BIOLOGY

New Algae Strain May Aid Space Flight

➤ A STRAIN of algae has been developed that increases 1,000 times a day as compared to only eight times a day in previously employed algae.

This new development may speed man on his flight to outer space, as the process of photosynthesis, which replenishes the oxygen cycle on earth, can be made to take place in these "captive" algae. In addition to removing the carbon dioxide waste and replenishing the oxygen supply in a space vehicle, the algae can also furnish space men with nutritious food (proteins and vitamins), T. A. Gaucher of General Dynamics Corporation's Electric Boat Division reported to the first international symposium on submarine and space medicine meeting in Groton, Conn.

New methodology, using very dense plant cultures of fast acting algae irradiated with extremely intense light, has reduced the volume of algae required to one-twentieth of the most recently published estimates.

A type of lamp that can artificially produce light many times the intensity of sunlight for this technique was developed by the General Electric Company.

Cultures of the new algal strain, nearly as thick as blood, were pumped very rapidly past the light, which is scarcely bigger than a pencil. The alternate periods of high intensity light flashes were followed by dark rest periods for recovery. The algae growing in this closed circle system removed carbon dioxide and produced large quantities of food and oxygen.

Nuclear power has made the submarine a sort of underwater satellite, capable of remaining independent of the atmosphere for indefinite periods. The only limiting factor is the food and oxygen supply for the humans aboard, hence the importance of the algae experiments.

Science News Letter, September 27, 1958

PUBLIC HEALTH

Lung Cancer Death Rate In England Being Studied

➤ THE REASONS for the wide difference in lung cancer death rates between the United States and the United Kingdom are being investigated by the well-known proponent of the lung cancer-smoking relationship, Dr. E. Cuyler Hammond.

In 1955 the lung cancer death rate reported in England and Wales for males was 2.1 times as high as reported in the U.S., while the rate for females was 1.6 times as high, the director of the statistical research section, medical affairs department of the American Cancer Society, report in the *British Medical Journal* (Sept. 13).

Among both males and females in the middle- and old-age groups there are proportionately more cigarette smokers in the United Kingdom than in the U. S. On the other hand, he found, at the present time the number of cigarettes consumed per smoker per day is higher in the U. S. than in the United Kingdom.

In both countries the lung cancer death rate of smokers as well as non-smokers is higher in urban areas than in rural areas. While it is possible that some of the difference in lung cancer death rates may be due to factors associated with urbanization, such as air pollution and occupational exposures, available evidence does not suggest that these factors can account for a large part of the difference, Dr. Hammond says.

Data at present available do not support the hypothesis that a substantial proportion of the difference in lung cancer death rates between the two countries is attributable to differences in the use of cigarettes. However, more detailed information on smoking habits and on the chemical composition of cigarette smoke in the two countries is needed before this can be definitely established, Dr. Hammond emphasizes.

Science News Letter, September 27, 1958

MEDICINE

Laboratory Experiments Create Resistant Mouse

➤ RESISTANCE to a deadly form of mouse cancer has been developed in mice repeatedly injected with X-irradiated cancer cells.

Dr. Ralph W. McKee of the University of California at Los Angeles Medical School described results of studies with a form of mouse cancer known as Ehrlich ascites carcinoma before the Seventh International Cancer Congress meeting in London, England.

It has been reported by some scientists that in groups of mice injected with live cells from this type of cancer there was 100% fatality. However, during the past two years Dr. McKee has had 12 survivors among 1,000 mice injected with these cancer cells. These 12 have repeatedly survived such injections.

A genetic factor does not appear to be involved since more than 100 offspring of the cancer-resistant mice have yielded only two resistant animals. Nutritional studies have given no indication of diet factor.

It has been shown that X-irradiation of these cancer cells produces a change in the cells preventing their continued growth and multiplication beyond a few cell divisions which is followed by regression. A single injection of these irradiated cancer cells does not produce complete resistance. One to four injections of irradiated cells produced one resistant mouse out of 20, five injections produced two resistant mice out of four, and with six to eight injections 19 out of 19 were resistant.

Further laboratory studies have suggested that the resistance of the original 12 and those of the mice injected with irradiated cancer cells is due to an antibody production.

Dr. McKee said that these results were a little "crack of light" on the general problem of resistance to cancer.

Science News Letter, September 27, 1958

IN SCIEN

PHARMACOLOGY

Perfume Oils Contain Antiseptic Properties

➤ PERFUME is a better germ killer than was formerly thought. Previously, it had been known that the alcohol in perfume acted as an antiseptic. Now it has been discovered that perfume oils are effective germ killers.

One hundred aromatic oils used in the manufacture of perfumes were found to possess antimicrobial properties against either or both fungi and bacteria, two investigators report in the *Journal of the American Pharmaceutical Association* (July).

All of the perfume oils exhibited antibacterial activity on at least two of ten bacteria tested. All of the same oils displayed antifungal activity on at least six of ten fungi tested, Jasper C. Maruzzella and Percival A. Henry of the biology department of Long Island University report.

Among the perfume oils that were found to possess either antifungal or antibacterial activity were those in lily of the valley, lilac, jasmine, lavender, orange blossom, sweet pea, wisteria perfumes, and many other common perfume oils.

Therefore, common toilet articles such as creams, soaps, shampoos, lotions, powders, sprays, and other such preparations that are applied externally, will act as antiseptics if they contain perfume oils. Those perfume oils that possess marked antimicrobial activity might be incorporated more widely into medicaments that are used externally, the scientists suggest.

Science News Letter, September 27, 1958

ZOOLOGY

Rare "Rats" Found By Australian Museum

➤ THE QUEENSLAND Museum has made a historical find: seven little marsupials that belong to a very old order of animals.

Only 15 have been found since Europeans settled in Australia in 1788. Unique to Australia, they are called the "brush-tailed rat."

Their scientific name is *Dasyuroides byrnei*.

The seven "rats," which are distantly related to the American opossum, were trapped under permit on Queensland's far southwestern border. They will be kept in the Queensland Museum, Brisbane.

Two will be mounted in a case at the museum and the skins of the others will be preserved for research.

The director of the museum, G. Mack, said the museum would publish a research paper on the rats. It will be distributed throughout the world.

Science News Letter, September 27, 1958

CE FIELDS

BIOLOGY

Normal and Cancer Cells Differ Chemically

➤ A NEW CHEMICAL difference between normal and cancerous human cells has been reported.

The difference has been found in the chemical composition of DNA, deoxyribonucleic acid, the material that determines the cell's genetic characteristics.

Such differences in DNA had long been suspected because of cancer cells' variations in form and function from normal cells, and because of their ability to transmit these variations to daughter cells during cell divisions.

Scientists have not yet been able to define the differences between the various DNAs. Dr. Aaron Bendich, Dr. Giampiero Di Mayorca and Herbert S. Rosenkranz of the Sloan-Kettering Institute for Cancer Research, New York, and Drs. Mario Bianchessi and Elio E. Polli of the Instituto di Clinica Medica Generale, Universita di Milano in Italy, reported these findings at the Seventh Congress of the International Society of Hematology in Rome.

Science News Letter, September 27, 1958

MEDICINE

Menstrual Pain Responds To Exercise Routine

➤ THOSE PAINFUL menstrual bouts can now be alleviated or even cured by a simple exercise routine.

An eight-year study of 5,324 girls suffering menstrual pain during their junior high, senior high or vocational school years revealed that special exercises for six months to two years resulted in an average cured or improved rate of 78% per school. The over-all average rate was 20% "cured," Drs. Leib J. Golub, Warren R. Lang, Hyman Menduke and James O. Brown of the Jefferson Medical College, Philadelphia, report in the *American Journal of Obstetrics and Gynecology* (Sept.).

Some of the girls were taught the Mosher exercise routine. It consists of, first, lying on the back with knees bent and feet flat on the floor. The girls were instructed to place their hands on the abdomen and breathe deeply ten times. Second, standing with the hands resting on the back of a chair, raise and lower the heels 20 times. Then, in the standing position, bend the knees deeply and straighten them out five times. Finally, back on the floor, in the first position, bring the knees as close to the chest as possible and return them to resting position ten times.

The second technique, the Billig, consists of standing with the left side to a wall, with feet together and about 18 inches from the wall. With the left forearm and hand placed against the wall at shoulder level, the heel of the right hand is placed in the hollow of the right side where the upper leg and lower pelvic bones join. By contracting the abdominal and buttock muscles, the pelvis tilts upward in front and downward in back. Then the pelvis is slanted toward the wall by the pressure of the heel of the hand. The shoulder remains in line with the elbow, still resting against the wall, and the knees remain straight. The pelvis never touches the wall if the exercise is done correctly, three times on both sides, the doctors said.

Advantages of the exercise routine over other modes of treatment include the ability to teach the program to large numbers of girls at school; no expensive medication; more desirable than surgery; they can be continued over long time periods and repeated, the doctors pointed out.

Science News Letter, September 27, 1958

DERMATOLOGY

Soap, Hot Water Therapy Rates Best as Acne Aid

➤ THE OLD SOAP and hot water routine is still the best treatment for acne, the skin disorder that affects 70% of the nation's boys and girls.

Doctors regard this common skin disease as a perplexing daily problem and know that there is no specific cure for it.

Acne therapy can only help erase the disease more quickly and prevent bad scarring, Drs. Kenneth W. James and John B. Tisserand Jr. of the department of dermatology at the University of Michigan report in *GP* (Sept.), the journal of the American Academy of General Practice.

Acne is too often regarded as a normal process that begins in the early teens. Although the hormonal changes that affect the gland secretions are normal, the accompanying blackheads and pimples are not, the doctors point out.

The tendency to belittle acne as part of growing-up is wrong. There is no quick and easy path to satisfactory improvement and without the proper attitude and patience on the part of the physician and his patient, therapy is seldom effective.

Recommended therapy includes ordinary soap, or better still, a drying, detergent soap. Four daily three-to-five minute scrubbing periods are advisable.

Agents to peel the skin have been used for years with the hope of unplugging pores and decreasing oil. Because secondary infections frequently occur, antibacterial therapy is particularly important in severe acne cases, the doctors warn. Sulfonamides are especially helpful but if they prove ineffective, tetracycline and novobiocin are beneficial.

Dermabrasion, a recently introduced technique, involves freezing small areas of the skin with chemical refrigerants and applying a high-speed wire brush that removes the top layers of skin. A crust forms in one to two days, and seven to 12 days later, the crust separates, leaving healthy skin.

Science News Letter, September 27, 1958

PHYSIOLOGY

Windpipe Study Sheds Light on Aging Process

➤ INCIDENTAL findings in research directed toward the repair of cancer-damaged windpipes may provide new insight into certain disease processes in which connective tissue turns to bone and into the aging process itself.

Experiments conducted by Dr. Joel Pressman and Mildred Burtz Simon of the University of California at Los Angeles Medical School and supported by the U. S. Public Health Service have been concerned with repair of surgically removed segments of the trachea by replacing them with grafts of other hollow tubes such as the large heart artery.

The graft, in the course of healing, contracts extensively, resulting in stretching and elongation of tracheal cartilage above and below the graft. The stretching process, which continues over three years, apparently gradually reduces circulation in the tissue.

The cell structure begins to degenerate, and calcium is deposited in the cartilage. Eventually bone cells appear, and after three years the cartilage is replaced altogether by bone. These changes take place only in the "stretched" tracheal segment.

The process in which cartilage becomes bone-like is similar to that which occurs in certain arthritic conditions and in cartilage in old age. Similar deposits of calcium are likewise seen in arteriosclerosis.

Thus the technique may be an excellent laboratory procedure for studying aging and disease under carefully controlled conditions. It is hoped that from such studies may come ways of controlling calcification of connective tissue and of learning more about basic body changes inherent in the aging process.

The investigators report results of their experiments in *Surgery, Gynecology and Obstetrics.*

Science News Letter, September 27, 1958

CHEMISTRY

Test Predicts Behavior of Fuel Oil in Storage

➤ A SIMPLE, rapid test that accurately predicts what will happen to various types of fuel oils when stored over long periods has been developed, scientists at the American Chemical Society meeting in Chicago were told.

The test allows chemists to learn in 15 minutes what otherwise might take up to 18 months of storage to find out, Drs. A. C. Nixon and B. M. Steckler, Shell Development Company, Emeryville, Calif., reported.

They measure the "filterability" of a fuel oil through a hypodermic syringe and draw upon this figure for information about the oil's sludge-forming characteristics.

This not only tells chemists how badly stored oil might clog furnace burners, but also gives them a quick test of various additives' performances in prolonging optimum fuel life.

Science News Letter, September 27, 1958