yellow cups are formed of five to nine petal-like sepals, which are usually the outer parts of the flower chalice and are nearly always green. This flower has no petals.

When the marsh marigold grows in the lowland marshes or swamps, it stands erect. Toward the colder north lands or on mountains, however, the plants grow smaller and have trailing slender stems.

This flower, like most wildflower members of the Ranunculaceae family, such as the buttercup, crowfoot, goldilock, mousetail and lesser spearwort, is symmetrical. Other members of this family are asymmetrical—such as the monkshood and delphinium.

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MEDICINE

Penicillin Kills Bacteria By Stealing Enzyme

➤ THE SECRET of a marvelous thief is being revealed. Scientists are finding that the drug penicillin destroys harmful bacteria by stealing an essential enzyme.

Penicillin has been an effective healer for more than 36 years, yet scientists have not known exactly how the drug works.

Now, recent studies show that it works by reacting readily with an enzyme that is necessary for the growth of harmful bacteria within human and animal bodies.

The long-held secret was divulged by Dr. Jack L. Strominger, University of Wisconsin Medical School, Madison, at the annual meeting of the National Academy of Sciences in Washington, D.C.

Key to the secret lies in the fact that penicillin reacts with the recently isolated enzyme, glycopeptide transpeptidase, more readily than the bacteria.

The enzyme is essential in building the rigid cell walls of the bacteria. It helps form a bridge between chains of combinations of sugar and protein units in the walls, Dr. Strominger said.

The enzyme reacts with the end component of one chain and links it to the next, thus forming the bridges of a fish-net structure.

When penicillin is present, however, most or all of the enzyme combines with it rather than with the chain, and thus the bridges cannot be formed.

Manufacture of the cell wall material is effectively blocked. The bacteria cease growing and eventually die, reported Dr. Strominger, who credited his co-workers Donald J. Tipper, Kazuo Izaki and Michio Matsuhushi in this research sponsored by the U.S. Public Health Service and the National Science Foundation.

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MEDICINE

Enzyme Found in Tears Is in Excess in Leukemia

➤ AN ENZYME found in human tears is overproduced by persons with monocytic leukemia, a type of cancer of the blood-forming organs.

The enzyme, called lysozyme, was found in the urine of monocytic leukemia patients, who excrete large amounts of the protein and have elevated levels of it in their blood. The amount of lysozyme in such patients is many hundreds of times greater than that in normal persons.

Dr. Elliott F. Osserman of the Columbia University College of Physicians and Surgeons reported his findings on 11 consecutive patients at the annual meeting of the American Society for Clinical Investigation and the American Federation for Clinical Research in Atlantic City, N.J. Dr. Osserman has also developed a technique for detecting lysozyme in a single drop of urine.

The enzyme itself was discovered in 1922 by Sir Alexander Fleming, the discoverer of penicillin. It is widely distributed in nature and is found in plants, the whites of eggs, and in tissues and body fluids of many animals.

Dr. Osserman said lysozyme is probably synthesized normally by the type of white blood cells known as monocytes, and the proliferation of these cells in monocytic leukemia results in the great overproduction of this enzyme.

Lysozyme is known to have the ability to destroy many forms of bacteria by attacking their cell walls. It is believed to be important in the natural defenses against infection.

Assisting Dr. Osserman is Dolores P. Lawlor, a research associate at the College of Physicians and Surgeons. The research is being conducted under a grant from the U.S. Public Health Service and, in part, by the American Cancer Society, of which Dr. Osserman is a Faculty Research Associate.

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MEDICINE

One County Has 238 Abnormal Births in Year

➤ A HIGH RATE of congenital defects of varying degree was found in 238 children among those born in a single year in one Vermont county. Approximately 250,000 such children are born in the United States annually. Three University of Vermont College of Medicine physicians reported in the New England Journal of Medicine, 274:861, 1966, that information had been obtained about 1,775 of the 1,813 children born in 1952 in Chittenden County.

The study included questionnaires to parents, a review of hospital charts, hospital pediatric-consultant records, death certificates, hospital pathological files and agencies for crippled and retarded children.

Long-term continuing care was required by 23.5% of the children, while 42.9% required short-term care and 33.6% required no care.

Dr. Richard Wulf, now of Albany Medical Center Hospital, Albany, N.Y., Dr. Roger J. Meyer, now at the University of Virginia School of Medicine, Charlottesville, and Prof. Thomas C. Gibson, University of Vermont College of Medicine, made the report.

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