APRIL 1971

Herald of HEALTH

A NURSE DISCUSSES SURGERY

by CHARLENE DALSING, R.N.

WHAT is preoperative and postoperative care? What happens when a patient is prepared for surgery? What are analgesics and hypnotics? A patient may want to ask such questions but thinks his doctor is too busy to answer them.

The doctor says to a nurse, "Give Mrs. Pandit her preoperative medication in an hour."

Mrs. Pandit thinks, "I am simply going to have my gallbladder removed. What do they mean by adequate preparation? My doctor told me it was a simple operation and there was nothing to worry about."

For all operations, preparation requires the following check list to assure the surgeon that the patient is safely ready for the operation:

Pre-operative Care

1. *Blood Tests.* Blood tests are necessary before surgery to check on the patient's red blood cells and to determine whether he will need to be given extra blood. His white-blood-cell count is made. If there is any infection, the white-blood-cell count may be above normal. Antibiotics are ordered by the doctor if needed to combat infection. Blood tests are essential to determine the patient's state of health.

2. *Urine Samples.* How are Mrs. Pandit's kidneys functioning? A simple urine test shows any such abnormality as the presence of red and white blood cells, sugar, and albumin. It shows the pH (measure of alkalinity and acidity). It shows the condition of the patient's health as related to his kidneys and bladder.

3. *Chest X-Ray Examination.* Mrs. Pandit had a bad cough, and the doctor ordered a chest X-ray examination to make sure that she could stand an operation. Chest X-ray films show the condition of the lungs.

4. *Enemas.* An enema is given to make sure the lower bowel is clean before surgery; for one thing, to prevent after-surgery gas pains.

5. *Food or Water After Midnight.* An NPO sign posted by the patient's bed means that he gets no food or water after midnight. For the person who is to take an anæsthetic it is desirable and necessary to have the stomach empty. An empty stomach helps prevent vomiting after surgery. Eight hours of fasting will do so in a normal situation. Most hospitals require it.

6. *Hypnotic or Analgesic.* A hypnotic medicine is a sedative, and an analgesic medicine is a pain reliever. The patient's doctor determines what to order..

If the patient is allergic to any drug, he must be sure to report his allergy to his doctor. It is very important that the specific allergy be reported to the doctor.

A preoperative medication is given an hour or two before surgery to reduce bronchial secretion and lessen tenseness. The medicine will dry the mouth and throat so much that it may feel as though one has a mouthful of cotton.

7. *Nutrition.* Checks on protein and vitamin deficiencies in the patient are a requirement to assure the surgeon that the patient has enough vigour to stand the operation and that the incision will heal properly afterward. Protein is a healing ingredient.

Once a patient knows what preoperative preparation means he understands why it is necessary for him. Doctors do not want surgery to be a step into the unknown.

Post-operative Care.

When the surgeon ties the last stitch, and says, "Over," the patient begins on post-surgical

To page 29

CLIPPINGS and COMMENTS

An Edinburgh, Scotland, hospital will soon have ready the first artificial arm that is able to reproduce all natural movements and has a hand sensitive enough to detect differences in texture.

*

Every year 50,000,000 people die, 136,986 every day, 5,707 every hour, 95 every minute. The average life span is thirty years. One quarter of the world's population die before the age of seven. One out of 1,000 reaches 100 years, only six per cent reach sixty-five years and one out of 500 reaches eighty years.

*

Russia claims to have more oldsters than any nation on earth. Among them, according to the 1959 census, are over 20,000 centenarians. The oldest is reported to be a 165-year-old man, an active member of the local party cell and a patriarch of a family of 233 members.

*

Japanese tax officials are worried because people are drinking less and liquor revenues are down. The Japan "Times" speculates that people are spending more time motoring and in "substitute leisure activities such as bowling."

*

Canadians, who smoked an average of 3,540 cigarettes per adult last year, have proved to be the second heaviest smokers in the world. Americans with an average of 4,320 per adult, were first; and the Japanese, with 3,141, were third.

PICTURE CREDITS

Cover: Colour transparency by Vidyavrata. 1, 12, 13—Life and Health; 5, 29—WHO; 7, 11, 26—J. S. Moses; 14—Harry Baerg; 19—James Padgett.

Herald of HEALTH

Vol. 48, No. 4 April 1971

ARTICLES

FEATURES

A SEVENTH-DAY ADVENTIST PUBLICATION issued monthly by the ORIENTAL WATCHMAN PUBLISHING HOUSE, P. O. Box 35, Poona 1, India.

SUBSCRIPTION RATES: 1 yr. Rs. 12.60; 2 yrs. Rs. 24.70; 3 yrs. Rs. 36.30; 5 yrs. Rs. 60.50; Foreign postage, Rs. 3.00 per year.

Foreign: Malaysia, $12.00.

SUBSCRIPTION PAYMENTS: Our representatives are authorized to receive cash or cheques and to issue official receipts for same. For orders sent to publishers, make cheque or money order payable to Oriental Watchman Publishing House, Salisbury Park, Poona 1.

REGIONAL OFFICES: Andhra, Kerala, Madras and Mysore—13, Cunningham Road, Bangalore 1; Gujarat and Maharashtra—16 Club Road, Bombay 8; Uttar Pradesh, East Punjab, Delhi and Adjacent States—11, Hailey Road, New Delhi; Bihar, Orissa, West Bengal—Morabadi Villa, Ranchi, Bihar; Assam—Nongthymmai, Shillong; East Pakistan—130/C Dhanmandi Road, Dacca; Ceylon—7 Alfred House Gardens, Colpetty, Colombo 3; West Pakistan—Oriental Watchman Publishing House, 57 Multan Road, Lahore; Burma—Book & Bible House, 68 U Wisara Road, Rangoon.

CHANGE OF ADDRESS: Send new address, with wrapper from magazine, or reference number on wrapper, to indicate old address.

NON-RECEIPT OF MAGAZINE: Inquire at local post-office before informing us. If possible, send magazine wrapper when writing regarding non-receipt.

EXPIRY NOTICE: X on wrapper of magazine indicates subscription has expired.

Owned by the Oriental Watchman Publishing House, P. O. Box 35, Poona 1, and printed and published by V. Raju at and for the Oriental Watchman Publishing House, Post Box 35, Poona 1. 852-71.

Guest Editorial

A Full Life Despite Diabetes

At the beginning of this century diabetes mellitus was a formidable disease. Its diagnosis in a young child was a notice of premature death. Its discovery in a man or woman in the prime of life meant a complete change in the way of living, and a greatly reduced expectation of life.

And then, fifty years ago in the later months of 1921, the persistent interest of a young Canadian surgeon, Frederick Grant Banting, in research on diabetes, was finally rewarded. Together with his younger collaborator, Charles Herbert Best, they isolated insulin and in January 1922 used it successfully in the treatment of patients. One of the greatest and most dramatic discoveries of modern medicine, it completely transformed the outlook for the majority of sufferers from diabetes.

What Banting and Best had discovered in a Toronto laboratory appeared for a time to be the decisive "cure" for the disease. But it was soon recognized that there were cases of diabetes which do not respond to insulin, so research was intensified into the types of the disease, its mechanisms, and into insulin itself.

In recent decades this research has yielded a number of important discoveries. Long-acting insulin has reduced to one a day the number of injections required by patients. Anti-diabetic drugs which can be taken by the mouth have been developed. More evidence has been gained of the natural and basic methods of control by diet and exercise.

Despite these discoveries, diabetes appears to be on the increase, and there are many undetected cases, particularly amongst men and women, above the age of forty, who are overweight. This knowledge has led many public health authorities to try to detect such cases by organizing community screening surveys, using blood or urine tests.

Once the disease has been diagnosed, the appropriate form of treatment is prescribed. It is now possible for the diabetic patient to live a normal working life, to bear children, to play games, and, in brief, to enjoy life to the full.

Obviously, certain precautions must be taken. The most important is that the treatment and dietary regimen prescribed by the doctor are carefully followed. Diabetic patients must also subject themselves to a periodical medical "check-up". This is particularly true during and after such an illness as influenza, or during pregnancy when the body's metabolism is changing. For people about to be married, genetic counselling is advisable when either partner has a family history of diabetes.

Diabetes is still a serious disease and neglect of the prescribed treatment can lead to dangerous complications: coma, blindness, kidney and nervous disease, skin infections, and, above all, degenerative changes in the heart and blood vessels.

The more people know about the disease the better they will be able to fight it. Information and education at all levels can therefore help to promote both early detection and proper care. Physicians and other members of the health team, including nurses, dieticians, health educators, medical social workers and pharmacists, have all a part to play in the educational process.

"Informed opinion and active co-operation on the part of the public are of the utmost importance in the improvement of the health of the people". These words from the preamble of the Constitution of the World Health Organization are particularly pertinent with regard to diabetes, a disease of public health importance in all parts of the world.

—Dr. M. G. Candau
Director-general of W.H.O.

A hernia, or rupture, is a protrusion of any portion of an organ—such as intestine or stomach—fat, or muscle through an abnormal opening in its covering. We will discuss mainly hernias that occur in the abdominal wall and diaphragm—the large muscle that divides the thoracic and the abdominal cavities. Hernias occur frequently. Their repair is one of the most common operations.

Most hernias in adults occur in people who are doing relatively heavy work, involving lifting or strenuous activity. Or they result from coughing, sneezing, straining at the stool, or similar stress. About fifteen per cent of hernias develop in people who live sedentary lives and do little of anything strenuous.

Surgical textbooks today list seventeen or eighteen kinds of hernias, most of them rare. We will discuss the five common kinds.

Inguinal Hernia

Inguinal, or groin, hernia is by far the most common, making up seventy-five per cent. In the male they occur where the testicle went through the abdominal wall in its descent into the scrotum. During embryonic development, the testicle descends from the abdominal cavity through the groin region into the scrotum, carrying with it some of the layers of the abdominal wall to make up its coverings. Normally the tunnel through which the testicle passes closes, leaving only room for the blood vessels and the spermatic cord to pass. In patients who develop a hernia, this tunnel fails to close completely, and weakness results that later becomes a groin hernia. This may be present at birth; or later the weakness plus added strain when the person grows older, may cause hernia to develop finally.

In the female inguinal hernia occurs where the round ligament of the uterus passes through a tunnel and spreads out to attach to the tissues at the upper portion of the vaginal wall.

Inguinal hernias are of two types—direct and indirect—the difference being in place of origin. Indirect hernia occurs most often in males—about ten to one over females. Direct hernia is almost exclusively a disease of older men.

When the surgeon repairs an inguinal hernia, his job is to tie off the neck to the sac and remove the protruding portion. If there is any bowel or fat content in the sac, it must first be pushed back into the abdominal cavity, provided there is no interference with circulation of the sac contents.

When the surgeon has taken care of the sac and its contents he must then repair the opening through which it came and tighten up the tissue that surrounds the tunnel in which the hernia occurs.

Should the hernia become constricted at its neck, interference with circulation to the bowel may result, causing pain, swelling, and gangrene of the bowel. When this occurs, the mortality rate for the operation climbs. This is the reason it is preferable to repair hernia before complications set in. Groin hernia can be operated on successfully under local anæsthesia with little if any discomfort to the patient.

Trusses are being used. A truss is a belt with a pad that holds pressure over the rupture and is supposed to keep the bowel from protruding through the opening. A truss gives only temporary relief and does not cure the problem.

Surgery is the only method of actually curing these hernias. The average patient need stay in the hospital only about four days unless he has complications. Fifty or sixty years ago patients stayed in the hospital an average of three weeks after hernia repair.

Femoral Hernia

In femoral hernia, which makes up about six per cent of all hernias, some of the abdominal content—either fat or bowel—protrudes through the femoral canal, which is at the middle of the large blood vessels going into the leg in the upper thigh. Femoral hernias are about three times as common in females as they are in males.

Strangulation and obstruction of the content occur in about a third of all cases. Femoral hernia—easy to overlook—is a common cause of bowel obstruction.

Umbilical Hernia

Umbilical hernia makes up about three per cent of abdominal hernias. It is common in young babies. Because of the bulging when the baby cries, the mother is worried. The doctor may push the rupture

Are You Suffering from a Hernia?

R. N. Brown, M.D., F.A.C.S.

Illustration shows diaphragmatic hernia. Part of the stomach is protruding into the chest cavity.

back in and place a small coin over the navel and hold it in place with adhesive tape. Statistical studies show that a goodly portion of umbilical hernias heal by the time the baby is one or two years of age. They heal just as well without the taping as they do with it. For this reason doctors tend no longer to strap them up with adhesive tape. The tape is irritating to the skin of many babies.

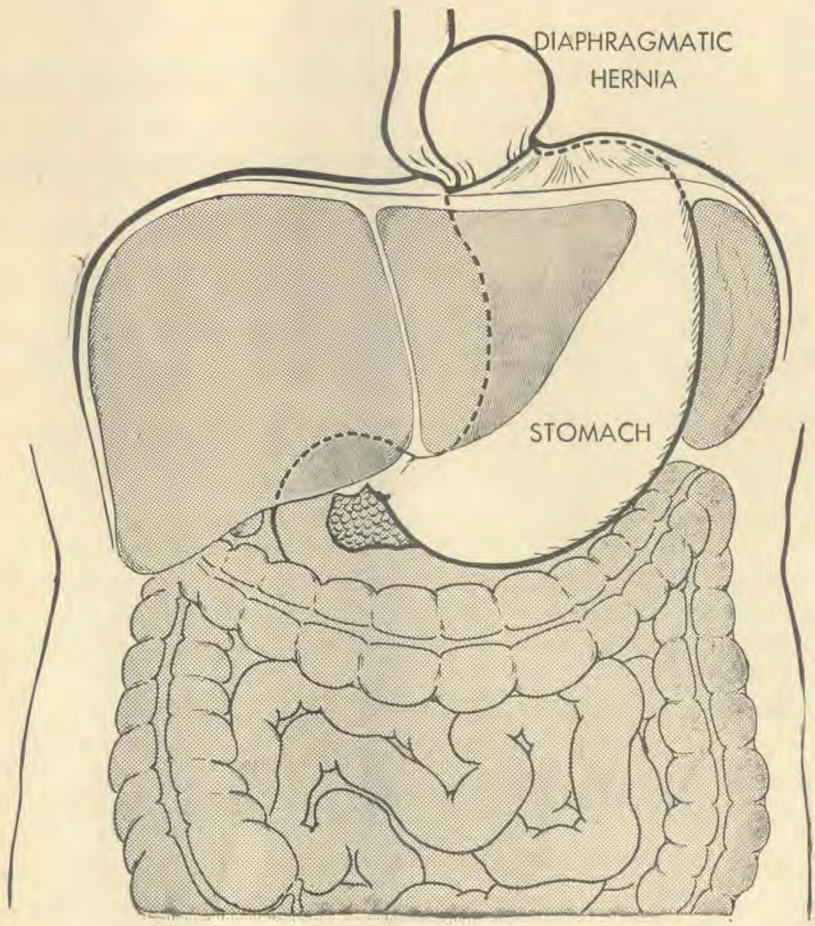
If a small to medium-sized hernia of the umblicus in a baby has not healed by the time the baby is two years old, it should be repaired surgically.

Some babies are born with a large umbilical hernia that contains part of the liver, intestine, or other organs. Such a hernia requires immediate repair—pulling the skin up over the organs that are presenting. When the baby is a year or two old, another operation is necessary to affix the abdominal wall more firmly.

Incisional Hernias

Incisional hernias make up eight to nine per cent of abdominal-wall hernias. They result from previous surgery where healing was not perfect. They may be relatively small, admitting only the tip of the finger, or they may have large defects extending the full length of the healed incision.

Temporary support can be given with wide belts, but cure requires further surgery and repair. Sometimes because of weakness of the tissues around a hernia it becomes necessary to reinforce the repair, using strips of tough fibrous tissue called fascia from the person's own body (usually taken from the thigh) or certain synthetic or metallic gauze-like materials.



Diaphragmatic Hernia

Occasionally a baby is born who does not have a complete diaphragm, and part of the abdominal content such as stomach, spleen, and occasionally even liver and intestine, is displaced up into the chest. This condition produces respiratory difficulty, which is noticed shortly after birth. This condition requires surgery the first day of life. Even then a substantial percentage of the infants do not survive.

The most common type of diaphragmatic hernia is displacement of a portion of the stomach into the chest cavity. This condition may produce gas, belching, and heartburn after meals, especially when the patient lies down after a meal. It can be diagnosed only by X-ray examination.

When acid from the stomach regurgitates into the œsophagus, ulcers and strictures may form in the lower end of the œsophagus. It is advisable to have repaired a diaphragmatic hernia that produces these symptoms. The repair may be done through the chest or the abdomen.

Hernia is common today. The only sure cure for it is surgical repair. In the hands of well-trained and experienced surgeons, recurrence is rare. If the patient has a hernia repaired before complications set in, the hospital stay is relatively short and the results are good.

When strangulation and gangrene develop, the stay in the hospital is prolonged and the death rate climbs. No age of human life is exempt from hernia. Unless there is some contraindication such as a badly diseased or weakened heart, hernia should be repaired surgically.

When you have your next annual physical examination, be sure your doctor checks you for hernia. If one is found, have it repaired before it enlarges or develops complications. ***

The man who spends long hours at his desk without ever standing up and walking around is an ideal candidate for leg cramps.

Leg Cramps

by HAROLD SHRYOCK, M.D.

A forty-eight-year-old businessman, Mr. Wilson, complains that he had severe pain in both legs two days ago when he hurried up three flights of stairs to his office because the elevator was not running.

A twenty-five-year-old expectant mother, Mrs. Raj, complains of cramps in the calves of her legs. She has two small children and does the housework. Her leg cramps are most severe after she has been hanging out clothes.

A sixty-seven-year-old barber, Mr. Tom, suffers from cramps in the legs, sometimes one and sometimes the other, which wake him out of sleep about three o'clock in the morning. They usually occur after he has spent a long day at the barbershop.

A twenty-year-old student, Miss Maran, experiences cramps in her legs at night after a day of writing examinations or studying.

Here we have the story of four people of different ages and walks of life who complain of muscle cramps in the legs. There appears to be no common factor involved.

Before we examine each case let us consider the basic cause for cramps in the muscles.

Basic Causes

Any interference with the source of nutrition of a muscle or its receiving oxygen and getting rid of carbon dioxide can cause the muscle to cramp. The flow of blood through it is what brings it energy food and oxygen and carries away carbon dioxide. The combination of energy food and oxygen with a muscle produces muscle power. The by-product of the chemical action is carbon dioxide, which must be carried away from the muscle promptly if it is to function efficiently. Anything that interferes with blood flow through a muscle makes it susceptible to cramping.

Let us learn more about Mr. Wilson and try to determine what caused him to have cramps in his legs when he climbed the stairs.

This 220-pound man is overweight for his height of 5 feet, 10 inches. He spends long hours at his desk without ever standing up and walking around the room. He is not interested in exercise or outdoor activity. He does not keep a garden or play golf. His wife says he takes the car even to visit the next-door neighbour. At his last physical examination the doctor told him his blood pressure was slightly elevated. In view of his being overweight and his sedentary habits it is reasonable to assume that he has started developing hardening of the arteries.

Now we can understand why Mr. Wilson is subject to muscle cramps on sudden exertion. His heart is already overworked because of the overweight and hardened arteries. Even under favourable circumstances his heart does not have a good margin of safety for propelling blood. Because he does not exercise, his muscles are accustomed to doing only the minimum amount of work. They have not been stimulated to develop beyond the usual demands made on them. The blood vessels supplying the muscles are small, for they have not been required to carry larger amounts of blood than necessary to provide for the unusual activities.

When Mr. Wilson climbed three long flights of stairs because the elevator was out of order he made a greater demand on his muscles than he had for many weeks. His muscles, his heart, and the blood vessels carrying blood to his muscles were not equal to his extra demand. Because of an insufficient supply of energy food and oxygen, the muscles rebelled reflexly by cramping.

Mrs. Raj suffered leg cramps for a different reason. She was in good physical condition. She had to be active to take care of her two children and do her housework. She was expecting the baby in about two months.

In Pregnancy

Beginning about the twenty-fourth week of pregnancy, leg cramps are common. The unborn child is growing rapidly. The source of the raw material for his tissues is the mother's blood. A great deal of calcium is necessary for his bones, and this is drawn from the mother's blood.

Perhaps Mrs. Raj had been careless by not eating enough food that provides calcium. Milk (even skim milk) is the best natural source of calcium. Calcium and other minerals must be present for the cells to function normally. Calcium, phosphorus, and sodium are particularly important for normal muscle function. Only about one part calcium to ten thousand parts blood is necessary for normal muscle function, but when this small quantity is reduced by half, the muscles become so irritated that they cramp.

Various explanations have been offered for the leg cramps that occur in expectant mothers, but the one generally accepted is that they result from a reduction of blood calcium. They usually disappear when the physician administers calcium. Probably Mrs. Raj's leg cramps could have been avoided had she included more minerals in her diet.

Varicose Veins

Mr. Tom has varicose veins. Barbers are particularly susceptible to them because their occupation requires them to stand almost motionless for many hours each day.

In the standing position, the blood in legs and feet must be lifted many inches for its return to the heart. The pressure by which the heart pumps fresh blood to all parts of the body serves to carry it through the arteries and into capillaries.

Once the blood has been forced through the capillaries it is no longer under high pressure, and even under favourable circumstances it returns to the heart slowly. In the person who stands a lot, blood returning from feet and legs must be helped on its way back to the heart. This return is accomplished by two factors—valves in the veins and the squeezing action of muscles. The valves in veins keep the blood from flowing backward. When the muscles in a given part contract they enlarge and compress the veins, helping the blood along its way. As the muscles relax, the valves keep the blood from losing the progress just made.

The blood in Mr. Tom's legs tends to stagnate because while standing quietly beside his chair he does not use his leg muscles enough to squeeze the blood on its way toward the heart. Such lack of exercise causes barbers to be susceptible to varicose veins. With stagnation of blood in enlarged varicose veins

there is reduction in rate of blood flow through leg muscles. Even though there is plenty of blood, it is not moving quickly enough to bring in new energy food and oxygen at a rate sufficient to keep the muscles well supplied. Nor is the carbon dioxide the muscles produce when they contract carried away at the normal rate.

Why do Mr. Tom's legs cramp at night? During sleep, heart action and blood pressure are always reduced. Then the flow of blood to Mr. Tom's leg reaches its lowest ebb. Because their blood supply has already been reduced by varicose veins, body processes during sleep do not provide enough blood to meet the needs of these muscles, hence they go into cramps.

Anæmic Factor

Miss Maran's cramping has a different explanation. She has been a consistent honour student, getting her high marks by many hours of study. She has neglected physical exercise and virtually become a bookworm. A recent physical examination by her doctor indicates that she is anæmic. Thus either through a reduced number of blood cells or a reduction in the amount of hæmoglobin they contain, her blood is not able to carry its usual quantity of oxygen. She exercises so little that the vessels carrying her blood to her muscles do not have capacity adequate for her needs. The blood these muscles receive is low in oxygen because of anæmia.

Another factor accounts for the leg cramps at examination time. Miss Maran is concerned over the outcome of each examination. She must have top marks to maintain her self-esteem. During an examination she becomes so concerned with every detail of the questions and answers that she is tense. The muscles of her body are contracted even though she is not using them actively. She actually is doing a great deal of physical work throughout the examination. Because her muscles are not contracting and relaxing alternately, the blood supply to the muscles remains low.

The night after an examination Miss Maran is so tired that she sleeps soundly. Then the circulation to her leg muscles reaches its low ebb. Having been in a state of tension for many hours, they need fresh blood to recover.

Miss Maran's leg cramps result from a combination of circumstances. Her anæmia, lack of exercise with resulting small blood vessels, and tension combine to give her leg muscles less oxygen than they require. It is no wonder that her muscles cry out in cramping protest.

Leg cramps are not serious, but the person who is afflicted with them should ask his doctor to help him find the cause and then remove it. Overweight, anæmia, poor nutrition, varicose veins, and heart and artery disease should receive attention and appropriate treatment.

Health Measures

As a health-building measure the person with leg cramps should make sure he receives enough milk each day for the calcium it contains. He should add to his diet extra vitamins and minerals, especially vitamins B, C, and D.

Physical exercise is next. For the person who is otherwise robust, walking in preference to riding in a car, climbing stairs in preference to riding in an elevator, swimming, golfing, and playing tennis offer good opportunities for developing a more nearly adequate supply of blood to the muscles.

For people who are not able to exercise actively, other less-rigorous means can be used to increase the circulation and develop the muscles. Warm baths followed by contrasting hot and cold showers serve to improve the circulation. Muscle exercises that can be taken even by a person confined to bed add their beneficial effect. Massage helps increase the circulation. One person who was troubled with leg cramps early in the morning used to wake at midnight and give deep massage to his feet, legs, and thighs. By increasing his circulation, he was able to sleep through the rest of the night.

A heating pad (warm, not hot) placed next to the low back has a reflex effect by which the blood vessels of the legs carry a large volume of blood throughout the night. Often this simple procedure prevents night leg cramps.

For the person who stands a great deal, the plan of sitting down or lying down and raising his feet above his hips for five minutes every two hours serves to drain away the stagnant blood and thus improve circulation to the legs. ***

HEART TRANSPLANTS

FOURTH IN A SERIES OF FIVE ARTICLES by Walter Froehlich

TRANSPLANTING a living heart into the body of a patient to replace one irretrievably damaged is the farthest man has yet ventured in repairing the ravages of illness and injury.

It was, therefore, not surprising that the world's first human-to-human heart transplantations late in 1967 and early in 1968 stirred more widespread public interest and more detailed press coverage than any single medical development in history.

To the medical community, however, these operations were no surprise.

Large-scale experimentation of heart transplantation on laboratory animals began in the United States about ten years ago. This research quickly established the feasibility of such surgery. For the last seven years, heart surgeons throughout the world have taken for granted that such operations would be performed on human patients as soon as techniques were sufficiently refined and tested.

For several weeks before the world's first human heart transplantation, surgeons at several medical centres were ready to undertake such an operation as soon as the opportunity presented itself. Essentially, that meant the simultaneous availability of a suitable donor and recipient.

Several of these surgeons found themselves in the position of having as a patient a needy potential recipient who died before a suitable heart for implantation could be found. This situation continues to be a major problem for heart transplant surgeons.

The hurdle from animal experimentation to human clinical application is usually a daring one in all medical research. In heart transplant surgery that hurdle has now finally been cleared. These pioneering operations have demonstrated that a transplanted heart can support the life of a human being.

If human bodies were built like mass-produced automobiles, there would be no problem in interchanging vital parts that are diseased or worn out. But it is not.

The body has the ability to repair itself, within limits. It also resists repair and replacement of parts not of its own making. This resistance to a new heart, stimulated by the body's immunological system, currently presents the primary obstacle to heart replacement success.

As a result, new impetus has been given to immunology research. Whereas formerly this discipline was mostly concerned with such matters as vaccines and allergies (believed to be triggered by immunological phenomena), immunology now has become of prime interest to heart surgeons.

In the coming months, knowledgeable observers will be watching less the surgical aspects of heart transplantation, and more the care of the patient following the operation.

The focus will be on the follow-up, particularly how physicians will attempt to counteract the body's immunological "rejection" of the new organ. Currently attention is centred on a new drug, antilymphocyte globulin (ALG), which partly prevents the body from rejecting "foreign" material such as transplanted hearts.

ALG is a serum, or blood fraction, that suppresses the action of lymphocytes, a type of white blood

To page 30

Low Back Strain

by J. DeWitt Fox, M.D.

In my practice of neurosurgery I treat two of the most common ills of modern man—backache and headache. Although both can be caused by the stress and strain of modern life, backache is often the aftermath of some unaccustomed sudden twist, lift, or strain of the back, whether from lifting a heavy bag of rice or a box from a high shelf that slips coming down or working in the garden too long on a Sunday afternoon. If the back is not accustomed to this sudden strain or exercise, a strain or even a sprain may result. Monday morning may find you crippled up with a backache, with so much muscle spasm you cannot get out of bed.

Too many Sunday athletes end up with backache because they forget to exercise throughout the week. A housewife may find that her back goes into a kink because she does not bend her knees when she picks up around the house, but bends from the back, putting an unusual strain where it should not be.

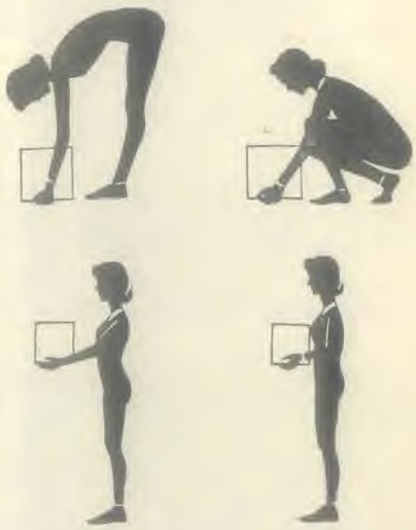
Prevention of low-back strain is really a way of life. You should remember that the body in normal function puts no strain on muscles, ligaments, and joints—is pain-free and agile. Whether you sit, stand, walk, work, exercise, or sleep, you should take your back into account, especially if low-back pain is a problem.

Benefits other than back comfort will be yours. When your body position is correct internal organs have enough room to function normally and blood to circulate freely.

It takes practice to gain good posture. By learning it, you will gradually develop proper carriage and the strong muscles needed to protect and support your hard-working back. Each time you practise good-posture habits you are that much closer to the time when you will carry good posture without thinking about it. Here are some suggestions that can help you develop good-posture habits:

1. Lifting. When lifting, to prevent back strain always keep the object as close to your body as possible. This precaution reduces the leverage factor that comes into play when you lift a box at arm's length. A 100-pound sack held close to you puts a 100-pound pressure on your last lumbar disk, but a 100-pound sack held at arm's length may put as much as 1,500 pounds of pressure in leverage on your disk, and it may rupture as a result.

2. Picking Up Weights. Bend your knees when picking up anything from the floor. Never lean over and pick up something with



your knees straight and your back bent. Your legs, not your back, are meant to be the jackknives. It cannot bend except at the last disk and at the hips, and at this level, a strain it cannot tolerate can easily be put on it. A strain, sprain, or ruptured disk may result.

3. Long Standing. You can accomplish prolonged standing more comfortably if you put one foot at a time up on a footstool. This posture takes extra strain off your back by rolling your pelvis under and flattening your back. The housewife who stands ironing for long periods should put one foot at a time upon a footstool about a foot high.

4. Swayback. Sit with knees crossed or with knees above hip

level to flatten swayback. A back's best friend is a straight, hard chair, preferably with a little tilt that puts the front an inch or two higher than the back. Lacking the slant, sit on the edge of the chair with legs crossed to put the right pelvic inclination to your back. Tighten abdominal muscles to keep chest up and head erect. A footstool may help to bring knees higher than hips.

5. Driving Position. Drive with a seat belt in place to encourage you to sit erect and slightly forward instead of slumping into the soft seat. Keep your car seat close to the pedals to require you to sit correctly and flatten your low back. Avoid strain while driving by relaxing at every stop the car must make for traffic lights and signs.

6. Sleeping Posture. Sleeping on the face encourages swayback and low-back strain, especially if on a soft mattress. For proper bed posture a firm mattress or a bed board under the mattress is essential. A faulty sleeping position may increase swayback and result in backache and tingling pains in arms and legs in the morning.

The preferred position for sleep is on the side with knees bent. This posture effectively flattens the back.

Sleeping on the back is restful and correct when the knees are properly supported, but lying flat on the back without support to the knees may make swayback worse.

7. Rest for the Back. Rest your back. The most comfortable position to do so is with all pressure and weight taken off your back and with your knees bent. Lie on the floor with two pillows under your knees and one under the small of your back and relax.

Another great way to relax is to lie on the floor with head on a small pillow, your knees bent and legs resting on a straight chair, and a pillow under your calves for comfort. By resting five to twenty minutes in this position your back will enjoy much relief.

8. Acute Low-back Strain. For the morning that you get up and find you are crippled with back spasm, as if someone had thrown a hatchet into your back, this programme may help:

Lie flat on the floor with your feet up on the bed and a pillow beneath your neck. As soon as you can navigate, slowly head for the bathroom and have a hot bath. The hot water relaxes your muscles better than anything else can.

You may need pain medication. If you require something stronger than aspirin, consult your physician immediately.

Muscle relaxants have been found effective by physicians, and you may require them before you can achieve comfort.

Your doctor may advise pelvic traction, which usually is given in a hospital.

If bed board, hot bath, and medication cannot get you comfortable at home, the next best place for you is a hospital where you can get intensive physical therapy.

9. Herniated Lumbar Disk. Recurrent episodes of back pain from low-back strain or associated with sciatica usually point to a herniated lumbar disk, and you may need extensive study by a doctor.

In a small percentage of cases more is needed than conservative measures, and surgery is necessary. The surgeon will advise X-ray of the lumbar spine.

If a herniated lumbar disk is your problem, corrective surgery will offer dramatic relief of pain.

***

NECK PAIN

by WILLIAM T. GIBB, M.D.

When I was young, if a person annoyed someone else beyond reason he was called a pain in the neck. There is nothing more painful than an abscess or a carbuncle in the back of the neck, because it is irritated by every movement of the neck. Such carbuncles are often associated with untreated diabetes. This disease was difficult to control before the discovery of insulin, but now its treatment is relatively simple. Because of insulin and more complete knowledge of diabetes, the incidence of carbuncles has dropped considerably.

Some neck pain of long standing is not associated with any visible changes of the neck, such as redness, swelling, and tenderness. Often these aches and pains persist for so long that they result in nervousness and harrassment.

The human head is heavy. I am not certain of its exact weight as it sits on the upper end of the neck. There are not many occasions when it can be weighed. A rough estimate is ten or fifteen pounds.

We are not conscious of this great weight, because the head is perfectly balanced on the neck by the action and counteraction of the neck muscles, which are under constant tension except when the body is horizontal, with the head supported.

Any situation that requires holding the head in an off-balance position places strain on one or the other of two sets of neck muscles. Eventually the aching pain of muscle fatigue is experienced.

When I was small, boys often turned the handle bars of bicycles over like those of a racer, but it was impossible to ride any distance in comfort because of the strain on the back neck muscles caused by holding the back in such a position that the eyes could look forward. The professional racer could become accustomed to this uncomfortable position through practice and training, but I never had the patience to get used to it.

Support to the Head

There are seven bones in the neck known as the cervical vertebræ that help support the head. The weight of the head in the erect position must be supported and transmitted by these vertebræ to the rest of the spinal column. Although the vertebræ differ somewhat in shape, six of them have a number of features in common. They have a cylindrical body; a bony arch or canal that protects the spinal cord as it passes downward, two articular facets on the top and two on the bottom; and the spinous process and the two transverse processes, all three of which are attached to the arch. The articular facets form small but important joints with the vertebræ immediately above and below.

Between the cylindrical bodies of adjoining vertebræ lies the intervertebral disk, which in reality is a tough fibrous cushion whose centre is a jelly-filled sac somewhat comparable to the liquid centre of a golf ball. Holding the vertebræ firmly together and at the same time allowing for a definite degree

Any situation that requires holding the head in an off-balance position places strain on one or the other of two sets of neck muscles. Eventually the aching pain of muscle fatigue is experienced.

of motion are many complicated ligaments. The motion between only two of these bones is not great, but the combined motion of all seven is sufficient to allow for all the bending and twisting that the neck can do.

No matter how long or how short a person's neck is, there is always the same number of bones. This fact applies to the lady with a swanlike neck, the swan, the English bulldog, and the giraffe.

The muscles in the neck concerned with support and movement of the head are strong, numerous, and complicated in their arrangement. Roughly speaking, one set bends the head forward, another bends the head backward, and two long diagonally placed muscles cause the head to twist. Combinations of these muscles allow for sidewise bending.

These muscles develop in size and shape, depending on what the person does with his head and back. Wrestlers exercise all of these muscles to the point that they are able to arch; that is, to support the body by the back of the head and the heels with the body clear of the ground. The larger in circumference they can develop their neck, the more readily they are able to slip out of a hammer lock.

Certain coolies carry great weight on their backs, partially supported by a cloth band across the forehead, thus developing another set of muscles. Women who carry heavy baskets or pots on their heads do so by balance rather than by any peculiar muscle development.

In addition to bone and muscle, there are many other structures that pass through the neck from the head to the trunk. A few include the œsophagus, or gullet; the windpipe; some large and important veins and arteries; and some nerves. The most important structure, however, is the spinal cord, which lies in a fluid-containing sheath within the protecting arches of the vertebræ. Through this cord passes the communicating system between the brain and the rest of the body.

The head is somewhat loosely connected to the body by the neck, and any unexpected vigorous motion of the body can result in a violent snapping motion of the head. If the neck muscles are prepared in advance for this jerk, it may be avoided or minimized.

The knights of old employed a weapon consisting of a heavy spiked iron ball connected with a short chain to a strong handle. Proper manipulation of the handle at the right time caused the ball to strike the opponent's helmet with tremendous force, the action being similar to the snap of the wrists at the proper time in a golf shot.

Whiplash

A physical injury common to some automobile-accident victims is the whiplash. At first it was thought that the head was snapped like the tip of a whip, but careful research has shown that this is not exactly the case.

In the typical situation, a car standing still at a traffic light is unexpectedly and forcefully struck from the rear by another car out of control. The driver of the stopped car is unprepared. His car is slammed forward by the impact, and his head being relaxed remains where it is while his body snaps forward. This first motion is violent, and his neck is bent far back. His car stops suddenly after the impact. His head has started forward along with his body, but his body stops with the car and his head keeps on going. This action snaps the neck forward, and the head comes to rest over the steering wheel. Then the recovery reflex action of the neck muscles snaps it backward again in an uncontrolled fashion. In summary, his neck has been bent backward violently, then forward, then backward again, with his heavy head flying uncontrolled at one end.

If through the rear-view mirror the victim should see the car approaching and be all set for the impact, his injuries, if any, would be entirely different.

As it is, he suffers varying degrees of sprain and strain of tendons, ligaments, and muscles. Often after such an accident the victim is not immediately conscious of any particular pain, perhaps because it is masked by the emotional shock of the accident. Only after he gets home and is relaxed does the pain really

A muscle must relax and contract periodically in order to throw off waste products.

begin to bother him. It takes time for the swelling and tenderness of a sprain to develop. The pain usually is of an aching nature, involving the back of the neck principally. It hurts all the time, and it is difficult for him to get into a comfortable position. The pain makes him extremely nervous and keeps reminding him of the violence and confusion of the accident. The fact that it happened through no fault of his does not help.

The usual mild-pain remedies do no particular good, and even codeine is of little help. The pain continues for a long time, as is usually the case with sprains and strains.

There is much more to an accident than the obvious injury. There are varying degrees of shock, but not the kind of shock one suffers from after losing a large quantity of blood or having an arm or a leg mangled—a physical shock. Another shock has to do with a sudden change in the victim's living condition and frame of mind. He goes from a state of content and tranquillity to acute distress in a split second, with no warning or any opportunity to make an emotional adjustment. He may not be badly injured physically, but his whole state of being is reversed. This change makes for severe anxiety and tension, especially if he was in no way to blame for what happened. If the fault were his, his reaction might be different. Being blameless may be the most shocking part of the experience.

Emotional Causes

Many people complain of aching and sore muscles in the back of the neck after an emotionally tiring experience, such as a long trying day at the office or a hectic day with the children confined at home because of bad weather. The muscles in the neck are actually sore. Nothing feels better than to have them gently massaged. Lying down with the feet elevated may also help.

All too often there is headache as well, with the discomfort going up the back of the head, across the top, and ending above the eyes. The scalp may feel tender and sensitive, even though this condition has nothing to do with what goes on inside the skull. This is a matter of tension and anxiety, with its effect on two nerves beneath the scalp that go from the upper part of the back of the neck to the top of the skull. There are also several curious flat muscles in the forepart of the scalp that have to do with raising the eyebrows and wrinkling the forehead, and another set just above the ears and going toward the top of the head. If you practise enough, you can wiggle your ears with them. These muscles can become sore and tender if they are on a prolonged strain.

The weight of the head becomes a factor in these situations, for when we are emotionally strained we tend to tense certain muscles, the muscles of the back of the neck often being the principle offenders. The head is held off balance, and these neck muscles remain tensed. What is felt is the discomfort of actual muscle fatigue. A muscle must relax and contract periodically in order to throw off waste products.

The sufferer is not conscious that his muscles are tight, but that they are is evident to the careful observer. Muscles in the front of the neck have to pull equally hard in order to compensate for the pull of muscles in the back of the neck and not let the head bend far back. If you watch a singer during her emotional performance you will notice what I am talking about—her neck muscles stand out prominently, because they do not relax.

Arthritic Pain

The pain of arthritis in the neck is usually localized; that is, you can point to it and say, "There it is." It is worse at times, especially in damp weather. Often there is pain going to the shoulder or down the arm to the hand. Certain motions may be particularly painful, and there may be limited motion of the head in one direction. You may find a spot that hurts when you press on it. There may be creaking on certain motions. We are not discussing neck arthri-

Often there is pain going to the shoulder or down the arm to the hand. Certain motions may be particularly painful, and there may be limited motion of the head in one direction.

tis as part of a generalized rheumatoid involvement, nor are we thinking of anything like Marie-Strumpell disease, which is a severe condition involving the entire spine.

When you go to your physician, he examines you and rightly orders an X-ray examination of your neck, which may show lipping due to calcium deposits in the ligaments holding the bodies of the vertebræ together. There may be arthritic involvement of the articulations between several vertebræ, a narrowing of or an encroachment on one of the neural foramina (opening through which the nerves pass) by a spicule (sharp point) of bone, or other arthritic overgrowth.

This encroachment may result in a pinched nerve.

At the level of each vertebral body there is a hole in the protective arch covering the spinal cord that allows a large nerve to pass through. These nerves are in pairs, one on the right side and one on the left. Because the neck bones move in relationship to one another, this partially obstructed foramen becomes even smaller on certain motions of the neck or arms, causing pressure on the nerve. Because of the nature of nerves, such pressure may give pain, tingling, or other symptoms at a distance from the point of pressure. Because many nerves leaving the spinal cord in the neck supply the shoulders, arms, and hands, pinching them can cause pain and tingling in the fingers or arm.

Although pain in the neck does not come from two pieces of diseased bone rubbing against each other, this is what comes to mind when people think about arthritic joints. Actually, the discomfort comes from the ligaments and tendons that hold the joint together. They become stiffened. The less the joint is used the more pronounced the stiffness be-

The treatment the doctor suggests depends on symptoms, and usually traction or some other form of physical therapy will suffice. Diabetes is a chronic disease. But if treated the patient may live a normal life.

comes. The calcium deposit causing the lipping is a sign that such a situation exists. It is not the calcium that hurts, for it is an end result rather than a cause.

One of the most common treatments for neck arthritis is called cervical (neck) traction. A sling is applied to the head and pull is applied by means of weights and pulleys. This treatment stretches and relieves spasm of structures that hold the neck bones together. It is surprising how much relief is obtained.

Herniated Disk

A more serious condition is hernia of an intervertebral disk. A herniated disk is common in the lower back, but can happen in the neck. The fibrous cushion between the vertebræ with its jelly-filled centre (*nucleus pulposus*) under certain conditions of strain and pressure pops through a weak spot in the disk. Because of vertebral construction, this protrusion takes place toward the back and encroaches on the space within the bony canal that contains the spinal cord and its sheath. If the hernia is large enough it causes pressure on the cord. This situation is serious, for the body's entire electrical system is endangered. The pressure is exerted on one side or the other, rarely in the middle. A patient told me that when he turned his head in a certain direction he felt weakness in the entire left side of his body. I did not believe him until it happened in my office, and then I was convinced.

Operation for removal of a herniated *nucleus pulposus* in the neck is serious, unlike the condition low in the back. Most surgeons would rather try traction before deciding on operation. It is dangerous working so close to such a small yet important structure as the spinal cord. The end results are not always as good as you might expect. Do not let anyone repair such a herniation until you have considered the matter carefully and obtained the opinion of several experts (neurosurgeons).

Effects of Injury

The bad effects of an injury to the neck, such as falling out of a tree and landing on the head, may not show up for many years. You may recall that after you fell you had a sore neck for a few days, and then everything cleared up until recently, when a dull ache began that nothing relieved. There is some limitation of motion when you turn your head in a certain direction and perhaps some numbness and tingling in one arm and hand when you awake in the morning.

After trying heat, aspirin, and liniment, you go to your doctor, who immediately orders X-ray examinations. The films show that one vertebra is wedged; that is, it is lopsided—narrower on one side than on the other.

When you were a child your bones were much more elastic than they are now. The force of the fall on your head was transmitted to your neck, and it compressed this vertebra, which sprang back into shape, so that at the time X-ray examination would have showed nothing. But damage was done to the blood supply of this bone, and over the years there has been gradual one-sided shrinking of the bone.

There is not a great deal to do except try to keep the condition from getting worse. The treatment the doctor suggests depends on symptoms, and usually traction or some other form of physical therapy will suffice.

Osteoporosis

Elderly people sometimes develop osteoporosis, which is caused by less calcium in the bones than the body needs. The condition is usually in all the bones, which lack their former strength. It is not unusual to see a partially collapsed vertebra when an X-ray examination of the neck is made. On the film one vertebra appears to be only about half as thick as the rest of the vertebræ. The treatment of

To page 25

Four in the Cr

A W.H.O. FEATURE

A young woman of twenty-five, a thirty-year old man, a little girl aged four, and a sixty-year-old man all have a problem in common: diabetes mellitus.

The cause of their disease is to be found inside themselves. Behind the stomach and the large intestine is an oblong, yellowish gland known as the pancreas. In a person suffering from diabetes, certain cells in this gland do not function the way they should.

An engine can only keep going as long as it is supplied with fuel. . . . the same applies to the human body. Our fuel comes from the food we eat.

We eat many different things. What we eat, how much we eat, how we combine various foods and how we prepare them are all factors that depend on our culture and traditions. This depends on where we happen to live in the world. Our food can be divided into three main groups: proteins, fats, and carbohydrates. Almost half of what we eat consists of carbohydrates: bread, potatoes, rice, and sweets of all kinds.

From the stomach, food passes into the intestines. Here a complicated process commences during which the food we have eaten is broken down so that the organism can begin to absorb it. The carbohydrates are of most interest to us. They are broken down by means of enzymes to glucose, to pass into the blood. Now something important happens. When the glucose reaches the pancreas, it activates certain cells. This signal causes the secretion of a substance called insulin. Without this hormone the glucose cannot be exploited in the right way. Insulin is carried in the blood to the liver on its way out into the entire organism.

A certain amount of the glucose is stored in the liver for later use. But most of it passes out into the organism to be used as fuel.

In order to keep the muscles going, the fuel—glucose—has to find its way into the individual muscle cells. But this cannot be done without insulin, for it is insulin that performs the task of sluicing the glucose into each individual cell.

Muscular work is not alone to demand fuel. No matter what we do we use energy. The brain cells obtain their fuel almost exclusively from glucose.

Two Tests for Diabetes

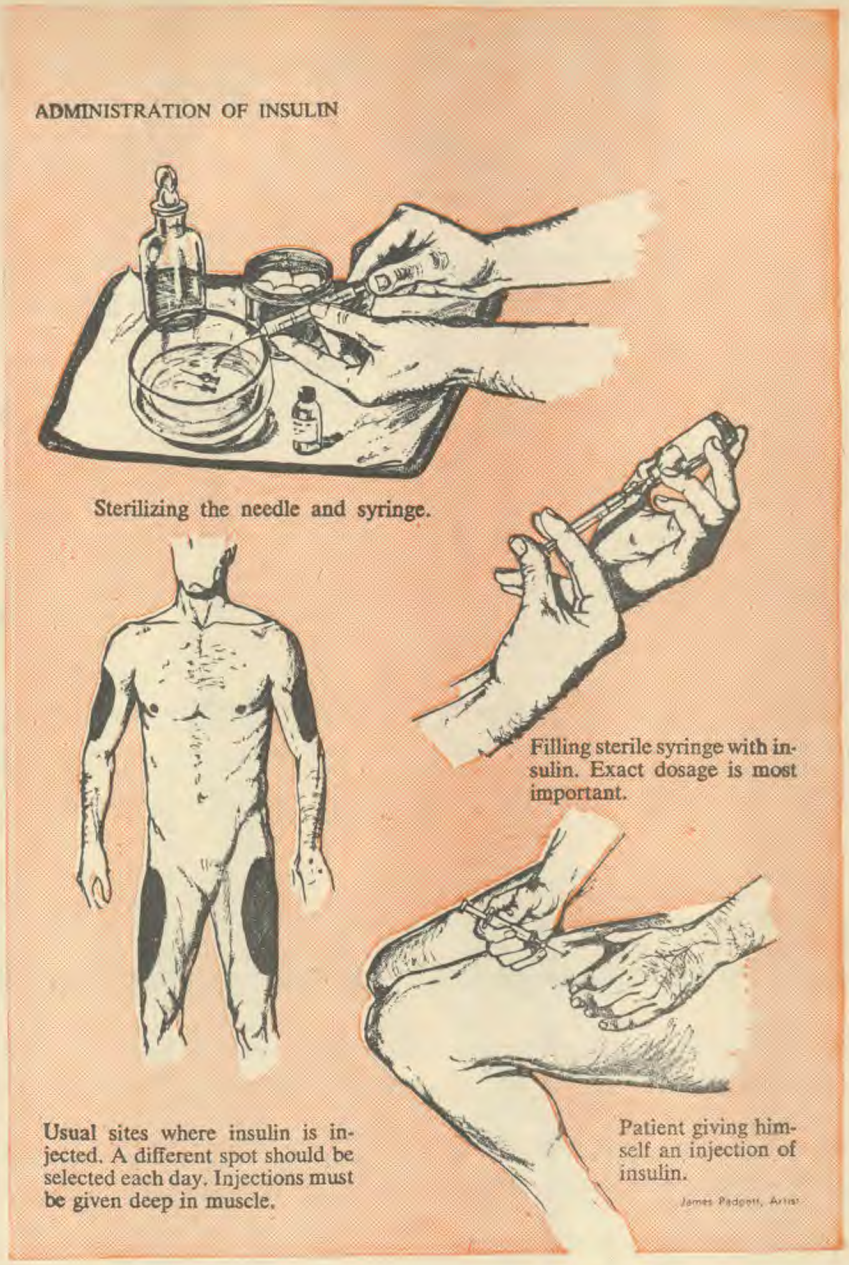
A man has been sent to hospital. His doctor believes he has diabetes. The simplest test is to examine the urine. By means of a specially treated piece of paper, sugar is detected. The next step is a blood test. This reveals that there is too much sugar in the blood. Now, in order to check the balance between sugar and insulin, the patient is given a specific amount of sugar solution to drink. It causes the sugar content in the blood to rise: not enough insulin. The patient has diabetes.

The insulin-producing cells in the pancreas are not functioning as they should. The glucose in the blood calls out in vain; there is no insulin answer. Out in the muscles, the glucose cannot be utilized by the cells because there is no insulin to sluice it in.

The muscles, however, must use fuel in order to function. They cannot work without it. So they use the stored layer of fat instead. The patient loses weight. The blood is overfilled with glucose that cannot be used. It presses on the kidneys. Soon they are unable to keep the glucose back and so it passes out with the urine. At the same time the glucose draws water with it from the body. The patient has to eliminate water frequently and he continually feels thirsty. Unless something is done the situation may well become critical.

Since its introduction in 1922, insulin has saved the lives of millions of people suffering from diabetes. Diabetes is still a chronic disease. But if treated the patient may live a normal life.

owd



Coma Diabeticum

The patient gradually passes into a state of unconsciousness. The lack of insulin in his body results in his "drying up" and at the same time acid poisoning sets in. His breathing is very laboured. His breath smells of acetone. He is in a diabetic coma.

Something has to be done to counteract the process of dessication. Liquid is infused directly into the blood stream. Blood samples are sent to the laboratory to be analyzed. The degree of acid poisoning is measured. And in order to re-establish normal conditions and correct the balance between glucose and insulin, it is necessary to give large doses of insulin quickly.

The Story of Research

Diabetes is a disease that has been known to man for thousands of years. The Chinese diagnosed it quite simply by tasting the patient's urine to see if there was any sugar in it.

All the symptoms of the disease are described in ancient Persian and Greek writings on medical subjects. But in those days doctors were unable to do much to help their patients. The only form of treatment discovered was a strict diet, but this only helped in the milder cases. Patients in whom the disease had reached an advanced stage gradually passed into a coma—and died.

Research has been conducted on this disease for a very long time, but it is only within the last 100 years or so that anything has resulted from it. A German scientist named Langerhans discovered some cells in the pancreas that were entirely different from the other cells.

In 1921, two Canadian doctors, Banting and Best, succeeded in extracting an effective substance from the pancreases of animals, and it was tried on dogs.

First Life Saved

There now seemed to be a chance of helping the thousands of people suffering from diabetes. January 11, 1922, a hospital in Toronto. A fourteen-year-old boy lay in a deep coma. The amount of glucose in his blood was five times larger than normal. He had

To page 29

Concern for one's health is normal and necessary. But one should avoid the twin dangers of anxiety and indifference.

Too Many Symptoms

by CLIFFORD R. ANDERSON, M.D., YOUR RADIO DOCTOR

ONE of the most gratifying things about the practice of medicine is the wide variety of people one meets every day. Many come with genuine symptoms, real complaints. Some have been injured by falls or other accidents. Others may have trouble with their blood pressure or perhaps with some heart problem. Still others are found to have diabetes or other disorders which they never even suspected before the examination.

Then there are those who are disturbed by various nervous problems which may be superimposed upon these other organic conditions. Again, there are patients who are troubled by what we may call "borderline problems," where it is not too clear where one symptom ends and another begins. These may require even more skill in diagnosis and treatment just to be sure nothing serious is being overlooked.

Also there are those who have all kinds of symptoms, many of which are not really based on fact at all. Just listing their endless complaints and anxieties would fill a book. They can talk about themselves by the hour, adding all the extra symptoms they have collected from the complaints of others!

Such people seem to make a career of being unduly preoccupied with their own health. They are forever looking around for some new form of therapy that will banish all their discomforts and bring back the vigour and vitality they claim to have lost through some imaginary disease. As a matter of fact there is no medication known to medical science that will ever cure their endless complaints.

Unhealthy Preoccupation

Such people are referred to as hypochondriacs, from hypochondria, an ancient Greek word meaning trouble in the upper abdomen just under the ribs. The old-time doctors, looking around for some seat of this troublesome condition, usually blamed the spleen, which was a perfectly innocent organ in almost every case. Here, as in so many other instances, "the Greeks had a word for it," and we still use this word.

Sudhir Kumar—not his real name, of course—was a typical case in point. He was a pleasant enough fellow, had a good education, even held a fine job. But how he worried over minor discomfort! He was sure he was developing cancer, heart disease, high blood pressure, diabetes, or *something*. Never satisfied with negative physical findings, he drifted from one doctor to another, always hoping that someone would find the cause of his trouble. He tried various laxatives, pep pills, so-called "food supplements," and all sorts of other things, but the results were always the same. Such troubles usually arise from some deeper conflict which the individual cannot or dare not bring to the surface.

A certain amount of concern over one's health is perfectly normal. All should follow the rules of good hygiene, keeping their weight within certain limits and securing sufficient rest to meet their needs. They should also watch out for the "danger signals" of cancer and other diseases. But having done so, they should relax and carry on without overconcern.

Overconcern

Naturally there are times when people do not feel well, such as during the menopause in middle life, or perhaps because of some illness. But we should beware lest we become too worried and focus our attention on something like "pounding in the head," which may be nothing more than one's own pulse beat magnified by pressure on the pillow at night. This overconcern is often a peculiar personality trait, particularly in those who have grown up in an atmosphere of ill health and insecurity.

True, many of these people seem little handicapped by their problems. Some even manage to lead successful lives, using their numerous "symptoms" as a kind of hobby for self-expression, though we pity the friends and relatives who have to listen to this "organ recital."

Then there are the hypochondriacs whose numerous aches and pains become a source of deep concern not only to themselves but also to their associates and friends. Many of these are women, with symptoms located in the pelvic area. All kinds of surgical operations have been performed for them, sometimes with good results, but often without valid reasons.

There are times when such women suffer from that peculiarly distressing condition known as endometrosis, and in such cases surgery may be the only advisable course. But in many others the hypochondria, or preoccupation with endless complaints, may be just a neurotic manifestation due to unconscious mental reactions now being displaced into various body organs, which then become centres of distress and discomfort. Such patients become preoccupied with their chronic complaints. The trouble may be projected to the stomach or some other part of the gastrointestinal tract, or the patient may complain of vague general discomfort over the whole body, including feelings of weakness, fatigue, sleeplessness, and irritability.

All this preoccupation of the mind with bodily aches and pains helps the individual to forget the real problems arising from deep within the mind from hostility and aggressiveness, which the person cannot allow himself to dwell on. Such individuals often have deep feelings of guilt because of either real or imaginary misdeeds in the past. Bodily suffering may thus help to relieve these feelings of guilt to some extent. In other words, the individual may be "punishing" himself for some real or imaginary problems of years gone by.

Nervous Feelings

Many a child has felt deprived of the love and attention he really needed in his early years. There may have been little real basis for his feelings, but they were only too real to him. Later in life anxiety over such feelings may reach the point where the individual may even develop a nervous breakdown from which he may or may not fully recover.

Telling such a person "there is nothing wrong" will do no good, for he is sure there is plenty wrong. In a way he is right, even though the true cause may be far different from what he himself suspects. Occasionally such a person will develop a genuinely serious illness which in turn gives him the opportunity to say, "I told you so!"

Then there are those very serious hypochondriac patients who will say, "Doctor, all my insides are rotting away, and my organs are 'turning to concrete.'" Foolish as such claims may seem, they are only too real to the patient himself. Such people may have tended toward this condition in early life, but in many cases these peculiar thoughts and attitudes may not show up until later years. This is particularly true in cases of involutional melancholia which may come on following some family catastrophe, such as the loss of a business or home due to fire, flood, storm, or other causes. These patients become deeply depressed and sometimes suicidal.

People afflicted with that peculiar cyclic disturbance known as manic-depressive psychosis may be very clever during the early manic phase of their illness, while later becoming overactive and completely out of touch with reality. Then suddenly the whole picture may change to the depressive reaction, in which the individual feels completely lost and worthless. The earliest signs of trouble may be seen in the constant absorption with the patient's own unhappy symptoms. He loses interest in the world around him and may suffer from delusions and hallucinations. Such patients may need the services of a qualified psychiatrist as well as help from their own family physician.

Whenever a person seems to have "too many symptoms," his family and friends should seek expert medical advice. Most of such problems unfortunately cannot be cured by diet or by any other single means. But a clear understanding of ourselves and the reasons for our peculiar feelings will greatly help in uncovering the cause and solving the problems. ***

Avoiding World Starvation

If the present population growth rate is not checked, we will have by 2000 A.D. more people than the earth can feed.

by THERESA A. WHELPLEY

EVERY second and a half a new baby is born in India. If India's present rate of growth continues, by the end of the century she will have one billion inhabitants instead of today's half billion. India's agriculture cannot meet the demands of her hungry millions. Other countries have the same problem. What about the future?

Thinking men are grappling with the question, How shall we feed this growing multitude throughout the world? It is estimated that by the year 2000 the inhabitants of our globe will number more than double the three billion of today.

The pioneer space scientist Dr. Wernher Von Braun considers the population explosion "the greatest problem facing this planet." He says, "Unless we find an effective remedy to this situation, our own children and grandchildren will live in a world in which the vast majority of mankind will be engaged in a struggle for sheer survival."

Scientists are experimenting to find ways of increasing the world's food supply. Inasmuch as water covers the great part of our earth they are studying the ocean as a possible solution. Said W. V. Farrar:

"The unicellular yellow-green alga *Chlorella* (Chlorophyta), and species related to it, has often been discussed in recent years as a possible source of cheap food. Its production, which needs only sunlight, water, and inorganic salts, would be economical of labour and land; experimental work has been going on in many countries."

Unfortunately, regardless of how it is prepared and camouflaged, human beings do not like the taste of *Chlorella*.

We have evidence "that the pre-Conquest inhabitants of Tenochtitlan (the present Mexico City) ate considerable amounts of a blue-green alga (Cyanophyta) of unknown species, which both the natives and the Spaniards found palatable," continued Mr. Farrar.

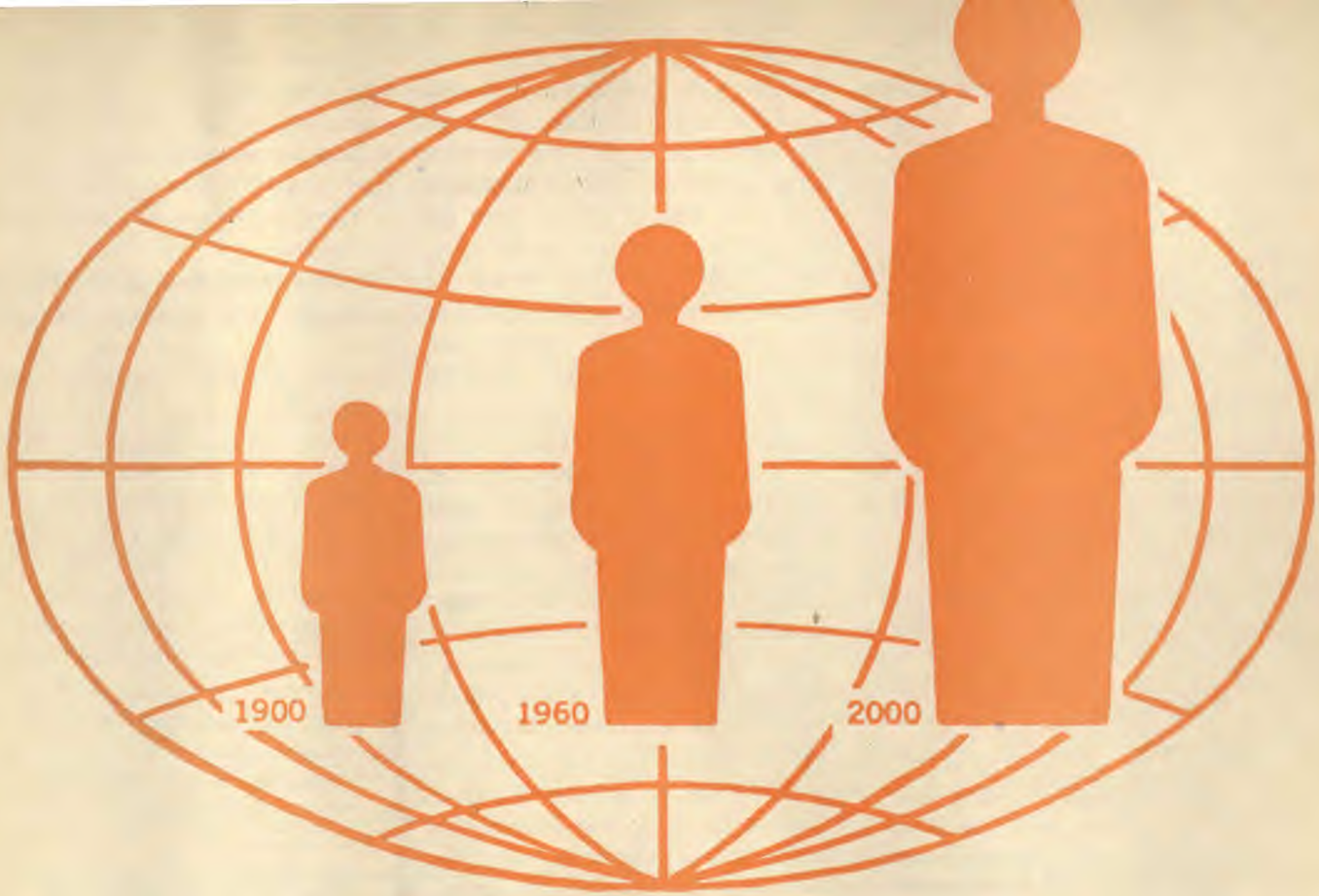
W. H. Prescott said, " 'Then there were fishmongers, and others who used to sell little loaves which they made out of a sort of slime which they gather from the great lake, which they thicken and make loaves of it, having a flavour like cheese.' "

Until science finds a way to make alga palatable to the people of today, it is impracticable.

New Rice Variety

The International Rice Research organization in the Philippines has developed strains of rice that produce greatly increased yields per acre, but people are slow to try something new. To demonstrate the greater returns of the new rice variety, they sent seed to selected parts of India and Pakistan, used advanced methods of farming. It is hoped that when more seed of this new strain is available, this greater-yielding variety will be used extensively, thus producing a much larger quantity of rice, "the staple food for 60 to 80 per cent of the world's population," according to *Newsweek* magazine. "Without protein, of course, man cannot produce new tissue and bone to replace old cells that continually slough off."

The United States Department of Agriculture predicts that "within the next decade, vital edible protein must be found because man will be increasingly competing with his domestic animals for this important chemical nutrient," said Michael A. Jones. "A typical acre of land, when grazed, yields about forty-three pounds of protein. Plant that same acre with soy-



beans and you get 450 pounds of protein. So you can see that it is not very efficient for us to obtain our protein through the animal when we can get so very much more protein by going directly to the soil.

"The U.S. Department of Agriculture said in 1966: "Further protein needs must be met by chemically nurtured and protected plant materials. They certainly cannot be met by animal protein. Furthermore, research shows that meat, milk, or eggs are not indispensable to human health and well being.' "

Aaron M. Altschul states that adequate protein nutrition is possible at lower cost without the undermining of man's satisfaction with his food. This potential requires the upgrading of the proteins of cereals by supplementation with amino acids and the development of the protein foods from low-cost sources such as oilseeds; infant malnutrition can be eliminated by such means.

Quoting *Newsweek* again:

"Corn would be a fine protein source except that it lacks adequate amounts of lysine and tryptophan—two of the eight amino acids the body cannot make for itself."

At Purdue University, Dr. Edwin Mertz and his associates "recently developed, through genetic solution, a strain of corn with a substantially increased lysine content. As a result the protein value of corn can be nearly doubled—i.e., corn may provide a source of protein almost as good as milk. Presumably this genetic approach to protein improvement can be applied also to rice, wheat, and other grains."

Legumes and Nuts

Legumes and nuts are also good sources of protein. Although they may not contain all the amino acids necessary, when combined or eaten with other foods, such as grain and milk, they provide adequate protein. Such combinations have been used in various countries throughout the ages.

Some nations eat only a little animal food. For many generations the Chinese have lived largely on rice and soya beans, and they are a strong, hard-working race in spite of the fact that thousands of them live on only one meal a day. Natives of the North Cameroons subsist mostly on millet and peanuts, a combination of grain and nuts. The Bostonian in America with his Saturday-night supper of beans and brown bread depends for his protein on legumes and grain.

Research has been carried out at the University of Lebanon to find an inexpensive baby food that will provide a complete diet. Scientists discovered that a combination of

gaibanzos and wheat, both of which are plentiful in Lebanon, ground in proper proportions, furnish an inexpensive, complete baby food.

Haiti Experiment

Dr. Kendall W. King, member of a team of scientists specializing in nutrition, told of their experiment in Haiti:

"Our objective was to develop a food simple to prepare, containing essential nutrients, and appetizing enough to be eaten day in and day out. . . . We found that a mixture of two parts of corn to one of the most common variety of beans worked out beautifully. Neither food alone gives proper nutrition. Beans have an excess of amino acids. Corn has a deficit. But mixed together, they balance each other.

Unless something is done, our grandchildren will live in a world in which the majority of mankind will be engaged in a struggle for sheer survival.

The scientists tested the food in the laboratory with rats for two and one-half years to see whether it had any toxic effect. They found that the protein quality was almost as high as that of milk.

Dr. King reported:

"Then we went to Haiti in 1964 to do a controlled medical evaluation of the food mixture with children. Twenty-seven children suffering nutritional edema—swelling of legs, reddened hair, apathetic expression—were selected. For six months, they got the corn-and-bean mixture and nothing more except a little milk and enough fruits and vegetables for a balanced diet. Growth response was fine. Blood tests turned out well. Acceptance of the food was good. . . . We even found that we could feed the corn-and-bean meal in large amounts to children just weaned at the age of six months."

Dr. King and his workers eventually set up fourteen mothercraft centres. The mothers were taught "how to blend corn and beans by the age-old method of putting them in a hollowed-out log and pounding them with a pestle. They got the proper proportions by using two handfuls of corn to one of beans. They have been taught how to cook the blended mixture and how to prepare menus centred on this food."

Alan D. Berg said also:

"A number of other possibilities are under study. Many of them are based on the notion that inexpensive oilseeds—such as peanut, cottonseed, chickpea, soya bean, sesame, sunflower and coconut—if processed and formulated into acceptable foods, can meet a protein requirement at considerably less cost than milk.

"After the oil is extracted from these seeds, little use is made of the residue for human feeding. Yet this material, properly processed, contains up to fifty per cent good quality protein suitable for the human diet, particularly if combined with other foods. The cost of oilseed protein is well under one fourth that of dry milk, and less than a tenth that of most other animal protein. The present supply of oilseed meal alone, properly processed, would be sufficient to meet more than twice the world's total protein deficit."

Soya bean Protein

According to the *Encyclopædia Britannica,* 1962 edition:

"Nutritionally the protein of the soya bean is similar to that of animal protein—even the amino acid analysis of soya bean protein and casein are remarkably similar. Sprouts grown from soya bean seed are eaten by the Chinese as a green vegetable throughout the year, either in salads or as a cooked vegetable. They are a good source of vitamin C."

The Chinese make a milk from soya beans that compares favourably with cow's milk in nutritive value. In the United States when infants cannot tolerate cow's milk, they often thrive on soya bean milk.

The *Encyclopædia Britannica* continues:

"Soya bean flour is one of the cheapest foods available to man when judged by the amount of protein, minerals, vitamins and energy obtained per unit of cost."

"The oilseed principle has been employed by a number of companies in various countries to produce a variety of commercial, low-cost protein products. The most successful of these is Vita-soy, a soy-based Hong Kong beverage sold in a typical soft-drink bottle and given a typical soft-drink promotion. Its sales keep pace with the major international soft drink . . . and it outsells all others in the Hong Kong market."

Even some of the large meat-packing plants, reading the handwriting on the wall, are experimenting and producing nonanimal protein foods. Many foods such as macaroni, salad dressing, breakfast food, ice-cream, and whipped desert topping often contain soy products.

The protein isolate of soya bean is now being spun into fibre resembling the consistency of meat, which with the addition of grains or nuts or both, makes a delicious substitute for meat. It may be used in loaves, casseroles, or by itself. The protein of wheat (gluten) can also be combined with other foods to provide satisfying dishes to take the place of animal protein products.

With the strides that science is making to find inexpensive protein from nonanimal sources, we now have hope that by the time the population explosion becomes acute, modern technology will have solved the problem of feeding the vast multitude inhabiting our earth. ***

From page 17

this vertebra is the treatment of osteoporosis in all the body, unless there are specific symptoms that need relief.

There are many other diseases and conditions that result in neck pain. There are a number of birth or development defects in the neck bones that can be seen by X-ray examination.

Lymph nodes often become enlarged and tender during an infectious disease of the throat, tonsils, or scalp. There may be chronically enlarged nodes because of spreading cancer, or a disease of the blood such as leukæmia, and it is evident that the patient has more wrong with him than a neck condition. The stiff and painful neck of polio, meningitis, brain abscess, and tetanus is only a relatively small part of the disease. The spread of cancer to the bone is seen in other parts of the body, although metastasis to only one neck vertebra is not unheard of.

Torticollis

Wryneck, or torticollis, has to do with spasm of a diagonal muscle in the neck that causes the head to be pulled toward the opposite side.

The conditions discussed are not serious so far as life itself is concerned, but they may occur in anyone nearing or beyond middle life. Chronic neck pain is annoying, and it can engender a surprisingly large degree of anxiety and tension. For one thing, you cannot get away from it. If a leg is painful you can use a crutch or a cane, if your lower back is painful you can use a brace or a corset, if your hand hurts you can put it in a sling; but the neck is different.

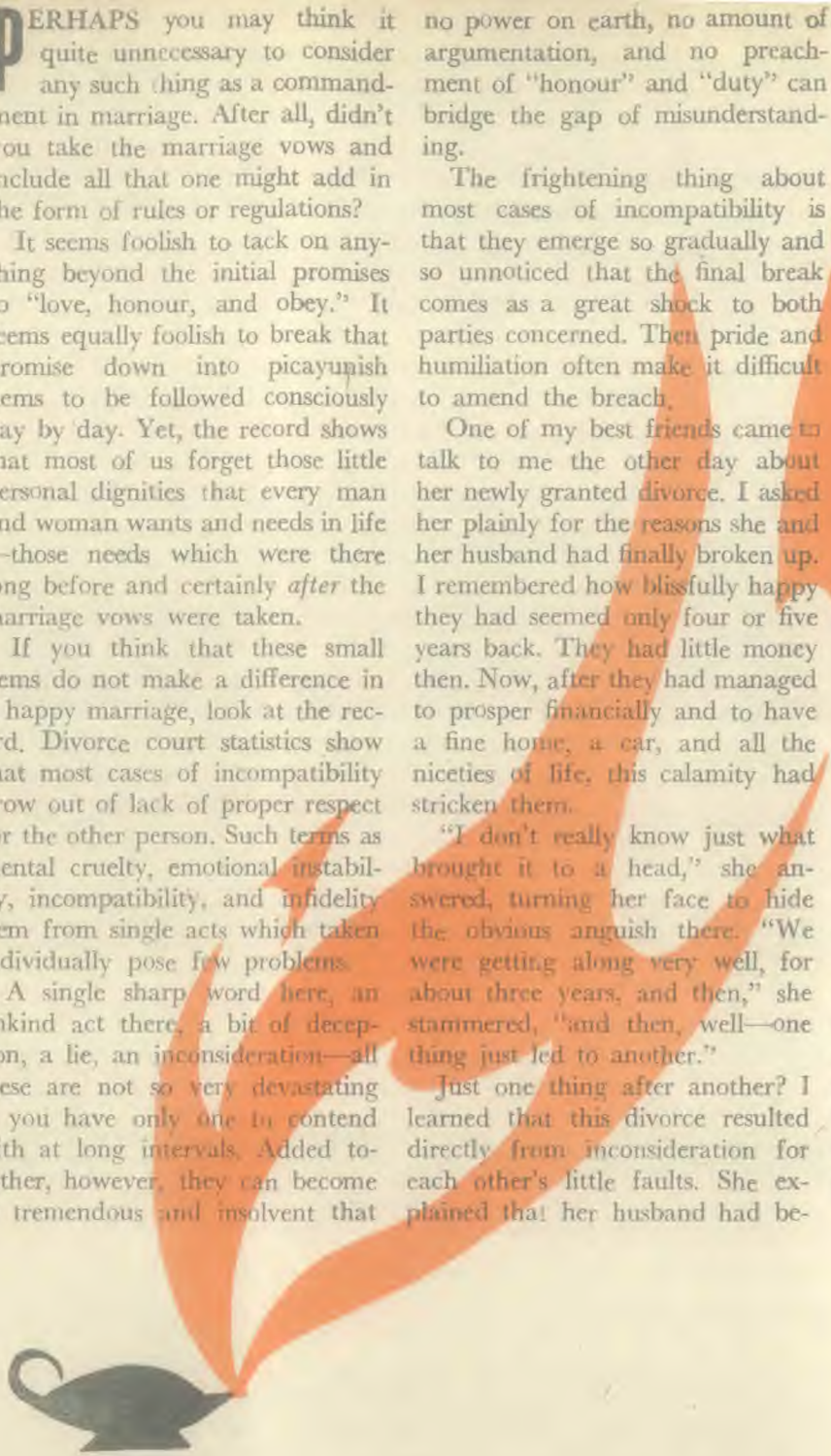
The head in the erect position must be supported. When you are lying down, it is almost impossible to do anything about complete body muscle tension in spite of pillows and other supports. Wearing a plastic cervical collar to support the head is becoming common. This collar takes the weight of the head off the chin and the back of the skull and transfers it to the shoulder muscles. It helps relieve spasm and fatigue of neck muscles. When properly used, the collar eliminates neck motion, which is a great help.

The usual simple home remedies and aspirin do not affect neck pain to any great extent because of the difficulty of putting that area at rest. Strong pain killers, such as codeine and Darvon, dull the senses if given in sufficient quantities to bring relief. Drugs that are addictive, such as opium and morphine, should not be used, even though they give relief.

Often in connection with the neck pain under discussion there is no X-ray evidence of disease; that is, the bones appear to be normal and there are no calcium deposits to be seen. The pain makes the patient nervous, tense, and irritable, and all too often doctors blame the whole thing on nerves, giving the patient the impression that his complaints are considered imaginary.

I do not believe that many doctors mean to convey this impression. They think that the anxiety and tension make the pain more evident to the sufferer, and the more pronounced the pain the greater the anxiety, and a vicious cycle is the result. Actually, if the patient did not get so nervous the pain would not bother him nearly so much, and he would learn to live with it. Too often neck pain cannot be done away with, and if the patient does not adjust to it his disposition and outlook on life become soured and he is difficult to live with or work for.

Keep in mind that the pain of common neck problems is not from rubbing or grinding together of two diseased bones, but rather a chronic inflammation of ligaments, tendons, and muscles in the involved area. Often there is no evidence of anything wrong, which may lead to the erroneous assumption that the patient is imagining things. ***



eight commandments for a happy marriage

by NORMAN C. MOHN

PERHAPS you may think it quite unnecessary to consider any such thing as a commandment in marriage. After all, didn't you take the marriage vows and include all that one might add in the form of rules or regulations?

It seems foolish to tack on anything beyond the initial promises to "love, honour, and obey." It seems equally foolish to break that promise down into picayunish items to be followed consciously day by day. Yet, the record shows that most of us forget those little personal dignities that every man and woman wants and needs in life —those needs which were there long before and certainly *after* the marriage vows were taken.

If you think that these small items do not make a difference in a happy marriage, look at the record. Divorce court statistics show that most cases of incompatibility grow out of lack of proper respect for the other person. Such terms as mental cruelty, emotional instability, incompatibility, and infidelity stem from single acts which taken individually pose few problems.

A single sharp word here, an unkind act there, a bit of deception, a lie, an inconsideration—all these are not so very devastating if you have only one to contend with at long intervals. Added together, however, they can become so tremendous and insolvent that no power on earth, no amount of argumentation, and no preachment of "honour" and "duty" can bridge the gap of misunderstanding.

The frightening thing about most cases of incompatibility is that they emerge so gradually and so unnoticed that the final break comes as a great shock to both parties concerned. Then pride and humiliation often make it difficult to amend the breach.

One of my best friends came to talk to me the other day about her newly granted divorce. I asked her plainly for the reasons she and her husband had finally broken up. I remembered how blissfully happy they had seemed only four or five years back. They had little money then. Now, after they had managed to prosper financially and to have a fine home, a car, and all the niceties of life, this calamity had stricken them.

"I don't really know just what brought it to a head," she answered, turning her face to hide the obvious anguish there. "We were getting along very well, for about three years, and then," she stammered, "and then, well—one thing just led to another."

Just one thing after another? I learned that this divorce resulted directly from inconsideration for each other's little faults. She explained that her husband had begun to let up on his attentions noticeably about a year and a half earlier. Whereas he used to bring her all kinds of little things as a surprise on special days and "unspecial" days alike he gradually dropped off this practice little by little.

As we talked, I saw the other side of the coin emerging, too. She admitted that she tried to make him overcome his shortcomings by calling attention to the way other men ran their businesses. She thought his clothes were too dressy for working in the office which had no air conditioning. She sought comfort in her own hurts by staying out with her contract bridge friends and coming home too late to prepare any supper. She had too much pride, as did he, to admit any faults, and the resultant outcome was this seemingly unmendable divorce.

Childish, you say? Yes, but the break came nonetheless. Fortunately, they had no children.

Only a very great character will admit a grave fault, especially to someone who knows just about everything you do from how you eat your rice to how you dress and undress yourself. We all have pride and self-centredness, and these feelings can easily overshadow our sense of proportion if we let them go unchecked.

Marriage is a serious business.

It requires good common horse sense plus the untiring desire to make it work. Whenever children are involved, divorce or separation only makes things more miserable and unhappy for all concerned.

If you essentially believe in the implications of the initial marriage vows, you *still* need to take stock in the practical applications of their worth. If you truly want your marriage to be a lasting, worthwhile, ever-joyous adventure, try giving some thought to these following commandments. Test yourself. You might be surprised. Even if you already are a very good husband or wife, there are probably avenues of caring and loving and respecting you have overlooked.

Commandment No. 1

Respect the privacy of your mate. No matter how much you love your husband or wife, there are some times when absolute privacy is necessary. For example, working out a very personal problem, taking mental stock of personal achievement, or meditating on spiritual food for enlightenment is, indeed, a time for complete privacy and solitude. It isn't that you love less for allowing this time of "aloneness".

Love is sometimes like the shy bird that rests on the palm of your hand; the more you try to grab it and hold it just for yourself, the more it struggles to be set free.

The length and time for privacy is entirely a personal one. Some people need more time for such things than others. I have known married couples who feel it necessary to spend their entire vacations from each other, as much as two or three weeks at a time. Others of my acquaintance set aside one evening a month to go their separate ways.

Many times this means no more than a shopping spree, or a time spent with "the boys," or just a quiet evening alone at home. As the desire to be alone is natural at times, it should be equally natural to grant this privilege.

Commandment No. 2

Remember that your mate needs help most when his luck is down. The marital boat sails on placidly whenever circumstances make it easy to do so. If the job is reliable, if sickness does not filtrate into the family, if relations are compatible because of no undue friction, then your marriage has less threat of breaking up. But character is built upon weathering adversities. The successful marriage is also a result of countless victories over adverse circumstances.

A brick wall doesn't have to fall on a woman to make her realize her mate looks to her first when all doesn't go well at the office. The wife, too, has her ups and downs with the everyday affairs of her home—plus those of her job, too, if she is working.

Job success plays an important role in everyone's life. To the man it indicates his adequacy in his society. He carries his job with him everywhere he goes, even to bed at nights. Failures in his job mean varying degrees of insecurity. Above all, a man needs his wife's encouragement and interest in his work because he reasons his success expresses his love for his family. A sympathetic understanding here often does more to cement up tightly the marriage bonds than any other single action.

Commandment No. 3

Don't feel you have to "prove yourself" at all times. I knew a man who never seemed to enjoy a single moment of relaxation. He bent all his energies on demonstrating his capability to succeed, to do as well as his competitors, or even better. Naturally, this attitude soon began to permeate his

Marriage is a serious affair. It is the true basis of all family life. True marital happiness requires that both husband and wife be well matched in mind and body, and that they be compatible and easy to get along with. It always takes two people to make a successful marriage, but one alone can spoil it through neglect or selfishness.

home relations. Before long he began to be critical of everything and everybody in his family—and all because he feared his status with his wife and children.

One day he overdid himself with some physical activities at the annual company picnic and suffered a mild heart attack. During his recovery I ventured to ask him why he pushed himself so hard.

"I feel, somehow, as if it is *necessary* for me to do these things," he exclaimed.

"Well," I replied, "what is your reasoning?"

He went on to tell me that his estimate of personal success depended upon weekly, even daily, successes in order to keep the admiration and respect of his wife and children. Now that he was ill and completely devoid of any need to excel, he found his family right close by his side.

"I never realized how much I was just spinning my wheels," he said. "My family loves me despite my inability to excel in everything."

And it is true. A good marriage thrives on love and sympathies, not talents, or ambitions, or things of temporal value.

Commandment No. 4

Refrain from employing jealousy to command attention. If you cannot impress your mate with the essential love you have, then no amount of jealousy will accomplish the task. In fact, the employment of subversive methods to ac-

complish your purposes will oftentimes boomerang into a real issue or catastrophe.

I knew a wife who tried to command her husband's attentions through the means of jealousy. In her attempt to impress him with her power to attract other men she resorted to sly, innocent flirtations. At first the trick worked. Then later, while talking to her one day at a club meeting, I heard her exclaim, "I never should have tried to hold him with my flirtatious antics. It didn't work anyhow. We just seemed to grow farther and farther apart."

The story didn't end here. When *he* began to use the same dangerous weapon, it ended up in a serious affair which scandalized the town. It took nearly two years of counselling and readjustments before they really came to know each other as wedded companions again.

In the long run jealousy accomplishes nothing but heartaches for all parties concerned. It only indicates hurt pride in the first place, and it feeds on suspicion and dispels any semblance of trust. Whenever human relations aren't based on complete trust, especially the marriage relationship, disharmony and eventual unhappiness inevitably result.

Commandment No. 5

Respect your mate at all times. Respect simply means honouring the dignity and worth of the individual, whether he be your boss, your casual friend, or the one you promised to honour and cherish for all time.

One man—known for his happy home—did many acts of love and kindness for his wife, acts you and I have, perhaps, long since forgotten. He didn't wait for her birthday or for a Christmas to roll around before he thought to bring her a small gift. Unexpectedly, he would send his wife some roses just before he came home from work. He'd sign the usual card with the usual name and then print at the bottom these five simple words: "Just because I love you."

Thoughtfulness? Respect? Mushy? Call it what you will, but show me *one* woman who would complain of such personal treatment from her husband.

Friends chided a young lady about how much her husband had been away at his job during recent weeks. They filled her mind with countless suggestions as to how he must be spending his time away from home. But she promptly put a stop to their attempts to arouse suspicion by replying, "When I married John, I did it because I loved him. If he chooses to work harder than most men, it is because he equally loves me." Then, adding a clincher to her profession of allegiance, she said, "We've had this kind of mutual respect for each other ever since we were married." John heard about this incident later from one of the girls who did the chiding, and the story strengthened his bond with his wife all the more.

Commandment No. 6

Tolerate the foibles and shortcomings of your mate. The far-reaching agreement to accept the other fellow "for better, for worse" has more to it than a fair-weather implication.

Be sure you have first developed the virtue of tolerance before you marry. It is understandable, however, that some faults and shortcomings will show up during the years that follow.

The husband's hair might thin. His shape might gradually change from that of the prime physical specimen to that of the pear-shaped office worker who doesn't seem to advance up the company ladder as fast as he once did.

The wife, too, might keep a few extra pounds after childbirth. She might let down a little in her housekeeping or personal habits. She might become bored with her lot in life.

These things do happen. It is essential that you take stock on the more lasting qualities of your marriage so that the lesser, temporal manifestations of the personality will not become deceiving. Maturity requires a heap of living in most instances. Tolerance works both ways. It has to be earned on the one hand, and it has to be sought beneath the surface on the other.

Commandment No. 7

Encourage and develop the strengths and abilities of your mate. A person never stays the same. He either goes forward or backward. The wife might deny herself many things so that her husband can earn a college degree, only to find herself a total stranger to him at graduation time.

I've seen this happen more than once. The husband because of his education day by day takes an increasing interest in great music, great paintings, poetry of the renowned men of all time, or landmarks of the giants in the literary field.

And his wife? Though she has scrimped and saved so that such an educational advantage could be possible for her husband, she slowly begins to realize a wall of different interests growing between them.

A marriage is an adventure. It can be one that rocks along without any purpose. But if it has a plan for *both* husband and wife to pursue, it can be a real success. Seek ever new interests and try to discover and develop the talents that you and your mate have. If

the husband takes up painting, the wife might do it, too. If the wife happens to be a good speaker and becomes president of the Ladies' Club, then the husband should cooperate. Discover, develop, and encourage the strengths and abilities in each other. A marriage thrives on purposeful activity.

Commandment No. 8

Love your mate as much as you love yourself. This last commandment might seem unnecessary at first consideration.

Love has many different connotations, many interpretations. An inborn love is essentially egotistic. After due experiences in life it gradually becomes altruistic to the extent that one ultimately comes face to face with God's great plan for the world.

Marriage helps this learning process from the "I" emphasis to the "you" consideration of all life and living. If you love sincerely, you have the assurance of becoming nearer to God, because you already know that God is love, indeed. ***

FOUR IN THE CROWD

From page 19

diabetes. This boy was the first patient in the world to be given an injection of insulin. The glucose content in his blood dropped. He regained consciousness and his strength returned. Since that day, insulin has saved the lives of millions of people.

Research continued, and the quality of insulin was improved. Modern insulin production has been industrialized. The result of insulin research is that today many different types of insulin are available for treating diabetics.

In the middle of this century, substances were discovered which, in milder cases of diabetes, were capable of stimulating the production of insulin by the pancreas itself. Now this substance is manufactured in the form of pills and capsules. Today doctors are able to prescribe the treatment necessary to regulate the course of the disease for each individual patient. Every person suffering from diabetes can now be helped.

Charles Best and Frederik Banting who isolated insulin in 1921.

Diabetes is a chronic disease. But if treated the patient may live a normal life. However, in some cases it can take a serious turn. Diabetes can attack the blood vessels in the retina of the eye, thus impairing the patient's sight. Similar trouble with the blood vessels may also occur in the kidneys. Furthermore, a diabetic has a greater tendency to develop a hardening of the arteries.

The child of a diabetic woman is at great danger in normal birth. Now the child can be saved by producing birth one month early.

The tendency to contract diabetes is hereditary. Out of one million people, 50,000 have diabetes—or will get it sooner or later. But diabetes may strike many who never expect it. In an unborn child, the pancreas is dormant, and only "wakes up" and starts functioning (just like most of the other organs) after the child is born.

But in five out of twenty children, the pancreas will fail to function entirely as it should, and in one of these five cases the insulin-producing cells in the pancreas will be so weakened that diabetes will result.

The factors which determine the activity and viability of these cells are as yet unknown. To find and control these factors is one of the major tasks of international research on diabetes. The goal is to discover the ideal form of treatment and ultimately to prevent the development of diabetes.

—Courtesy of W.H.O.

NURSE DISCUSSES SURGERY

From page 2

care. When he becomes conscious, he is glad surgery is over.

Here is what to expect in after-surgery care:

1. *Recovery Room.* After surgery the patient is taken to the recovery room. There a nurse keeps a special check on his blood pressure and pulse. The recovery room has only post-surgical patients in it, and he can be watched closely after his operation. When he is awake he is returned to his room. Usually it takes two or three hours to awaken from an anaesthetic.

2. *Intravenous Fluids and Blood.* The surgeon knows from the blood tests whether the patient needs extra blood or other fluids after the operation. The patient gets a bottle of blood or other fluid, depending on the doctor's orders. Blood tests are an effective way of estimating blood loss.

3. *Oxygen Administration.* Many people think that oxygen is given a patient only in dire emergencies. Actually oxygen is sometimes advisable after an

operation, on doctor's orders. Blood is an oxygen carrier, and if the patient has lost some blood, there may not be enough being carried by his blood unless he is given extra oxygen. He need not be frightened if he receives oxygen after major surgery.

4. *Sedation or Pain Medication.* The patient must not be afraid to ask for pain medication, because it may be necessary to keep him comfortable. The doctor checks on the frequency and use of the pain medication ordered, and he determines how often and how long it should be given. Pain medication relieves pain and thereby loosens tight muscles, helping the patient move and walk more easily after surgery.

5. *Ambulation—Walking.* Because of the patient's fear of pain after surgery he may not want to get up and walk when the doctor thinks he should try it. But walking and moving are essential for his welfare. They prevent such after-operation complications as pneumonia and blood clots in the legs, which can result from lack of movement. Moving and walking as directed by the doctor and aided by the nurse facilitate healing and make for a more successful and shorter postoperative stay in the hospital.

6. *Water Drinking. The* patient may wonder when he can have a drink of water. When the doctor visits him he has a stethoscope with which he listens for gas sounds. If he hears them he knows that the stomach and intestines are active, and that it is safe to give liquids. Sometimes a patient has what is called a Levin's tube connected to suction, for removing gas and secretions from his stomach. The doctor will determine when it is to be removed.

7. *Bowel and Bladder Care.* Usually four days after surgery the patient is given a laxative. After intestinal surgery other special treatment is required. The patient should always try to empty the bladder by himself to avoid catheterization. Catheterization is insertion of a tube into the bladder to remove the urine. Some operations, such as bladder or pelvic operations, require a tube or a Foley catheter, which remains in place to drain the bladder. The nurse measures the fluid the patient drinks and also his output of urine. These records are essential after surgery because they reveal to the doctor the progress of the patient.

Doctors and nurses are indeed very busy, but do ask them your questions. And they will be glad to talk to you. ***

HEART TRANSPLANTS

From page 11

cells which are the primary agents in the complex rejection process.

It is obtained by injection of human spleen extracts into horses. The horses' bodies, "rejecting" the extract, manufacture antibodies. The refined serum containing these antibodies is injected into patients.

Hopefully, this ALG will strike the fine balance required to keep the patient's body from rejecting the heart without substantially weakening the body's ability to fight off infections.

In the United States ALG has already shown great promise in connection with kidney transplants, which are considered even more susceptible to rejection than hearts. On the effectiveness of ALG techniques will depend much of the immediate future of heart transplant surgery.

Simultaneously with the ALG treatment, other heart surgeons are carrying on research of a very different nature, yet with eventual application to transplantation. For example, surgeons have for several years implanted artificial heart valves and blood vessels near the heart. These replacements, which are used virtually routinely in many medical centres, make use of plastics and other synthetic materials.

Dr. Michael de Bakey, the noted Texas surgeon, has demonstrated the successful use of "heart assist" devices developed by him and his associates. These devices, attached to the heart from outside the body, temporarily take over some of the heart's pumping workload to permit an ailing heart to rest and heal.

Some U.S. researchers are working toward developing a totally artificial heart while others are exploring the possibility that animal heart's pumping workload to perplanted to humans. In this informal competition between "heart factories" and "heart farms" the patients will almost certainly be the winners.

Both kinds of heart replacements may find a place in surgical practice.

The sheer complexity of heart transplant surgery eclipses even such medical landmarks as the invention of the "iron lung" respirator, the development of blood transfusion, and the use of radiation in medicine.

All of these milestones saved countless lives and profoundly influenced the course of medical practice. Heart transplant surgery may do neither to any appreciable extent, at least not for the present. Its application is currently limited to only a very few patients. Very likely that will be the case for a long time to come.

But the mere performance of such operations, regardless of their prevalence or outcome, symbolizes man's determination and increasing sophistication in his endless struggle against disease and disability. ***

The Doctor Advises

A SERVICE FOR OUR SUBSCRIBERS

READERS REQUIRING PERSONAL ANSWERS MUST SEND STAMPED SELF-ADDRESSED ENVELOPES WITH THEIR QUESTIONS.

Tartar on the Teeth

Is it true that tartar on the teeth causes pyorrhœa and that this, in turn, causes the teeth to fall out? Does having tartar on one's teeth indicate that he is not brushing his teeth well enough?

Some people are more prone to the development of tartar on the teeth than others. When tartar builds up on a person's teeth, especially on those areas near the gums, it causes an irritation of the soft tissues, and this leads to periodontal disease (pyorrhœa). Periodontal disease is characterized by bleeding of the gums and a gradual loosening of the teeth because of resorption of the surrounding bone. When the disease continues, the affected teeth are eventually lost.

The fundamental consideration in your question is the means of preventing the formation of tartar. In persons who are inherently prone to tartar formation, particles of food or accumulations of cellular debris become transformed into plaques of tartar. Thorough cleansing of the teeth after each meal and at bedtime will remove the food and other debris and so retard or even prevent the development of tartar.

Brushing the teeth does not serve to scour away the tartar as many suppose. The purpose of brushing is to aid in the cleansing and also to improve the circulation of blood in the gums. Some dentists are now recommending the additional use of a device which throws a small, intermittent jet of water against the teeth and gums. This washes away the debris and also massages the gums.

Patent Ductus Arteriosus

What does ductus arteriosus mean? Where is it, and what is its function?

In the unborn baby the ductus arteriosus is a normal blood vessel that connects the lung artery and the aorta. Normally this duct closes and disappears shortly after birth. At birth nature changes the fœtal type of placenta-heart-lung circulation to the developed artery-heart-lung circulation. It is a part of the miracle of physiological changes in a newborn baby.

If the duct remains open after birth, it is called a patent ductus arteriosus, which sets up an abnormal short-curcuiting type of circulation, a common form of congenital circulatory defect. This congenital anomaly (birth defect) causes a continuous heart murmur, but in itself it does not cause a blue baby or bluish colour when the baby cries or otherwise exerts himself.

If heart complications develop later in life, the defect can be corrected by surgery.

To Lose Weight

My husband needs to lose about sixty pounds, but he rejects all foods except those that are familiar to him. Can you give him a guidance for what to eat and how to eat everyday foods and still lose weight?

A simple well-balanced diet combined with will power and adequate exercise is the best method of loosing weight.

As you know, sweets, desserts, and such highly starchy foods as macaroni, potatoes, and white bread should be restricted. Some men lose weight by avoiding second helpings.

Your husband should avoid snacks, late meals, and crash diets. In weight, patience is truly a virtue.

Tingling Legs

I am having trouble with my legs from ankles to knees. They feel cold and tingling all the time, especially my right leg. I take hot baths and rub wintergreen and other liniments on them, but nothing helps. A doctor said the circulation was all right. I once had an operation on my spine, which the surgeons said was necessary because of nerves. My legs are still bad, and I cannot get them warm.

Your problem of tingling and cold feelings in your legs is relatively common in middle age and beyond.

As you know, medical advice and help by cor-

respondence is limited because a personal examination is not possible. It would be helpful to know whether these sensations developed after the surgery on your back, what the reason for surgery was, and the exact location of the surgery.

Even though you have been told that your circulation is good, it is possible that it can be influenced from some primary cause that affects the nerves. Often disorders of the neurocirculatory system cause abnormal skin sensations such as you describe. Pressure on a nerve or some other abnormal condition that affects the nerves may cause a decreased blood supply, which in turn results in unusual sensations.

You may need further examination of your back and perhaps X-ray examinations to determine whether there is some arthritis in your lower back, which can affect the nerves and the circulation to your legs.

Probably your doctor already has ruled out hardening of the arteries as a cause. Physicians can inject certain dyes into the arteries to determine whether the arteries are narrowed. Narrowed arteries cannot always be established by an external examination only.

So long as there is no acute inflammation in your veins or clots from a condition such as severe varicose veins, home remedies that stimulate the circulation tend to be beneficial. Heat in the form of fomentations, given by steam packs, usually is soothing. Gentle massage and the application of liniment such as you mentioned give temporary relief.

Try the treatment I suggest and keep on with it faithfully for best results.

You probably will need further medical examinations to permit the doctor to arrive at the cause of your discomfort. Do not give up after one or two examinations, because I feel sure you can obtain relief from your annoying symptoms.

New Role of the Placenta

The mystery of pregnancy—how a single cell the size of a pin dot grows inside the placenta into the billions of cells that make a baby—is not yet understood, but parts of the mystery are gradually being solved in current research.

One clue was offered on April 17, 1970, at Atlantic City, New Jersey, in a report by a Loma Linda University (Loma Linda, California) scientist about the unsuspected role of the placenta. Until the past few years the placenta was believed to be only a porous sac or membrane for the fœtus, with nourishment passing through its pores to the fœtus from the mother's blood. Medical textbooks still describe the process as passive diffusion.

But today, Dr. Lawrence D. Longo, professor of physiology in the Loma Linda University School of Medicine, contradicts this generally accepted theory. His studies have shown, instead, that the placenta is an active, highly selective organ that fastidiously picks out from the mother's blood the sugars the fœtus needs for life and growth. It pumps these foods across the placental cells into the baby's blood vessels in the umbilical cord, Dr. Longo said. He spoke at a session of the American Physiological Society meeting in Atlantic City with the Federation of American Societies for Experimental Biology.

His work is the first demonstration that an active pumping system is involved in the transport of sugar to the fœtus. Using slices of placental tissues from human and rabbit placentas taken immediately after birth, he kept the cells alive in saline solutions and supplied them with oxygen and nutrients. Sugar was placed in the solution, then minutes afterward its concentration inside the cells was measured and compared with that in the solution. In some experiments the measurements were made by using radioisotopic sugars and in others by chemical techniques. Depending on the kind of sugar (the cells transported many different kinds), he found that sugar concentrations were two to seven times higher inside the cells than in the saline solutions.

In effect, he showed that the placental cell is continually accumulating blood sugar. This is the fœtus' sole source of life, the only food it uses to build its bones, flesh, and brain. If the supply was cut off even temporarily, the brain and then the rest of the fœtus would die quickly; therefore, the accumulation within the placental cells ensures that there will be enough for the fœtal needs even if glucose (blood sugar) in the mother's blood gets low. In such a situation the fœtus would still get what it needs for quite a while, because the cell pumps would continue to transport the sugar.

Through other experiments Dr. Longo tested different kinds of sugar, and he found that the cells must "see" a certain type of molecular conformation in order to pick up the sugar and transport it. Some sugars are transported, but some with only one or two components replaced or rearranged are rejected.

Currently he is investigating how this sugar pumping system is regulated. He suspects that the pump itself may be a carrier molecule that combines with the sugar and goes through the membrane in a metabolizing process. ***

The Missing Piece

by JULEEN BRANTINGHAM

For two days Ravi and his dad had been working on the big jigsaw puzzle. But at last Ravi put in the last piece of blue sky.

"There!" he said, sitting back to admire the picture. "We did it. It's finished." He looked up at dad with a big smile on his face.

But dad had a frown on his face, and he shook his head. "No, it isn't. There's a piece missing." He pointed to one of the corners.

There was a place where there was a hole. Another piece should be fitted in there.

Ravi looked for the piece. It wasn't on the table. Dad helped him look on the floor and under the big chair. They couldn't find the missing piece anywhere.

Ravi stood up and clenched his fist. "I know what happened," he said. Shankar likes to work puzzles. He must have borrowed this one and lost one of the pieces. I'll fix him—"

"Wait a minute!" Dad said.

But Ravi didn't wait. He was already halfway up the stairs. He pounded on the door of his older brother's room. Then he began to accuse Shankar of losing the piece to the puzzle. In a minute the boys were arguing hotly.

"I didn't borrow your dumb old puzzle!" Shankar yelled. "And I didn't lose any of those pieces."

"It must have been you!" Ravi yelled right back. "The last time I put the puzzle together, all the pieces were there. Now one of them is gone."

Just then dad came up the stairs. "You two won't solve anything by shouting at each other," he said sternly. "I think you each had better control your anger. Then maybe we can find out what really happened."

Ravi went to his room, but he didn't get over being angry. "I know Shankar did it," he told himself. "I know it. I'm always careful with my things. I never lose anything. Shankar borrowed it without asking and lost that piece."

When dad called the boys a few minutes later, Ravi was angrier than ever.

"Now that you've had a chance to cool off," dad said, "I think we can talk about this calmly. Shankar, did you borrow Ravi's puzzle?"

"No, Dad," Shankar said. "He always gets so mad if I accidentally break something or get it dirty that I just never borrow anything of his anymore."

Shankar wasn't angry now, and his eyes and his voice were steady. Maybe that's why dad believed him.

Ravi jumped to his feet. It just didn't seem fair. He knew that all the pieces had been in the box the last time he had put the puzzle together. "You—you did it! You know you did it!" He was so angry he could feel tears stinging his eyes.

Dad stood up and put his hand on Ravi's shoulder. "I can see that I didn't give you enough time to calm down. We can't find out what really happened until you are calm enough to talk about it. Now, it's almost time for dinner. I think you had better go tell your mother that you will be eating alone in the

kitchen. Maybe after dinner you will feel better."

Ravi turned away without speaking. Having dinner alone in the kitchen was one of the most severe punishments in his family, but tonight he didn't care.

"What was all the arguing about?" mother asked as he pushed open the kitchen door.

"Missing puzzle piece," he muttered.

"From a jigsaw puzzle?" mom asked. She turned and took something off the top of the kitchen shelf. "Could this be it?"

For a minute Ravi just stared at the little piece of cardboard she handed him, and then looked up. "Wh—where did you find it?"

"In your bedroom. One day last week you and your friend Kumar were looking for something in your closet and you knocked the puzzle on the floor. You picked up most of the pieces, but I found this one under the bed."

Mother filled a plate for him; then she picked up the vegetable platter and walked out of the kitchen. Ravi was glad to be alone.

He tried to eat his dinner, but he had trouble swallowing. He felt so ashamed for losing his temper and accusing Shankar of something he had done himself.

"Dad was right," Ravi thought. "If I just hadn't lost my temper, I would have been able to think. I would have remembered about spilling the pieces out of the box last week."

He stood up. He knew what he would have to do now, and it wasn't going to be easy. His feet were almost dragging as he walked into the dining room.

He walked over to Shankar's chair and put the missing piece beside his place. "I—I'm sorry," he said in a choked voice. "I was the one who lost the piece. I'm sorry for losing my temper, and I'm sorry for accusing you of something you didn't do."

Dad sighed with relief. "Now that you've found that missing piece, why don't you bring your plate in and have dinner with us?"

"I think Ravi found two things," said Shankar, "A puzzle piece and his temper."

The brothers grinned at each other. ***

Eating and Heart Attack

In looking at obesity, a factor commonly associated with heart disease, Nutritionist Fredrick J. Stare of Harvard University (U.S.A) says; "Most obesity is due to physical inactivity rather than overeating. We like to eat. It tastes good; therefore, if we want to enjoy this life we have to get into the habit of exercising."

Dr. Stare was speaking at a symposium devoted to prevention of heart disease and stroke. He is chairman of the department of nutrition, Harvard University School of Public Health.

He emphasized the importance of using up the calories people eat. In speaking on this subject he pointed to a study of pairs of brothers from Ireland, in each case one brother staying in Ireland and the other brother going to the United States. The brothers who remained in Ireland had fewer heart attacks than those living in America did, even though they ate more. The reason is that those remaining in Ireland regularly exercised more and therefore weighed less than the brothers in America.

Regular exercise, necessary for maintaining proper caloric balance, can become a part of a person's everyday routine, Dr. Stare said. A brisk fifteen-minute walk for the average man used seventy-five calories, he said. Anyone who can arrange for two additional fifteen-minute walks each day can burn 150 calories to take care of the extra food he eats. Regular exercise, Dr. Stare said, is more important than harder but less-regular exercise.

Dr. Stare agreed with Dr. Paul Dudley White, famous heart specialist, who spoke at the same symposium, that stress is overrated as a cause of heart attack, saying, "As far as I know, there is no evidence that stress alone is responsible for coronary heart disease. Stress is highly individual, and in our society the hard-driving person is also the one who smokes too much, is physically inactive, and gains weight." For people under pressure, Dr. Stare quoted his teen-age daughter: "Cool it."

To help reduce the incidence of heart attack, there is need for a change of diet, Dr. Stare said. The ultimate solution of the hard problem of reducing dietary cholesterol and increasing polyunsaturated fat should come from the food industry, Dr. Stare said. Tasty, pleasant, attractive, and nutritious food—our usual food—can be made with these principles built into them, Dr. Stare believes. ***

MEDICINE TODAY

Artificial Arm That Works

An artificial arm that operates automatically in response to "orders" issued by the brain has been developed by a group of biochemical engineers in the United States. The arm is electronically operated. It works in this way: When an amputee "decides" to flex the arm, for example, electric signals (impulses) from his brain make their way to the appropriate muscle in the stump of the upper arm, causing the muscle to contract. The contraction is accompanied by the discharge of another electrical impulse that is (1) picked up by battery-powered electronic components in the forearm casing, and (2) amplified to run a small motor that powers the functional movement of the arm.

—*Home and Health*

Correcting Cross-Eye

Many parents have the impression that glasses and surgery can be used interchangeably in the treatment of cross-eye. Not true, says Dr. Eugene R. Fold, co-director of the clinics for cross-eyed children at three Chicago institutions.

About three out of four children with estropia (one eye turned inward) and most children with exotrophia (one eye turned outward) or hypertropia (upward) will require surgery, even though the deviation is intermittent.

Surgery should be done before the child starts school, Dr. Folk advises, although some opthalmologists favour surgery as early as before age one for deviation that is present shortly after birth.

Eye exercises also may be required. The purpose is not to straighten eyes but to teach the child to use the eyes together once they have been straightened by surgery or glasses.

Cause of cross-eye is unknown but there seems to be a strong hereditary factor. The mother of one cross-eyed child should have the other children examined by age four even if the eyes appear perfectly straight, Dr. Folk suggests.

—*Science Digest*

Alcohol May Affect Brain

Chronic alcoholism may damage brain function and impair learning processes, suggests Dr. Gerhard Freund of the University of Florida College of Medicine.

In laboratory experiments, Doctor Freund administered alcohol along with a nutritious diet to a group of mice. Two other groups of animals were used as controls, receiving diets without alcohol.

After a long period in which the test mice were continuously intoxicated (but well-nourished), the alcohol was withdrawn. After two weeks "on the wagon," the animals were given learning tests.

The rate of learning of the alcohol-fed mice was significantly worse than the controls' performance. They learned much more slowly and seemed to forget from day to day.

According to Dr. Freund, the experiments argue against the beliefs that mental deterioration of chronic alcoholics stems solely from nutrition deficiencies and that all harmful effects can be prevented by taking vitamins.

—*Today's Health*

Vitamin for Palsy

A form of B_1 vitamin has been found to eliminate within eight hours the palsy in alcoholics caused by a brain disorder, reports Dr. Allan D. Thomson, of the New Jersey College of Medicine, U. S. A.

The vitamin form known as thiamine propyl disulfide (TPD)—originally extracted from garlic—relieved the neurological symptoms in six alcoholics with the brain disorder, Wernicke's encephalopathy. They were not benefited by thiamine hydrochloride, the form used in most multivitamin preparations, Thomson said. Their palsy disappeared after oral administrations of TPD.

The clinical response, said Dr. Thomson, "was associated with an increase in blood and spinal fluid of thiamine and red blood cell ketolase."

"It would appear to be an ideal preparation," he said, "for the prevention and treatment of thiamine deficiency." Thiamine is essential to normal metabolism.

—*Listen*

Announcing our new health book!

RADIANT LIVING

Edited by JOHN M. FOWLER, *Editor, Herald of Health*

Here at last is a book that is dedicated to make you live—and live radiantly!

Thirty-three leading authorities are pooled to bring you information that are vital to the health of everyone—from the tiny tot to the venerable grand ma!

A few of the fifty topics discussed in this upto-date book:

How to Live With Yourself
Meaning of Marriage
Habits and Health
Weight Control
You and Your Diet
Pregnancy and Child Care
Common Ailments
Epilepsy and Convulsions
Home Treatments
First Aid Measures

Only Rs. 12.50 plus Rs. 2 for postage and registration.

* Attractive Cloth cover.
* Large readable type.
* Indexed for ready reference.
* 284 pages of lasting value.

Cut out this coupon and mail to us TODAY. You incur no obligations by mailing this coupon.

Editor
Oriental Watchman Publishing House
P. O. Box 35
Poona 1.

Dear Sir :

I would like to know more about your new health book RADIANT LIVING. ☐

I am sending a money order for Rs. 14.50 to pay for the book and postage. ☐

(Check appropriate box)

NAME .....

ADDRESS .....

Registered No. MH—40.