

তারিখ ... 7/1/78 ...  
পৃষ্ঠা ... 5 ... কলাম ... 5.4.

## What's New In Science And Technology ?

—Norbert Yasharoff

A medical first—the ultrasound diagnosis of Siamese twins before birth—was reported in the November 1977 issue of the AMERICAN JOURNAL OF ROENTGENOLOGY by Dr. Charles J. Fagan, a radiology specialist with the University of Texas Medical Branch at Galveston.

Siamese twins (or conjoined twins as they are known in medical parlance) occur once in 50,000 births and are rarely diagnosed by any method prior to the second stage of labour.

According to Dr. Fagan, a 24-year-old woman who was seven months pregnant, was referred for an obstetric ultrasound study because of a discrepancy between uterine size and expected date of delivery. Ultrasonography similar to sonar employed by submarines, uses high-frequency sound waves to outline tissues and conditions within the body.

The examination of the patient showed a single placenta with two fetuses and "an intimate nonseparable appearance of the fetal outline suggested conjoined twins." Dr. Fagan wrote, "Further the relative positions of the fetal spines to one another and the configuration of the fetal skulls prompted the impression that the twins were face to face and connected along their ventral (belly) surfaces."

A second ultrasound study six days later "promoted a firm impression of conjoined twins" as did a third examination a week after that. X-ray studies supported the ultrasound diagnosis. At birth time, when a cesarian section was performed Siamese twins—connected from the sternum (breast bone) to the navel—were delivered.

After waiting for the twins' condition to become sufficiently stable Dr. Fagan and his assistants performed extensive X-ray and nuclear-medicine studies on the newly born's gastrointestinal tracts, kidneys and ureters to determine if they could be surgically separated.

Eight weeks after they were born the twins were separated. One died of congenital heart and chronic lung disease at the age of six months. The other left the hospital 10 months after delivery, is being kept under medical observation on an outpatient basis and is doing well.

Until now, radiography has been the only definitive method for prenatal diagnosis of conjoined twins but it has often

resulted in failure to detect this unusual condition—either through lack of alertness to the very possibility of such a condition being present or through unfamiliarity with the X-ray criteria of Siamese twins.

"A prenatal diagnosis of conjoined twins is relevant to the welfare of the mother and the infants, to the management of (the stages of) labour and to (the stages of) labour and to (the stages of) labour and to (the stages of) labour (following birth) care of the infants. A noninvasive method that can make this diagnosis expediently and without radiation exposure is desirable. Ultrasonography is such a method as illustrated by this report" Dr. Fagan said.

**NEW TECHNIQUE REDUCES RISK IN BREAST CANCER TESTS:**—A new method for detecting breast cancer—without the use of radiation or surgery—seems to be completely safe and highly effective according to researchers at the Memorial Sloan Kettering Cancer Centre in New York.

The test may be an ideal technique for mass screening of women who do not have any symptoms of breast cancer the prestigious research institution said in a recent announcement.

Mammography which is currently used in most screening programmes, uses radiation and questions have been raised about its safety.

The new technique called graphic stress telethermometry or GST, involves taking the temperature of the breast from outside. It was found to be 80 per cent accurate in detecting breast cancer Sloan Kettering specialists said.

If further tests support these findings, the technique could be used to screen out many women who need not undergo further diagnosis with mammography. Dr. Ruth Snyder the principal researcher said.

The test detects both benign and cancerous breast lesions and can tell them apart. The temperature of the breast is taken by passing a miniaturized infrared heat detector over nine sections of each breast. The test measures the difference between the temperature of breast tissue and the temperature of the forehead. Areas of the breast that show a higher temperature than the forehead become suspect.

To determine whether any areas of higher temperature are benign or malignant, the wo-

man's hands are immersed in ice water for 15 seconds. Body temperature falls as a result and the temperature-taking is repeated. If the lesions are benign they will also cool off. But malignant tissues remain at a constant, higher temperature. The temperature differences are in tenths of a degree Dr. Snyder said.

In the tests performed at Sloan Kettering Cancer Centre on 282 patients 23 of 29 known breast malignancies were accurately detected.

**A BIOSYNTHETIC BREAK-THROUGH ARTIFICIAL GENE YIELDS HORMONE:** A group of scientists in California has succeeded in manipulating DNA the basic material of the genetic "code"—to "biosynthesize" a hormone somatostatin.

The gene that triggers production of somatostatin occurs naturally only in higher animals. But researchers at the city of Hope National Medical Centre in Duarte California synthesized the gene chemically and then placed it in bacteria, which in turn produced the hormone.

Somatostatin inhibits production of other hormones and—according to the researchers—this "has attracted attention to its potential therapeutic value in acromegaly (a disease in which over-production of growth hormones causes bizarre enlargement of facial bones) acute pancreatitis and insulin-dependent diabetes. This may mean that commercial biosynthesis is not far away.

The synthesizing of the somatostatin-producing gene was hailed as a "scientific triumph of the first order" by Dr. Philip Handler president of the U.S. National Academy of Sciences. It paves the way for cheaper insulin and other hormone-based medicines.

Hormones are the body's chemical messengers. Insulin, a vital hormone that helps the body use carbohydrates normally is produced in the pancreas. Diabetics however do not produce enough and need it supplied to them.

Scientists say it is now just a matter of time before protein substances like insulin can be produced by the same artificial gene process that produced somatostatin or by a process related to it. The medicines would be made to order in living bacteria "factories."

By combining the somatostatin gene with bacteria that reproduce themselves—creating

(Continued on page 11)

## Technology ?

(Continued from page 5)

a living "factory" for the hormone—researchers have fulfilled a promise that the still controversial technique of genetic engineering using recombinant DNA has offered since its advent in the past few years.

"A lot of genes have previously been put into bacteria" pointed out Mr. Arthur D. Riggs, a molecular biologist with the City of Hope National Medical Centre "but none of them have worked in the sense of making a functional product. So this is the first demonstration of a synthetic gene that has produced a protein product."

**BLUE BABIES:** The blood vessel that keeps blood away from a baby's lungs before birth—and lets it through after birth—can be opened or closed with drugs rather than surgery cardiologists revealed at a recent meeting of the American Heart Association.

Experiments conducted by Dr. Abraham M. Rudolph and other specialists at the University of California Medical Centre in San Francisco indicate that the use of drugs can make surgery unnecessary, or at least safer in repairing certain heart defects in newborn infants.

The drugs can either close or keep open the ductus arteriosus a blood vessel that forms a bridge between the pulmonary artery and the main artery out of the heart.

Before birth the bridge should be open and acting as a bypass routing blood away from the lungs which are not being used immediately after birth the bypass should close so blood from the heart can go to the lungs.

In cases where the bypass stays open, blood is detoured from the lungs and the infant does not get enough oxygen. In what became known as the blue-baby operation surgery was generally needed to correct the condition.

The San Francisco specialists said their new techniques while still regarded as experimental are saving lives and avoiding surgery, particularly in premature infants. They told the American Heart Association that small doses of the drug indomethacin usually will close the ductus. So will aspirin they said.

Dr. Rudolph pointed out that indomethacin treatment closed the ductus in 51 of a group of 60 babies.