

MEDICINE

Cell Division Restrainers Give New Cancer Hope

► HOPE FOR chemical treatment of cancer through a new class of compounds is suggested by the American Cancer Society in announcing recent findings of research it supports.

The finding is that cell division, unrestrained in cancer, can be restrained by chemicals which exist in all living cells. This was discovered in research by Dr. Ernst J. Dornfeld of Oregon State College, Corvallis.

The compounds are called nucleotides. They "come together," explains the cancer society, "to form nucleic acids which, with protein, make up the basic living substance."

Dr. Dornfeld found that two types of cells, those covering embryonic rat ovaries and those in tissues snipped from young rat ears, will almost stop growing if treated with three of the four kinds of nucleotides. The three are cytidylic, guanylic and adenylic acids. The exception, which did not slow cell growth, is uridylic acid.

"Precisely what application this may have to cancer is not yet understood," states the cancer society.

"If," the society's statement continues, "these or related nucleotides exercise a more potent anti-growth effect on cancer cells than on normal cells, or if they completely stop the ever-dividing cancer cells, the nucleotides in some might be used to treat cancer."

Science News Letter, March 14, 1953

CHEMISTRY

Slush as Hard on Cars As Is Salt Water Spray

► SLUSH AND road materials thrown under cars by the wheels can cause as much corrosion as salt-water spray and industrial fumes.

F. L. LaQue, International Nickel Company corrosion engineer, pointed out to the Society of Automotive Engineers meeting in Detroit that the under-surfaces of cars usually are not protected as well as the showy outer-surfaces. The reduced protection plus road splash and accumulations of water in places where it dries slowly can cause serious corrosion.

Except for heavy reinforced asphaltic coatings being applied to under-bodies for sound deadening and to retard corrosion, protection normally is inadequate, especially on the interior of body panels. He said four coats of protective material might be applied to the outer surfaces, but only a single primer coat might be put on inner surfaces.

"It is not surprising that most corrosion of automobile bodies proceeds from the inner surfaces," Mr. LaQue said.

The severity of corrosion depends upon the nature and amount of corrosive pollutants in the air as well as the kind of mate-

rial thrown under the car by the wheels. High humidity, rainfall, dust, ashes and soot all promote corrosion. For automobiles, it is most severe around seashores and in heavily industrialized communities.

Although some steels resist corrosion better than others, the less-resistant ones are widely used by auto manufacturers because of their low cost and qualities of easy workability. They can be made more resistant to corrosion by amounts of such alloying elements as phosphorus, chromium and nickel. A phosphate treatment before painting also helps the metal withstand corrosion.

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CHEMISTRY

Chemical Eye Ready For Automatic Factories

► AN AUTOMATIC eye that controls chemicals is now ready to go to work industrially. Demonstrated in Norwalk, Conn., it not only sees all the components dissolved in a passing stream of liquid, but signals the valves that can change the proportions of those components if anything goes wrong.

Replacing the tedious operation which previously was used to draw off and analyze samples of liquids circulating through industrial pipelines, the new method gives the plant supervisor continuous information on how the reactions in his apparatus are progressing.

Infrared light passes through a little of the liquid flowing through a small by-pass tube, and is then analyzed by a special instrument which tells what parts of the light were absorbed by the liquid. From this characteristic pattern of absorption bands, the components of the liquid can be read.

Controls operated by the pattern of light and dark bands shown by the instrument can be set to open or close valves in the pipeline according to pre-arranged settings.

This brings one step closer the perfection of the automatic factory, according to Dr. Van Zandt Williams, vice-president and director of sales and research of the Perkin-Elmer Corporation in Norwalk, who arranged a recent demonstration.

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MEDICINE

Drug for Chronic High Blood Pressure

► "PROMISE IN the treatment of chronic high blood pressure" is the verdict given on a relatively new drug by a report from the American Medical Association in Chicago.

The drug is trade named Apresoline. The "promise" is seen in the favorable response of more than half of 97 patients whose cases are reported by Drs. R. D. Taylor, Harriet P. Dustan, A. C. Corcoran and Irvine H. Page of Cleveland in the association's *Archives of Internal Medicine*.

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PSYCHOLOGY

Workers in "Like" Groups Up Production

► PRODUCTIVITY CAN be increased by more than a third, 36%, when workers are grouped together in "like" groups, Dr. Howard M. Newburger of the New York University psychology department told the New Jersey Psychological Association meeting in Princeton.

"Like" groups consist of workers who like each other and get along well together.

Although many employers have felt for a long time that people who get along well together are better producers, this is the first time that it has been demonstrated statistically, Dr. Newburger said.

He pointed out that employers can place workers in the proper "like" group by the use of simple psychological tests.

He warned that mixing people who are indifferent or antagonistic to each other in the same work group always results in decreased efficiency and output, and increased labor tensions.

Dr. Newburger urged executives to be consistent in their attitudes to people working under them. His statistics showed that consistently tough or consistently mild attitudes toward employees always paid off in higher efficiency. However, executive attitudes that vary from mildness to toughness, invariably result in decreased production and lower quality.

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TECHNOLOGY

Device Tells Whether Barn Needs Ventilation

► AN ELECTRONIC "brain" has been invented that tells farmers whether their barns need temperature or humidity control systems, or both.

Known technically as the "ventilation analogue computer," the device takes the guesswork out of a perplexing farm problem: whether the barn is properly air conditioned for good health and productivity of the livestock.

It considers the number of animals in the barn, figures in the heat and moisture they will give off, studies the heat and moisture gain or loss from other parts of the building, then tells the farmer whether he needs temperature or humidity controls in his barn, or both. It also tells him what size ventilating system he needs.

The farmer's helper was designed by William McGoldrick, Jr., a Minneapolis-Honeywell Regulator Company research engineer in Minneapolis.

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CE FIELDS

PHYSICS

Energy From Matter Annihilation Expected

► THE POSSIBILITY of obtaining vast amounts of energy from the annihilation of matter was suggested to National Science Talent Search winners in Washington by Dr. I. I. Rabi, Nobelist in physics of Columbia University, New York.

Explaining that the opportunities in exploration of matter and energy are "open-ended," Dr. Rabi urged the young scientists to help discover new methods of energy production by investigation of particles of matter.

The existence or creation of anti-matter, or the negative analogue of the proton (heart of the hydrogen atom), is theoretically possible. If this particle were to combine with a proton, two billion electron volts of energy would be let loose. This is a thousand times as much as the energy release of the similar annihilation of an electron (particle of electricity) which is a million electron volts.

Thus, Dr. Rabi explained, there are probably discoverable in the future methods of energy production much greater than the fission of matter in the atomic bomb or the conversion of hydrogen into helium such as occurs by fusion in the H-bomb and the sun.

Studies of protons and neutrons, now under way in powerful accelerators which are beginning to duplicate the energies of the cosmic rays, may lead to the discovery of the new potential sources of energy. The number of kinds of subatomic particles known to exist has increased in the past few years and physicists are exploring particularly the mesons first found in the debris of cosmic ray collisions.

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MARINE BIOLOGY

Expect Another Catch Of Rare Fossil Fish

► THE FABULOUS coelacanth, the "living fossil" fish recently captured near the east African coast, was deader than scientists are happy about before it could be properly preserved.

Prof. J. L. B. Smith, the South African scientist responsible for the discovery of the coelacanth, a very primitive type fish thought extinct for 50,000,000 years, reported in *Nature* (Feb. 28) that the 120-pound specimen was mutilated more than had been realized at first. (See SNL, Jan. 17, p. 38).

However, Prof. Smith stated, most of the soft parts of the fish remain, extending enormously the scope of investigations that can be carried out on the specimen.

Discovery of the coelacanth is of great importance to biology, because the fish is one of a group believed to be an intermediate stage between water and land animals—fish and amphibians.

On the chance that more coelacanths may turn up, Prof. Smith plans to leave a supply of preserving materials on the Comoro Islands, where the fish was caught. He said he is preparing detailed instructions, telling what to do and what not to do with the fish, which he will distribute widely among the fishermen in areas where coelacanths may be found.

The five-foot coelacanth had its skull bashed in by the fisherman who caught it. After spending some hours in the African sun, it was split from head to tail and salt was dumped into the cuts to try to hold back decay. Later the island's entire supply of formaldehyde was pumped into it, before the fish was flown to the mainland in a special plane.

When Prof. Smith proudly presented the specimen to South African Prime Minister Daniel Malan, his words included an apology for the odor.

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PHYSICS

New Invisible Light From Hydrogen Atom

► EXCITED HEARTS of hydrogen atoms are exciting physicists. For the first time in nearly 30 years, a new series of atomic spectrum lines has been found. This is the sixth series.

Light given off by hydrogen, the most fundamental element, when an electric spark jumps through a tube containing that gas, has just been analyzed into the five well-known series of lines by which atomic energy is measured, plus a sixth series. Prediction of this sixth series of lines, in the infrared part of the spectrum, has been made during the past three decades.

Announcement that the new kind of invisible light from the hydrogen atom has been found was made by Dr. Curtis J. Humphreys of the National Bureau of Standards. Earlier discoveries of the five series of lines were made by physicists whose names the line series carry. These are the Lyman series in the ultraviolet region of the spectrum, the Balmer series in visible light, and the Paschen, Brackett and Pfund series in the infrared.

Prediction of a seventh series of lines, to be found still farther toward the infrared end of the spectrum, where light waves change into heat waves, is made by Dr. Humphreys.

Although of no practical use at the present time, the spectrum lines of hydrogen are of great importance in theory of the way all chemical elements, and therefore all kinds of matter, are built up. Fusion of hydrogen into helium, the process used in the hydrogen bomb, is one of the ways in which such building up of matter can be made to take place.

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VETERINARY MEDICINE

Hard to Detect Source of Sheep Disease, Scrapie

► A DEADLY virus disease of sheep has broken out in Ohio and Illinois, the U. S. Department of Agriculture reported. All animals known to be infected by the disease, scrapie, have been destroyed, the Agriculture Department said.

The scrapie virus only attacks sheep under about 18 months of age, Dr. Leigh T. Giltner, assistant chief of the Agriculture Department's pathology division, reported. Although the disease is generally fatal to infected animals, it spreads only very slowly within a flock, Dr. Giltner said.

Scrapie disease is extremely difficult to detect at its source because there is an incubation period of up to two years before its effects become noticeable in a flock. Complete destruction of all animals in a flock known to contain infected animals is the only known sure way of combating the disease.

An outbreak of scrapie in California last year was wiped out by slaughter of infected flocks, so that there is no known case of scrapie in that state now.

There is no indication that the present outbreak has any connection with the California infections.

Symptoms of scrapie start with a violent trembling of the ears, lips and limbs of infected animals. This is followed by serious itchininess, in which the sheep often scrapes off areas of wool in its constant scratching. In a few months, the animals lose weight, become emaciated and finally die.

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TECHNOLOGY

New Brakes for Cars Promise Better Stopping

► THREE MAJOR American auto manufacturers currently are testing a new type of brake drum designed to make modern driving safer, George T. Ladd, Fairchild Engine and Airplane Corporation engineer, reported to the Society of Automotive Engineers meeting in Detroit.

The brakes feature aluminum cooling-fins bonded to a cast-iron liner. The cooling fins permit the brakes to be used more often without overheating. Overheated brakes, he said, can "fade out" on heavy trucks and trailers creeping down mountains.

Heavy-duty brakes are taking on more significance now that automatic transmissions and fluid couplings are going into modern cars. These transmissions cut down the braking effect the engine exerts through regular transmissions. Coupled with more powerful motors and high-speed highways, this means brakes are needed more often by the average motorist. The brakes must be rugged enough to withstand the extra use, he said.

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