

cal and even mental and personality characteristics. They may be mistaken for each other even by their parents. The Dionne quintuplets are believed to be all identical.

But twinning may occur also by another sort of biological accident, the simultaneous development of two or more egg cells and their fertilization at the same time. Twins formed in this way may not be any more like each other than other brothers and sisters and may be of different sexes.

Quadruplets could thus be of four combinations—all identical, two pairs of identical twins, identical triplets and an odd one, or four brothers or sisters, no two of whom are identical. The chances of the last occurrence—four separate egg cells developing safely to maturity at the same time—are extremely small.

Yet the Alphabetical Perricones represent just such a fabulous occurrence. And to add to their rarity, they are all boys. The chances that non-identical quadruplets would be all boys is only one in 16.

Psychological studies by Dr. Gardner reveal that these four brothers are just as different in mind and temperament as they appear physically. Although they are all just about average in intelligence, Carl's IQ is 10 points higher than either Anthony's or Donald's and five points higher than Bernard's. The particular questions they do well on are different.

Carl and Bernard rush ahead and make quick decisions. Anthony and Donald deliberate longer. Donald misses questions that have to do with reading, but he is very good in detecting absurdities. Anthony and Donald are better than either Carl or Bernard on the non-reading performance tests.

These little boys were born of Italian parents on October 31, 1929, on a small truck farm near the outskirts of Beaumont, Texas.

In physical appearance, Bernard and Carl are more alike than any other pair among the four. But Bernard has medium chestnut hair and light brown eyes while Carl has dark brown hair and dark brown eyes. Carl is two inches taller than Bernard. And Bernard has freckles.

Anthony is also freckled, but is fair with bluish-gray eyes. He is the only left-handed one of the quads.

The boys have five older brothers and each of the quads has one older brother whom he resembles more than he does any one of the other quads.

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MEDICINE

# Anti-Bleeding Vitamin K May Prove Weapon Against Cancer

## Vitamin K Favors Production of Prothrombin; This In Turn May Protect Body Against Cancer Causers

**V**ITAMIN K, the vitamin that is saving new-born babies and sick adults from bleeding to death, appeared in the new role of a possible weapon for the fight against cancer in a report by Dr. Louis F. Fieser, of Harvard University, to the University of Pennsylvania Bicentennial Conference.

Prevention of cancer by means of this vitamin is the possibility, admittedly purely speculative as yet, which Dr. Fieser suggested to fellow scientists as a result of recent chemical studies of both the vitamin and cancer-causing chemical compounds.

Vitamin K prevents bleeding in certain cases because it favors production in the body of prothrombin, the blood constituent necessary for proper blood

clotting. A recent report from Duke University researchers on this point indicates, Dr. Fieser said, that the chemical relationship between the vitamin and prothrombin is similar in certain ways to a detoxifying of cancer-causing chemicals that has been observed in laboratory animals.

"On the hypothesis that a cancer-producing hydrocarbon can be detoxified by interaction with suitable disulfide compounds," Dr. Fieser said, "it is conceivable that one of the normal functions of prothrombin may consist in the protection of the body from incidental carcinogens (cancer-causers). This would suggest the possibility that maintenance of prothrombin at the top level of activity by administration of vitamin K



### SENSITIVE

*Even the hard of hearing can make use of the electrical microphone stethoscope now available for U. S. Navy physicians. A volume control and filter makes it possible to separate normal heart sounds from abnormal sounds.*

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may produce a condition favorable to the inhibition of hydrocarbon carcinogenesis, and experiments to test this point are in progress."

The cancer-causing chemicals are coal-tar derivatives. London chimney sweeps were the first recognized victims of cancer from tar compounds. Such cancers are rare in humans today, because the danger is known and can be avoided. Studies of the cancer-causing substances from tar, however, have shown that they are very similar to chemicals naturally found in the body, such as the bile acids and several hormones from the ductless glands.

Cancer may arise, according to one theory, from a defect in body chemistry by which cancer-causing chemicals, instead of harmless and useful ones, might

be formed. Assuming that this might be the case, Dr. Fieser and associates have studied animals to see what might become of the chemicals.

Rabbits fed some of the cancer-causing substances failed to get cancer and excreted from the kidneys what appeared to be detoxified derivatives of the original malignant compound. Study of the chemistry involved led Dr. Fieser to the theory of vitamin K as a possible protector against cancer that might be due to faulty body chemistry.

The place where the body chemistry might go wrong, producing cancer-causing substances by mistake, is, he believes, the cortex of the adrenal glands which produces the hormone that saves the lives of Addison's disease patients.

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#### BIOLOGY

## Parties and Petting Observed Among One-Celled Animals

### Paramecium Seems To Recognize Castes and Have Taboos Against Cousin Marriages; Fix Hours for Social Events

**T**HE sex drive, the urge to find a mate, underlies social behavior among animals clear down to the very bottom of the evolutionary scale, Prof. H. S. Jennings of the University of California at Los Angeles pointed out before the University of Pennsylvania Bicentennial Conference in Philadelphia.

Prof. Jennings has made an intimate study of the behavior of the microscopic one-celled creatures known as Paramecia or (because of their shape) as slipper-animals, that swarm in stagnant fresh water. He has found types of behavior startlingly similar to parties, petting or flirting, and the formation of family groups or clans with rigid taboos against cousin marriages.

Ordinarily, these tiny slipper-animals reproduce by simple division. One cell splits and makes two; these separate and in turn become four, and so on. But occasionally they do resort to sexual reproduction. Two cells unite temporarily, exchange protoplasm, and then swim away again, to continue the race. It is here that the social behaviors watched by Prof. Jennings begin.

The clan or family groupings which Prof. Jennings observed are rather complex. In one group, there are four mating types or castes. Members of the same

caste will not mate with each other, but will mate with individuals of the other three castes. There is a second group of eight castes, none of which will have anything to do with the castes of Group I, but each of which will mate with the other seven castes in its own group. Finally there is a third group of four castes, likewise snobbish toward the twelve castes in the first two groups. Thus there are in all, in this microscopic universe, three tribes of 16 castes, with a most complex set of taboos.

However, when groups of individuals which will consent to mate with each other are mixed, they do not proceed to pair off immediately, but "hold a party". They bunch together in tight crowds, clinging as tightly as if they were all covered with glue. Only after this "party" breaks up do the individuals pair off and actually mate. There are even fixed hours for the parties; they start only between 8 and 9 in the morning and at 5 or 6 o'clock in the afternoon.

Sometimes, instead of mating at once, a pair of the little animals will remain in casual contact, swimming along in spirals. This may last for only a few seconds—a temporary flirtation. Or it may continue for a much longer time, ending in mating—a real courtship.

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## Anti-Influenza Defenses

**T**HE NOSE has two defenses against influenza, one of which may also operate against infantile paralysis, Dr. Thomas Francis, Jr., of New York University College of Medicine, told the Conference.

For protection against influenza, it appears from his discoveries, scientists will have to find methods of bolstering these nose defenses rather than methods of bolstering general body defenses such as are successful in protecting against diphtheria and smallpox, for example.

The two nose defenses, he believes, may complement each other in affording protection against influenza.

One of them, found in humans, consists of antibodies in the nasal secretions that can inactivate the influenza germ or virus. Antibodies are one of the body's defenses against many other germs, but are generally found in the blood. Influenza-fighting antibodies are also found in the blood, but their presence there does not protect a person against influenza, Dr. Francis has found.

The other nose defensive mechanism against influenza, discovered in ferrets, is a change in the character of the tissue cells lining the nose and upper respiratory tract. This change comes during an attack of influenza and consists in the destruction of many of these cells, followed by their regrowth in a form highly resistant to subsequent injury by influenza. The resistance, however, is not lasting, disappearing as the resistant repair cells are replaced by normal cells.

Tests of the nasal secretions of 668 normal persons, of ages ranging from three months to 30 years, showed that the flu-fighting antibodies are apparently present at birth, disappear during the first two years of life, and then increase again. The highest proportion of samples containing influenza virus-inactivating substance was found among persons from five to 19 years of age.

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## Eat Fats and Vitamins

**E**AT more fats and vitamins and less sweet and starchy food to protect yourself against tooth decay, is the advice of Prof. Elmer V. McCollum, Johns Hopkins University.

A still unidentified substance, present in the saliva or mucous secretions of the mouth or both, plays a part in suppressing germs that affect tooth health, Prof. McCollum is convinced. People who have good teeth probably have plenty of this