herald of health

AUGUST 1976

NOSES

WHAT'S AN AIR conditioner, humidifier, filter, gas absorber, and refuse disposal? Just one small (or bigger) structure does it all. Your nose.

You may not like its size, shape, position, or beauty, but it performs some very important functions for your health.

Under ordinary circumstances the nose is the first target of the first line of defense against the air in which we live. In addition to making us aware of the various fragrances and smells around us, it also has an air-conditioning system to protect the olfactory organ and provide it with moist air. Fortunately, it is equally well adapted to removing many of the foreign materials from inhaled air, thus protecting the entire body against injurious influences of environmental air.

Modern man deliberately travels from one climate to another, creates his own artificial indoor climate, and soils his atmosphere with harmful gases and particles. How fortunate that these companion functions of the nose, filtering and air conditioning, have assumed more importance than its primary role of smelling.

To understand the role of the nose as a defense organ we must look at its intricate structure and the resulting pattern of air flow through it. We will need to note how effectively particles are deposited or gases absorbed within it, and how they are disposed of by an active self-cleaning mechanism.

The nasal passage can be arbitrarily divided into three main parts. The entrance leads to a narrow portion through which the air moves more rapidly than in any other portion of the respiratory tract. Immediately beyond this the air channel bends and opens into the main chamber consisting of a large area of narrow passages that slow air movement. All the mucus produced within the nasal cavity passes into this area. At its far end begins the nasopharynx, the portion shared with the mouth. Here the air channel takes another bend and the air stream increases its speed. This is where the adenoids are found.

The peculiar structure of each segment helps the air perform its task as it passes through. Particles that are heavier than air (dust, pollen, other air contaminants) are usually trapped on the moist lining (the process is called impaction or impingement) of the first section as the fast-moving air stream turns abruptly. The heavier particles simply can't change direction as fast as the air molecules and collide with the sides of the channel. As the air slowly passes through the middle section with its large area of moistened surface, contaminating gases and vapors are absorbed. Here also air conditioning occurs. A second region of impaction of particles is provided by the turn and increased speed of the air stream in the nasopharynx.

Since the nasal passages would soon become filled with particles, it must dispose of the impacted materials quickly and efficiently. The refuse disposal is carried out by one of the body's most amazing self-cleaning mechanisms. The cells that line much of the nasal passages have hairlike appendages sticking out from their surface that move rapidly (up to 20 times a second). The appendages are called cilia and the cilia of groups of cells all move in the same undulating rhythm in the same direction. The mucus is carried like a blanket on the surface of these cilia and the particles trapped in it move along also. Together, the mucus and cilia are often referred to as the mucociliary system. The cilia of cells lying near the front of the nasal passage "beat" rapidly forward toward the opening of the nostrils, where refuse can be eliminated from the body through nose blowing, wiping, and sneezing. The rest of the trapped materials are carried backward and downward by the mucociliary current toward the nasopharynx and thence to the stomach by the wiping action of the soft palate during swallowing.

We get some idea of the efficiency of this system when we realize that in most people the mucus covering in the main nasal passage is cleared every ten to fifteen minutes. It is as rapidly replaced by secretions of glands located in pockets along its sides.

There are several questions about the relationship of the nose to health that science has not yet answered:

1. Is there any relation between mucociliary cleansing of the nasal passages and susceptibility to disease?
2. Does the nose really provide a defense against airbrone disease superior to the defenses of the lower respiratory tract (larynx, bronchi, and lungs)?
3. If the nose can act as a defense against airborne disease, what factors other than complete blocking of the nasal air flow, influence the choice of nose or mouth breathing?

There is evidence to suggest that the answer to the first two questions is Yes. How important these answers are will require more study. Less is known about the last item.

Certainly the nose is a remarkable structure, designed to perform its functions efficiently. We owe much of our health to this. Perhaps we should be less concerned about its looks or the occasional annoyance of a stuffy or dripping nostril. After all, it's doing the job for which it was created. ***

herald of health

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SUBSCRIPTION RATES:

1 year Rs. 18.50
2 years Rs. 36.20
3 years Rs. 54.00

Foreign rates:
Sri Lanka 1 Year Rs. 19.10 (Indian)
2 Years Rs. 37.40 "
3 Years Rs. 55.80 "

Bangladesh: Indian rate in Indian currency. Address all correspondence regarding subscription orders and complaints for non-receipt in India to:

National Home and Health Service,
Post Bag 129,
Poona 411001.

For Sri Lanka:
Sri Lanka Union,
7 Alfred House Gardens,
Colpetty, Colombo 3.

Bangladesh:
Bangladesh Section;
P.O. Box 80, Dacca 2.

A SEVENTH-DAY ADVENTIST PUBLICATION issued monthly and owned by the Oriental Watchman Publishing House, Post Box 35, Poona 411 001, and printed and published by V. Raju at and for the Oriental Watchman Publishing House, Post Box 35, Poona 411 001—1187-76.

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Vol 53. No. 8 August 1976

ARTICLES

FEATURES

Picture Credit, Cover transparency: Brahm Dev

Just briefly...

A Short Course in Human Relations

THE MOST IMPORTANT 6 WORDS—
"I admit I made a mistake."

THE MOST IMPORTANT 5 WORDS—
"I am proud of you."

THE MOST IMPORTANT 4 WORDS—
"What is your opinion?"

THE MOST IMPORTANT 3 WORDS—
"Would you mind?"

THE MOST IMPORTANT 2 WORDS—
"Thank you."

THE MOST IMPORTANT 1 WORD—
"We."

THE LEAST IMPORTANT WORD—
"I."

Big Ben's 316-foot spire has slipped just a few inches in the last 113 years, and there has been warning that the famous London clock tower might topple to the ground. Engineers, however, believe it is not in immediate danger.

*

With an average temperature of 72°F., the capital city of Venezuela, Caracas, is called the city of eternal spring.

*

Nearly 15,000 species of insect life, 80 per cent of the world's total, have been found and classified in the Amazon River basin.

*

Table tennis professionals stand 15 to 20 feet from the table and slam the wildly spinning ball at speeds reaching 60 to 100 miles an hour.

*

Health clinics in remote, roadless communities in Alaska are to be equipped with cameras enabling patients to meet face to face with specialists in the towns of Fairbank and Anchorage. Heartbeats, electrocardiograms and X rays can be transmitted. The picture and sound will be scrambled so the doctor-patient consultation remains private.

*

Bats usually broadcast sonar pulses at frequencies too high for humans to hear. The pulses of a Malayan naked free-tailed bat have been measured at 145 decibels, comparable to the sound level of some jets at takeoff.

THYROID CONDITIONS

Clifford R. Anderson, M.D.

IF YOU PUT your fingers on the front of your throat just below the larynx or "Adam's Apple," you may feel a small mass of tissue on each side of the trachea or windpipe. This is the thyroid gland, a very important structure that has to do with the metabolism or rate at which food substances are used in the body.

When the basal metabolism is below normal, a person tends to be slow in his movements. He feels the **cold** more than the other members of the family, and may have marked **dryness** of the skin, along with **constipation** and a tendency to put on **weight.** His hair is dry, thin, and coarse, and the skin appears dry, scaly, and thickened. There may be puffiness in his face, especially around the eyes. The tongue is usually large, the pulse is slow and regular, and the patient often complains of vague pains in the back and stiffness in the joints.

This is the typical picture of **hypothyroidism** or myxedema, resulting from insufficient amounts of thyroid hormone (mainly thyroxin) being produced in the body. The trouble may also stem from some pituitary deficiency, but it is more likely due to some inborn error of the thyroid gland. The change usually comes gradually and involves the patient's personality and also his ability to think.

Hypothyroidism is seen in both sexes, but is far more common in women. Most of these are overweight and may complain of a heavy flow during menstruation. The heart is often enlarged, and there is a high level of cholesterol in the bloodstream. The diagnosis is usually made by the **P.B.I.** (protein-bound iodine) test, in which a small amount of blood is withdrawn from the vein and sent to the laboratory for special studies. **Radioactive iodine uptake** (I^{131}) is also valuable, if there is any doubt about the P.B.I. A normal level for P.B.I. ranges from 4.5 to 8. Anything below this is likely to be hypothyroidism. Anything above means hyperthyroidism, or too active a thyroid gland.

Simple or Adolescent Goitre

A simple goitre usually arises from a deficiency of iodine in the diet, and is most frequently seen

in young girls during early adolescence. It may also develop during pregnancy. In the early stages a simple goitre usually appears as a soft, symmetrical enlargement of the thyroid gland. The P.B.I. test is usually low. This soft swelling in the neck is not due to a malignant tumour, nor does it have to be removed by surgery, except for cosmetic reasons, or if there is pressure on the structure of the neck. **Treatment** is simple. Iodine should be given in some form, preferably as **Hydriodic Acid Syrup,** one third teaspoonful daily, well diluted in water. Give this daily for three weeks, and then repeat in three months, and again at the end of six and nine months, and one year. Most simple goitres can be prevented by the use of iodized salt, which is available in some areas.

Hyperthyroidism

Hyperthyroidism, also known as Graves' disease or thyrotoxicoses is a serious condition of the body, arising from too much activity in the thyroid gland. The excess amounts of thyroid hormone produced by the overactive gland will then raise the metabolic rate of the body. The true cause of Graves' disease is not known, but it does seem to run in families and is most likely to develop during some emotional or physical stress. The basal metabolic rate is elevated, and the P.B.I. will be more than 8 microgrammes per 100 cc. of blood. At the same time the cholesterol level is usually low.

A patient with this disease is usually **nervous,** weak, sensitive to heat, sweats frequently, is overactive and often underweight, in spite of an increased appetite. There is a fine **tremor** in the fingers, and the patient often complains **of palpitation** of the heart. In many of these cases there will be **bulging of the eyes.** The heart is overactive and usually enlarged, and the pluse rate is rapid and may be irregular due to atrial fibrillation. Any infection or unusual stress, such as a surgical operation, may bring on a **thyroid crisis** or storm. When this occurs, all the symptoms are greatly increased and the heart is very rapid. Both the P.B.I. and the radioiodine uptake are high. The patient eats heartily but continues to lose weight because of the higher rate of metabolism within in the body.

Treatment: People whose thyroid glands are only mildly toxic may be given a trial of iodine, five drops of saturated solution of potassium iodide per day, or they can take 10 drops of Lugol's solution twice daily. Prophylthiouracil, 50 to 100 mg. three times a day, will usually bring some improvement, although this is slower than using iodine. Surgical treatment (subtotal thyroidectomy) is recommended if there are nodules or large cystic areas of disease within the thyroid gland. A single nodule is more likely to be cancerous. Prior to surgery the patient should be given a course of iodine and propylthiouracil to reduce the toxic effects of the thyroid gland during the first few weeks of treatment.

Radiation treatment, using **radioiodine,** is now available at most large medical centres. In many cases this is the treatment of choice, provided the patient is not pregnant. Surgery is best if a nodular goitre is present. Patients with severe heart disease should be given radioiodine.

Nodular goitres are more common after thirty years of age, and one must always be suspicious of **malignancy,** especially if there is only one nodule. If the mass is hard and irregular, it is more likely to be malignant. A soft swelling is more apt to be benign. If the nodule is growing rapidly or is pressing on the trachea or other structures in the neck, surgery is always advisable. The patient should try to rest, avoid the use of alcohol, and be sure to use iodized salt.

Pituitary Gland

Located right in the middle of the head behind the eyes and above the nose, is a tiny organ no larger than a good-sized pea. This is the pituitary gland, in some respects the most important endocrine gland in the body. It takes orders in part from the central nervous system. The pituitary produces many different hormones. Most of them direct the activities of other endocrine glands of the body.

Small as it is, the pituitary has two distinct parts. Hormones from the front portion of the pituitary gland control the adrenal glands, thyroid gland, the growth hormone, also the female menstrual cycle, as well as regulating the sex hormone, of both sexes. The back part of the pituitary gland puts out another set of hormones that determine the amount of water filtered and re-absorbed by the kidneys, and also other hormones that affect the uterus and

milk glands of the breast.

Should any of these powerful hormones fail to appear at the right time, striking changes are bound to occur in various parts of the body, altering a child's development and the normal functioning of the body in later life. Failure of somatotropin, the growth hormone, interferes with the normal development of the cells. When enough somatotropin is present, protein is produced in ample quantities within the body. At the same time, surplus fat is used up. In other words, the growth hormone helps to produce a body that is well-balanced and of normal size and shape. Without an adequate supply of somatotropin, a child may become a **dwarf** and cease growing at a certain age. This may result from some disease or tumour of the pituitary gland.

Acromegaly is another rare condition of the pituitary occurring in older people whose bones continue to grow after the epiphyseal lines have closed. In this case the individual cannot grow taller but the bones and soft tissues become thicker. Certain areas such as the bones of the head, face, hands, feet, nose, forehead and lower jawbone, may all become larger than normal. The jawbone protrudes forward while the forehead slants back. The nose may increase to twice its normal size, and the fingers, hands, and feet may all double in size. Other organs, such as the tongue and liver, may also be greatly enlarged. Treatment by radium and X ray will usually stop any further overgrowth of bones, but unfortunately it has no effect on the tissues that are already too large. Early diagnosis and treatment are essential in preventing further changes. Without question, these small endocrine glands have an enormous effect upon the whole body, not only during those teenage years of rapid growth, but throughout the rest of a person's life. ***

Breaking the Laxative Habit

Read N. Calvert, M.D.

The most common disease condition of man is constipation. Millions of rupees are needlessly spent every year for cathartics and laxatives to cure a condition which they only make worse.

These so-called remedies should be classed with the habit-forming drugs, for while they do not produce a craving for the medicine itself, they just as surely fasten a pernicious habit on their unsuspecting victims, who are numbered by the thousands. The person appears to be benefited at first, but later needs another and larger dose, and then more potent drugs, which have a most deleterious effect on the delicate walls of the intestine.

Civilized man has been described as a "constipated biped." His wild relatives—the fast-diminishing aboriginal races in their native habits—are not constipated. Why should we be? The reason can be found largely in our refined diet and habits of life, including a shameful neglect of exercise. *Repeated failure to answer the call of nature is the greatest single factor initiating constipation.* This is not usually a problem which has its beginning in adulthood.

Often through ignorance, neglect, or lack of proper training and instruction, the child lays the foundation for a lifelong slavery to the cathartic or enema habit by neglecting to have a regular bowel movement. The most natural time for this is right after breakfast. Nothing should interfere with this important function, and if necessary the rising hour should be set a few minutes early in order to allow sufficient time to care for it. When

at stool, attend to business. Reading the morning paper at this time leads to constipation.

Barring tumours, adhesions, and other mechanical hindrances to proper elimination, constipation is almost always the result of stasis in the colon, or large bowel. There are two types, atonic and spastic, often in combination.

Atonic Constipation

In atonic constipation the walls of one or more parts of the colon, usually the cecum (which is the first part) or the sigmoid (part ending in the rectum), are markedly relaxed, and become distended with food residue. The longer the mass remains, the more water is absorbed, and dry, hard masses result, which are naturally difficult to evacuate.

Patients with this type of constipation require an excess of roughage foods—coarse vegetables with much cellulose and fibre, whole grains, bran, and fruit. It is usually found in young persons who have habitually neglected the call of nature, and who lead more or less sedentary lives, eat refined food, and drink insufficient water.

Spastic Constipation

Until the X ray came into common use, it was thought that atonic constipation was the more common, but now it is known that spastic constipation is much more common. In this type the descending colon, or sigmoid, and sometimes the transverse colon, is constricted by the circular muscle fibres of its walls until the passage is so narrow that solid material is impeded in its attempt to reach the rectum.

Often the terminal part of the colon is so contracted, and so small in comparison to other parts of the large bowel, that the condition is called "shoestring bowel." In this type the treatment is just the opposite from that for atonic constipation. The diet must be smooth and non-irritating, with little or no residue, especially during the attack. Bran, coarse vegetables, fruit with skins or seeds, wholewheat bread, and particularly cathartics, make this condition much worse and must be avoided.

Spastic Colitis

In spastic colitis there is usually a hypersensitive nervous system as well as a hypersensitive intestinal mucous membrane. Many physicians believe that there is a big hereditary factor, and that these patients are born with a tendency to this particular type of constipation. If the patient allows herself (and it is quite often himself) to develop an "irritable colon" by dietary indiscretions, faulty habits of life, or more than the usual stresses and strains on the nervous system, she is well on the road to spastic colitis or a fullblown case of mucous colitis. The condition is one of the most distressing to the patient, and is annoying to the physician.

Colitis is almost as good life insurance as one could carry. The symptoms, while not usually serious, are so distressing that the patient takes such good care of himself that he usually lives beyond his expected age. While colitis may be good life insurance, it certainly is not good health insurance, for colitis patients certainly "enjoy" poor health.

While these patients need to follow a careful programme, including a non-residue diet, during and often for some time after the attack, many cases do well during the periods between attacks on a fairly liberal general diet. It is often advisable to puree the vegetables to avoid coarse foods, including fruit with skins or seeds. Citrus fruit juices are usually tolerated well, and are beneficial, provided the patient can take them.

Many patients with spastic colons try to fasten the blame for their attacks on some particular food eaten just previous to their intestinal disturbance. In most of these cases the real cause of the trouble was a bad nervous upset. Food lying in a warm place, with moisture and fermentation germs present, is bound to ferment and form gas. When this gas attempts to pass the contracted colon, the result is an attack of colicky pains, with distention of the abdomen.

Heat to the abdomen in such a condition is most acceptable, and helps to relax the tonic spasm of the colon musculature. Mineral oil is useful to soften the retained food residue. Complete physical and nervous rest is absolutely essential. Most patients having an attack of colitis need the services of a physician, and should not attempt to treat themselves without medical advice.

How Often?

Abraham Lincoln, who had unusually long shanks, was once asked by a would be tormentor how long a man's legs ought to be. His immediate reply was, "Long enough to reach the ground." The question of how many bowel movements a person should have is also an individual question, depending on his physical and nervous make-up and many other factors, including possibly a hereditary one. While most healthy persons have one or two daily bowel movements—three, if the stools are formed, are not too many—a large number of normal, healthy persons have a movement only every other day.

Many a patient thinks he is normal if he has a daily bowel movement, but a railroad train may arrive at the scheduled time of day, and yet be several days late. So a patient may have daily movements but each is several days after the respective meals. One can determine whether this is the case by taking a small amount of charcoal with a meal, and noting its appearance in the stool. Normally the stools passed twenty-four to thirty-six hours after taking charcoal should be dark in colour. If it takes longer than this, a laxative should be used. Some races of Asia become subject to the most common disease of civilization—constipation—when they adopt the diet and habits of Europeans, including the modern toilet. When in the jungle these people squat, for that is the natural position in which they defecate. The intra-abdominal pressure is increased, and a movement results with little effort. Some find it an advantage to get back to nature in this respect and place a stool eight or ten inches high in front of the toilet for a foot-rest, thus simulating a squatting position, with excellent results.

Regular habits are essential if one would avoid constipation. A regular time for evacuation is of prime importance. Regularity in mealtime is also essential for the recurring stimuli of food to the mucous membrane and muscles of the digestive tract, and produces peristaltic waves resulting in regularity of bowel action. It is a common experience to become constipated while travelling, because of the change in the time and character of the food eaten.

Regular exercise (preferably out-of-doors) is a wonderful stimulant to proper bowel action. Sedentary workers should be particularly faithful in getting sufficient regular daily exercise. Morning sitting-up exercises, especially those that bring the abdominal muscles into play, as forward and lateral bending of the trunk, as well as deep-knee bending, are particularly beneficial. Massage is a form of exercise that is often utilized to advantage, especially the kneading and vibratory movements. Self-massage may be performed by rolling a cannon ball or shot-filled wooden ball over the abdomen. Beginning at the lower right side, roll the ball upward, to the ribs, then across to the left side, and finally downward on the left side.

Sufficient fluid, consisting of at least twelve cups or glasses each day, including milk and fruit juices, should be taken. A normal supply of water assists in the arrival of food residues at the rectum.

Gulaman, psyllium seed, mineral oil (plain or emulsified), and other bulk products are helpful adjuncts to a laxative diet. A generous quantity of water daily is very essential. The fibre and cellulose content of vegetables and fruit is a normal stimulant to healthy bowel action.

Enemas

The enema habit is almost as bad as the cathartic habit. Occasionally a soapsuds enema, made by adding a teaspoonful of powdered soap to one or two pints of water, may be necessary to wash out an impacted rectum. An oil enema of cottonseed or linseed oil, is useful in softening hard masses. The enema which is the most soothing and which is said to approach nearest the normal bowel secretion is one made of flaxseed by boiling about two to four ounces in a quart of water and then straining off the seeds. It becomes somewhat gelatinous as it cools. Better results are obtained if it is warmed before using.

Colon irrigations are being prescribed more and more by physicians, and no doubt have value in certain chronic states of the colon and disease conditions resulting from these abnormal states, but great harm can result from the indiscriminate use of these colon irrigators by "quack doctors." Positive harm can be done, and a fatal outcome may be the result, if there is a structural weakness in the bowel wall. So when this form of treatment is resorted to, it should be on the advice and under the direction of a competent doctor of medicine.

Hydrotherapy and physiotherapy, including electrotherapy, have their place in the treatment of certain cases of constipation. The support of weak abdominal muscles by an elastic, or better still an inelastic, support around the lower abdomen is useful in elderly, overweight persons or those with lax or weak abdominal walls.

Drugs should have very little use in the treatment of constipation. Phenolphthalein, while pleasant and effective in its various forms, is very likely, if used over an extended time, to damage the kidneys and may cause a toxic skin rash. Magnesium, as the oxide, citrate, or milk of magnesia, is often useful as a laxative.

There are some elderly persons who have, through years of abuse of the gastro-intestinal tract, developed crippled bowels, and are compelled to take something daily in addition to the laxative measures outlined. Cascara sagrada, probably better in the liquid form, is preferred by many physicians for the majority of such cases.

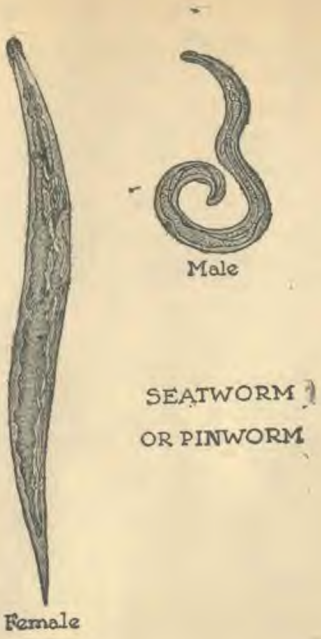
Constipation is a medical problem, and a very important one, and calls for the best medical skill one can obtain. ***

Intestinal Parasites

C. A. Fernando, M.D.

PART 2

(Note: Last month the author discussed the prevention and possible eradication of the giant roundworm and hookworm. In this issue he writes on two other worms—pinworm and tapeworm. —Editor)



THE PINWORM. This parasite is also called the seatworm because of the irritating itchiness which it causes in that part of the anatomy. This itchiness is occasioned by the sinuous motion of the worm which the affected person seeks to relieve by scratching in that area either consciously or unconsciously. The worm is sometimes called the "impolite worm" for the same reason.

Unlike many intestinal parasites, pinworm or seatworm infestation is not limited to the poor and to those who live in rural areas. It may infect the rich and those who live in cities. It has a very wide geographic distribution but usually infects children more than adults.

The worms are small, being about 10 mm. in length, with the female bigger than the male, as is usual with intestinal worms of all types. Both male and female are curved at their posterior ends. To survive, the worms attach themselves to the mucous coat of the cecum and appendix. However, pregnant females become detached, migrate down the bowel, crawl into the anus and lay several thousand eggs at this body exit.

Mode of Infestation. Migration of the worms usually occur at night. When the infected individual scratches himself to relieve the itching the eggs become attached to the fingers and are subsequently swallowed. Upon reaching the stomach the larvae in the swallowed eggs are liberated by the intestinal juices. Or they may hatch at the anus and migrate up the anus and rectum, to the cecal area where they mature and again, like their parents, attach themselves to the mucosa, repeating the cycle.

Manifestations. At the site of attachment of the worm, at the cecum or appendix, bleeding may occur or abscesses may form. Thus blood in the stools, abdominal pain and tenderness accompanied by chills and fever may be present. Migration of the pregnant worms to the perineal area causes severe itching and unavoidable scratching. The scratching may break the skin causing secondary infection at the affected area.

Children, especially young girls, may become nervous, irritable and thin. Grinding of the teeth during sleep, abdominal pain, nausea and vomiting may be present. Inability to sleep and chronic emotional disturbances usually follow.

Treatment. Diagnosis is made by recovery of the eggs from the anus. This is done by swabbing the perianal skin preferable in the morning before dressing, bathing, or bowel movement. The family physician usually gives complete instruction on this procedure to insure successful recovery of the eggs.

In the past, gentian violet medicinal was widely used as a specific treatment for pinworm infection. No pretreatment or postreatment purgation was required. The tablets in the dosage prescribed was usually given three times a day for seven to ten days, discontinued for one week, then repeated.

At the present time piperazine salts are widely used. Some doctors find this drug effective in 98% of cases. However, more recently, pyrvinium pamoate has been found to be just as effective if not more so, and is easily administered. Occasionally mild gastrointestinal side effects may occur but these are negligible.

Prevention. Scrupulous personal and group hygiene is essential. Accurate diagnosis and simultaneous treatment of all infected persons in the household, repeated several times if necessary, is important. The fact that pinworm eggs frequently enter the body by way of the fingers, which may pick them up by scratching in the anal area, or by handling soiled nightgarments, undergarments, bed linen or other soiled objects in a room, must be kept in mind. A good way to prevent the eggs from coming in contact with the fingers during scratching, or from their becoming airborne—for breathing in airborne eggs is proved to be a way of getting infection—is to have the child or patient use gloves during sleep and put on pyjama bottoms that are tied at the ankle.

One household member having pinworm infection can cause infection of every other member of the family. Hence, simultaneous treatment of all infected members of the household is necessary to

eradicate this worm from the family group.

THE TAPE WORM. This worm is flat and may be as long as twenty metres. In appearance it is seen to have a head no bigger than a pinhead, and is composed of a series of segments. The segments toward the tail end are the largest. These larger segments carry the eggs which, under favourable conditions, become adult worms.

There are three common types of tapeworm: beef tapeworm, pork tapeworm, and dog tapeworm.

Mode of Infestation. Beef tapeworm infection is common in beef eating peoples, pork tapeworm in those who eat pork and the dog tapeworm is found in those who fondle infected dogs or who eat their meat.

If the worm segments carrying the eggs in the human body are discharged in the faeces upon soil from which they may be taken into the body of the animals mentioned, those animals will become infected. The larval stage will then develop in the striated muscle of these animals and people who consume their improperly cooked flesh are liable to become infected. The larvae are liberated from the meat by action of digestive juices in the stomach. These larvae attach themselves to the mucosa of the small intestine and in about three months become adult worms and begin to develop egg-producing segments.

Manifestation. Tapeworm infection frequently produces no symptoms, and the patient may become aware of his infection only when he notices segments or proglottids passed in the stool. If there are symptoms, the most important are generalized reactions to the poisons produced by the worm and manifested as digestive disturbances, vague abdominal aches or hunger pains relieved by eating, and skin inflammations or eruptions. There is weakness and loss of weight from nutritional deficiencies. Children harbouring these worms may experience diarrhoea, headache and minor nervous disturbances.

Tapeworm infection can be diagnosed by recovery of the eggs from the stool but only a few eggs are passed out by the average patient. Specific diagnosis can be made from the passing out of egg-carrying segments in the stool or as developed worms migrate from the anus. Microscopic examination of these proglottids will determine the type of infestation present.

Treatment. Formerly, oleoresin of male fern and carbon tetrachloride were the drugs used, but these are relatively poisonous. At the present time, quinacrine (Atabrine) is more effective, is easily administered and is much less poisonous. However, it is essential that a doctor supervise the treatment.

For treatment with quinacrine, the patient is prepared thus: for forty-eight hours preceding its administration, he is put on a light, non-constipating diet. Sodium sulfate is administered the night before the drug is given. Quinacrine is administered in the early morning hours in tablet form in the dosage prescribed by the physician. No food is allowed until the whole worm is expelled. Small amounts of water may be taken. Two hours after the administration of quinacrine, the sodium sulfate purge is repeated.

It is imperative that the whole worm, including the head, be expelled from the body. If it is not, the worm will again develop, and will be producing eggs in a few months.

Prevention. Sanitary disposal of faeces is fundamental. Patients are instructed to burn or otherwise destroy all worms that emerge from the anus. All beef should be thoroughly cooked before eating. We recommend that the flesh of pigs and dogs not be eaten at all. Those who keep pet dogs are advised to have them treated from time to time to be sure they are not infected. (concluding article next month) ***

What to do when children have

W. Schweisheimer, Ph.D.

Little Dinker woke up in the middle of the night. "Mummy, Mummy!" he cried, and when his frightened mother hurried to his bed, she found him sitting up, sobbing and shaking, his eyes wide open and his mouth convulsed to a strange grimace.

"The dog has bitten me," Dinker repeated over and over again.

His mother took him in her arms. "It's just a dream, Dinker," she assured him again and again in her calming voice, "just a dream. No dog is here and no dog will bite you; it's a dream, that is all."

Dinker repeated, "No dog here, no dog." He held his mother for a while, then fell asleep.

The next morning he had forgotten all about his bad and terrifying dream.

Richard Wagner, the famous composer, as a child suffered from attacks of night terrors which he remembered through his whole life. "No night went by to the time of my late adolescence," he says in his autobiography, "without my awakening from some nightmare with terrifying shrieking which did not stop until a human voice bade me be still. The worst scolding and even physical punishment seemed to me welcome kindness at such time."

Terrors that occur during sleep are a highly unpleasant disturbance in children, but they are not necessarily a cause for alarm. They may, it is true, be a sign of fever, of the beginning of an ill-

BAD DREAMS

ness or of acute emotional disorder. Often, however, the child who suffers from night terrors is in good physical health and suffers merely from a temporary nervous disposition which can be overcome.

Sunder, a healthy boy of seven years, had attacks of night terror. He suddenly sat up in bed, he shrieked and cried, his face was terror-stricken. He stared with wide-open eyes but without recognizing his parents. Sometimes he perspired. The episode lasted for five or ten minutes, then he gradually woke up, whimpered for some time, and then peacefully returned to sleep.

Such an attack may occur soon after the child has fallen asleep, or after he has been sleeping for several hours or in the wee hours of the morning. Usually only one "attack" occurs during a night, but occasionally there may be two or three attacks during the same night. The following day the child may remember nothing at all of his terror, or he will simply recall that he has had a bad dream.

An ordinary nightmare is much less dramatic. It lasts only a few minutes. The child cries or moans in his sleep, his body stirs, and he wakes up. He is fully oriented to his surroundings and knows his parents immediately. Sometimes he stays awake for a long time; he feels the urgent need to talk over his bad dream with his mother or father.

The best way of helping your child in such a case is to approach him calmly and lovingly. Go to his room, turn on the light and answer his frantic questions as intelligently as you can. You will not "spoil" him in this way, but will give him the moral support he needs at that time. Try to calm him and see that he goes comfortably back to sleep. Be sure that he is completely out of his trance before he slumbers again.

It is wise to suggest a trip to the toilet so that his sleep will be deeper. After going back to bed, his sleeping position may be changed somewhat, laying his head higher or lower than before. Smooth the bed, the blanket and the pillow; thus your child will feel that a new period of rest has begun.

Sometimes the nightly terror is related to a physical condition that needs correction, such as swellings and growths in the nose or adenoids that impair breathing. Another cause may be faulty digestion, the wrong kind of diet, or formation of toxic conditions within the body. Or maybe the daily demands made upon the child, perhaps by over-stimulating playmates, burdensome lessons, difficulties in school adjustment, over-strenuous competition in one field or another, will create tensions, and cause anxieties which contribute to the nightly terrors. It may be that the child is insecure and distressed in his relations with other members of the family.

Children's nocturnal frights sometimes originate from acute fears. Little Peter, a healthy boy of five years, was going through a period of rapid growth. One day he became afraid of "thieves."

Several nights in a row he

awoke in terror. His mother prodded him gently to talk about his fears. She discovered to her surprise that the boy's fear traced from a time when he overheard his parents discussing a stage play which dealt with a story of thieves in a humorous way. She discussed the problem thoroughly with Peter, and was able to put his mind at ease.

In addition, the light was left on when Peter went to sleep, a big help in any case when children are afraid of the dark of the night. After three days the boy had forgotten all about burglars and thieves. The whole nervous episode had passed. There was no nightly awakening for Peter any more.

Dr. Arnold Gesell, the former director of the Clinic of Child Development, Yale University, has emphasized that sleep is a component of an organic cycle which consists of four consecutive phases: (a) going to sleep, (b) staying asleep, (c) waking, (d) staying awake.

If the child has recurrent nightmares, Dr. Gesell points out, the phase (b) (that is, staying asleep) and (a) phase (that is, in this case, going back to sleep) are out of normal adjustment. On the other hand, if the child is subject to recurrent night terrors, then phase (b) (i.e., staying asleep) and phase (c) (waking) are faulty. The child here wakes with spastic, almost convulsive intensity and yet in such a narrow zone of his total personality that we may truly say, "He doesn't know how to wake up."

Another form of sleep disturbance that sometimes occurs in children, is sleep-walking. What brings about this strange condition is still a mystery. Two persons out of every hundred are said to be sleep-walkers during a certain period of their life. Among children it is said to occur more than twice as often.

The sleep-walking child gets out of bed at any time of the night, wanders about the room, or even leaves his bedroom. He undertakes some activity or other and then returns to bed. Sometimes he returns to bed only after he has been awakened, sometimes while apparently he is still asleep. There is a popular belief that it is dangerous to wake up a sleep-walker. This, however, is exaggerated. Just call him by his name in a quiet way and he will turn toward you.

Sleep-walking is not a frequent occurrence. Sometimes it is considered the equivalent of an epileptic seizure, but much more often it is not a serious condition. Some children pass through periods of occasional sleep-walking in the normal stride of their development, and emerge from this phase without special help and without any lasting sign of nervous disorder. Most cases of sleep-walking have nothing to do with lasting nervousness or hysteria.

The German novelist, Ludwig Ganghofer, was a very nervous child. He has described in his autobiography how, as a child, he succeeded in ridding himself of his habit of sleep-walking. Once he found himself sitting at his desk when he woke up. Another time he climbed to the roof of a little summer house during his sleep, and awoke there in the cold and darkness.

To cure himself, Ganghofer took a reel of his mother's cotton, tied some threads around his wrists, and fastened the end to the bedposts. When he started sleep-walking by night and tried to get up, he felt the pull of the threads. Immediately he woke up. After this happened several times, he was cured of his sleep-walking and it never came back.

Children often show certain habits of position connected with their sleep. They prefer to fall asleep in the same position every single night. When you look at young children you are somewhat reminded of the position in which the embryonic child lies in his mother's womb. Interference with the favoured position makes it hard for the child to fall asleep.

There are other habits connected with falling asleep. A child may always want to have his doll or a certain toy in his hand or under his pillow, or he puts his thumb or a certain finger in his mouth, sometimes in a queer position. There is no reason why such habits should not be supported by understanding parents.

Most children readily fall asleep in the dark without any fear. Other children however, are afraid of the dark. Sometimes this is connected with the telling of gruesome stories. Or such fear has been instilled by people who use this means of intimidating the child in order to make him obey. Such children will be happy when the light is on in the hall or bathroom and the door is open a little.

Every child should fall asleep with pleasant feelings and loving thoughts. Quarrelling and nagging are not the best companions for the last few hours and minutes just before a child retires. Rather, there should be happiness and pleasant memories of the past day, happy expectancy of the coming day, and the child should feel tender thoughts toward the parents when he bids them good night.

For during sleep not only does the child's body grow, but his mind develops as well. Conflict, fear and tension may be disturbing factors in the mysterious developments that go on during sleep. And that is why happiness, love and tenderness should colour the road that leads from the reality of waking hours to the twilight land of sleep. ***

THE EXPERIMENT THAT SAVED MILLIONS

Dr. Macquarie Street

FIFTY-FOUR YEARS ago, a sufferer from advanced diabetes was saved from certain death by the wonder drug of the era, newly discovered *insulin.*

Since that day, countless thousands of people around the world have benefited from this major advance in medical knowledge. Although many other preparations have since appeared, insulin is still the front line of therapy for folk suffering from severe degrees of diabetes.

On January 11, 1922, a fourteen-year-old lad named Leonard Thompson was given a trial injection of crude form of insulin. Indeed, rather than the pure form we use today, it was really a frozen, crushed up extract of beef pancreas. But it contained the key ingredient, and the young lad's life was saved.

Indeed, he would undoubtedly have lived for many years, but the motor-bike era was as wild then as it is today. Leonard was involved in a severe smash when he was only twenty-nine, and died soon after from injuries received.

Canadian Discovery

Insulin discovery was the product of two men working together in Canada. Like many major discoveries, it was associated with a high degree of chance. Dr. Frederick G. Banting was a thirty-year-old doctor who had set up practice as an orthopaedic surgeon. However, through sheer lack of support from fellow practitioners in the area, he failed to make a living. So he applied for a position as an anatomy demonstrator at the University of Toronto. He commenced this work in 1920.

One night he happened to read an article in a medical journal which pointed out that the pancreas gland degenerated if the narrow duct leading from it was blocked or ligated. This suddenly gave the young surgeon an idea that there could be some relationship between this fact and diabetes.

Indeed, so obsessed did he become with the thought, that he immediately presented the idea to the doctors at the university. They (as is usual in such cases) tended to down-grade his ideas. However, after a lot of persuasion, they agreed to make available a small laboratory for him to work in. In addition, they provided him with several dogs on which to experiment. They also gave him an assistant.

The "off-sider," as it happened, was Charles Best, a twenty-two-year-old graduate student, who was still working on a project of his own and trying to pass his final examinations.

On may 17, 1921, the two started their collaboration, which was destined to bring them fame, as well as fortune.

Best was very keen about diabetes. His father was a general practitioner, and his aunt was a nursing sister. A few years before, she had come to live with the family. Suddenly she had developed diabetes. The family watched, powerless, as she wasted away, and finally died in diabetic coma. The poignant fact is that a few years later she could easily have been saved by the very persons who watched helplessly as she died.

Tedious and Highly Skilled

Banting, the surgeon, carried out all surgical procedures in the experiments that followed. These were tedious and highly skilled. Indeed, the operations were of utmost importance, and dexterity of considerable magnitude was essential to make sure the right organs were located and the correct procedures carried out. The entire experimental results rested on these operations.

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WHEN SOMEONE I

ALL SUBSTANCES, including the body's tissues, are composed of molecules. As far as the body is concerned, there are some kinds of molecules that belong and some that do not. Certain of these foreign molecules, that are normally not represented in the body, can cause serious damage and even death once they enter the body.

The list of substances whose molecules create damaging effects in the human body is very long and becoming longer each year because of the continuous development of new chemical substances. It is good for us to note in passing however, which substances come at the top of the list.

Even though statistics are not readily available in this country, we note that in the Uuited States carbon monoxide, a colourless gas which occurs in the exhaust from automobile motors and is produced in fuel-burning stoves which are not properly ventilated, causes more cases of poisoning than any other agent. Medicines account for more than one thild of the total number of cases of poisoning. Of these, the barbiturates are exceeded only by carbon monoxide in the number of poisonings they cause. Third in the list is a miscellaneous group of pain-relieving and sleep-producing medicines. The several kinds of alcohols cause the fourth greatest number of poisonings. This group includes wood alcohol (methanol) and ethylene glycol (permanent antifreeze) as well as the less harmful ethyl alcohol which is contained in intoxicating drinks.

Medicines derived from salicylic acid are fifth. The chief offender here is the lowly aspirin tablet, which is the most frequent cause of poisoning in young children. Compounds containing arsenic and the corrosive poisons come sixth and seventh in the list.

A cell is the body's unit of structure and function. The body consists, essentially, of a community of millions of cells. Inside each cell certain vital chemical processes take place. Oxygen and food materials are brought to the cell by the blood. Within the cell these basic substances are combined so as to produce energy. The energy is expended in performing the cell's functions, whatever these may be—producing a secretion, if it is a gland cell; causing a change in the cell's shape, if it is a muscle cell; producing structural elements for growth and repair, if it is a cell belonging to the body's framework.

Under conditions of health and well-being the various kinds of molecules that are contained inside a cell are said to be in a state of dynamic equilibrium, meaning that just the right number and kinds of molecules are present. As some of the molecules are transformed in the cell's chemical processes, the newly formed ones are secreted or excreted and other raw-material molecules are brought in to take their places.

When molecules of some unusual substance are introduced into a persons body, they are carried by the blood to all parts of the body just as are the molecules of substances that normally belong. Thus they have access to all the body's cells. When such molecules enter a cell, the effect on the cell's functions will depend on how these visiting molecules affect the chemical processes that are taking place. If the "foreign" molecules are chemically inert, no damage will be done. But if they combine with the molecules already present, alteration in the cell's structure or function may occur. Thus our definition of a poison is a substance whose molecules can bring about a detrimental change of the structure or function of the body's cells.

Of course there are degrees of poisoning depending on the number of molecules introduced, on the nature of the compounds produced by the altered chemical processes, and on the particular vital processes thus altered.

Molecules of several of the heavy metals such as lead and mercury combine with the protein molecules within the cells to make these unavailable for their normal uses. Enzymes may be inactivated by such combinations, and thus the oxidation processes by which the cells derive their energy are handicapped. Certain poisons combine with calcium, making it unavailable for the body's need. Carbon monoxide exerts its lethal influence by combining with haemoglobin molecules so that these can no longer ferry incoming oxygen from the lungs to the various tissues.

There are celtain in the body that are more vulnerable to unfriendly molecules than other organs. Some poisons have a predilection for the cells in one or two particular parts of the body. For example, the corrosive poisons, some of the heavy metals, and the war gases have their principal effect on the tissues where they make first contact. Thus it may be the skin that is largely involved. When swallowed, it is the tissues of the mouth, œsophagus, stomach, and intestines that suffer most. If the poisonous agent is inhaled, it is the tissues of the air passages and lungs that are damaged most.

The kidneys are severely damaged in certain kinds of poisoning, and when these cases end fatally it is usually because the kidneys become unable to carry on their normal function. The reason for this kidney damage is that certain poisons are eliminated from the body through the kidneys. Thus a large number of poison molecules become concentrated in the kidney and exert destructive influence there.

In the case of other poisons, it is the liver which is most affected. Not only does a large volume of the blood circulate through the liver but the liver cells have ability to remove certain molecules from the blood as it passes through. When the poison is of such a nature that the liver filters out its molecules, the very liver cells that do the filtering may be the ones to suffer the most.

The nervous system is the principal target of some poisons. Some of these, such as the alcohols, ethers, and certain hydrocarbons depress the action of the nervous system. Others, such as the alkaloids and the barbiturates, have the effect of reducing the amount of oxygen which is available to the nerve cells. In their effects on the nervous system, the substances just mentioned can have a lesser or greater effect, depending upon how much of the particular substance is taken into the body.

Some poisons exert their primary effect on the bone marrow and thus interfere with the production of certain kinds of blood cells. Benzene, arsenic, lead, and nitrogen mustard are examples.

The length of time required for a poison to do its damaging work varies from poison to poison. Some poisons act so rapidly that there is hardly time to do anything to save the victim. Cyanide is such a poison, also carbon monoxide and nicotine, in sufficient amounts.

In any case of poisoning the condition must be detected, or at least suspected, in order to do what is appropriate to save the victim's life. It is detection and identification of poisoning that are often so difficult.

What makes it difficult to evaluate the symptoms of poisoning is that these may be the same symptoms as are caused by various forms of natural illness. Poisoning may cause loss of appetite, pain in the abdomen, a feeling of being sick at the stomach, and a tendency to vomiting and diarrhœa, just as in certain of the infectious diseases.

In some cases the victim's skin may be cold, moist, and dusky-coloured. There may be loss of consciousness and even convulsions. Even these symptoms are not unique, for they may be caused by illness unrelated to poisoning.

In making the attempt to help a person who has taken poison, one must be alert to the indirect evidences of his condition: 1. When a person who has otherwise been in good health becomes suddenly ill after taking food or medicine or drink, think of the possibility of poisoning. 2. When the person who is ill has been engaged in some occupation in which he has contact with poisonous agents, think of poisoning. 3. When it is known that a person has been emotionally depressed or seriously discouraged, or has passed through some humiliating experience, and such a person becomes suddenly ill, think of the possibility of poisoning with suicidal intent. 4. When a medicine bottle or empty container is discovered in the vicinity of someone who is ill, think of the possibility that he may have taken the contents into his body.

Poisoning is such a subtle kind of illness, with such an uncertain outcome, that we are reminded most forcefully that here, of all circumstances, an ounce of prevention is worth a pound of cure. The American Medical Association has provided a list of seven items which, when adopted as rules of the home, will almost positively prevent the occurrence of accidental poisoning. Here are the items;

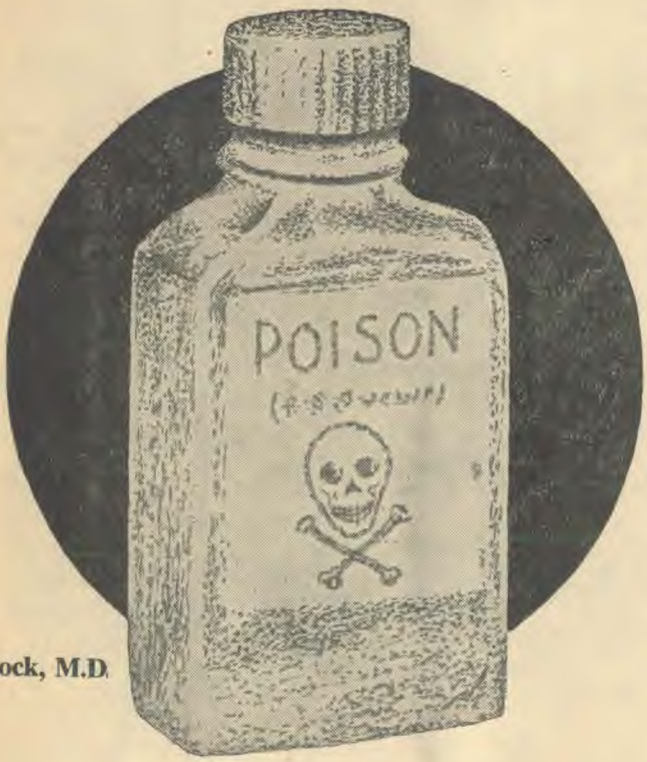
1. Keep all drugs, poisonous substances, and household chemicals out of the reach of children, remembering that children can climb.

2. Do not store nonedible products on shelves used for storing food.

3. Keep all poisonous substances in the original containers. Don't transfer to unlabelled containers.

4. When medicines are discarded, destroy them.

POISONED



hyrock, M.D.

Don't throw them where they may be reached by children or pets.

5. When giving flavoured or brightly coloured medicine to children, always refer to it as a medicine—never as candy.

6. Do not give or take medicine in the dark.

7. **Read labels** before using chemical products.

Just as every successful automobile driver schools himself in answering the question, What would I do in case of an emergency on the road? so all adults, particularly parents, should keep in mind a procedure to follow in case it becomes necessary to be first-aider to someone who has taken poison or an overdose of medicine.

When the poisonous agent has been inhaled, the victim should be removed at once from the room or area in which the poison gas (such as carbon monoxide) is present. Preferably he should be taken out of doors. Artificial respiration should be administered to keep the patient breathing while someone else places an emergency call for a physician, for an ambulance crew, or for the police department.

When the poison has been taken by mouth, the first effort should be to summon qualified help. If possible, let someone else make the call so that you can give your attention to the victim. Here, as above, the call should be to a physician, an ambulance crew, or the police department. As much information as possible should be included at the time of the call—the victim's name and address, symptoms and any clue as to the nature of the poison. While waiting for help to arrive, the first-aider may proceed as follows:

When a corrosive poison has been swallowed (strong acid, caustic soda, lye strong ammonia, phenol, or cresol) an attempt should be made to have the victim swallow some fluid which will help to neutralize the corrosive agent. Milk is probably the safest fluid to administer. If no milk is available, plain water is helpful. If the victim is unable to swallow, keep his body warm to help in preventing shock until the physician or ambulance arrives.

When a petroleum product (gasoline, kerosene) has **been swallowed,** have the patient swallow a half cup of mineral oil or salad oil. This tends to retard the absorption of the petroleum product into the body's tissues. If the victim vomits, well and good, but make sure that his face is downward and that his head is turned to one side so that he will not choke.

For other types of poisoning by mouth, the patient should be induced to vomit. This is best accomplished by getting the patient to drink three or four glasses of milk. Then, while turning his face downward and having his head a little lower than his hips, the first-aider can insert his index finger past the victim's tongue, thus causing him to gag and vomit. If no trained help has yet arrived, the next step is to administer, according to direction on the package, the "universal antidote" which should be abailable at every chemist shop. ***

THE EXPERIMENT THAT SAVED MILLIONS

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On the other hand, Best carried out the physiological experiments. He was an expert at this, despite his tender years.

The basis of the experiments was the surgical "ligation" (tying off) of the pancreatic duct. The pancreas is a large internal gland that sits in the upper back part of **the** abdominal cavity. The two researchers believed **it** contained (and produced) a special "something" (**they** didn't know what), that would maintain blood sugar levels at normal.

When food is eaten, it is "broken down" in the bowel, and finally absorbed by the blood stream. Carbohydrates (commonly called "sugars" or "starches") are broken down and absorbed by the blood as "glucose." Therefore, after a meal, the blood is high in glucose. However, under the influence of the hormone insulin, most of this is temporarily converted to a product called glycogen, and laid down in the store-house until it is required by the system. Insulin, therefore keeps the "blood sugar" level at a constant normal. However, if there is inadequate insulin, the blood sugar levels rise. Sugar is not stored. As time passes, the condition becomes worse, and finally, is often fatal.

This is the disease we now know as diabetes. It is all perfectly clear today. But not back in the 1921 era. Then it was a well-known lethal disease, but the cause was still an idea in the minds of the two research workers.

Major Operations

On July 21, 1921, the major operation in the researchers' programme took place. After having several preliminary attempts (with not very great success), the workers had finally managed to completely ligate the pancreatic duct of a dog. The dog was anaesthetized, and at operation it was found the pancreatic gland had completely degenerated. Clinically the dog had progressively suffered from increasingly severe diabetes.

The doctors removed its pancreas. This was then frozen and chopped up, and crude extract formed. This was then injected back into the animal's veins. Simultaneously, blood sugar readings were taken at regular intervals. The animal showed a dramatic improvement. Its perilously high blood sugar readings started to fall dramatically. At the same time, the disastrous symptoms of diabetes started to vanish as if by magic.

The key to the diabetes riddle had at last been found. The pancreatic gland *did* produce a chemical

that was responsible for converting sugar and lowering high levels in the blood stream. Lack of the chemical, for any reason, would cause the clinical condition of diabetes. Conversely, administration of it would bring a diabetic person back to normal. In short, *insulin had been discovered!*

A Macleod on the Horizon

It was a day of triumph for the two men.

However, their premature elation was soon cut short by their stoic superior, a soulless Scotsman named Professor Macleod. Indeed, he was sceptical of the discovery, especially as it had been made by two men of such young years. This did nothing to enhance his readiness to accept what in fact was earth-shattering news. He demanded that they repeat their experiment at least ten times before he would even consider its possible consequences.

So the researchers returned to their little laboratory. Not only did they repeat the performance ten times, but seven times ten! After seventy successful and identical experiments, even the dilatory professor from Scotland was prepared to accept (although grudgingly) the fact that a major achievement had occurred.

In November, 1921, the discoverers presented their findings to the University of Toronto. Here they received the tumultuous acclaim that the professor had failed to give.

Within weeks, there was pressure from outside for clinical application of their discovery. So in January, 1922, young Leonard Thompson was the first human guinea pig for the new preparation. The tremendous success which followed this "experiment" was outstanding.

Overnight, insulin therapy became the *in*-thing for diabetics across the nation. Within months, special licences had been issued to laboratories in most major countries for their production of the new product.

A Bright Horizon

The outlook for the diabetic took on a sudden new face. No longer were they destined to inevitable death. But a bright new world now formed their horizon.

The word "insulin" was the brain wave of Professor Macleod. In fact, he insisted this be the word used. As the discovery was, in fact, made in his department the discoverers had to comply with his request. Not that a name was very valuable; it was the product that was most important.

Many early problems were encountered as large-scale "mass production" of the new, relatively unknown chemical was undertaken. In Toronto, the Eli Lily Company was asked to produce it. However, with the teeming numbers of diabetics throughout the country, early production was limited, and supplies given only to those in severe states.

The two doctors continued in medical research. Banting became involved in special medical problems during the second world war. Unfortunately, his career here was prematurely cut short. At the age of fifty, his plane crashed in 1941, and he was killed.

However, Charles Best continued on his meteoric way. He stayed with the University of Toronto. In fact, he followed Professor Macleod as head of the department when Macleod left Toronto to return to Scotland in 1929.

Best is still alive and active. He heads up the Banting and Best Department of Medical Research, and is still currently head of the Charles H. Best Institute at Toronto University.

Adulation and praise and world-wide recognition were heaped upon the two researchers for their contribution to the world. It was accepted with all humility, and never went to their heads. Indeed, they took it as part of life, and continued to toil on in their chosen fields.

As we look back, it seems incredible that such a major piece of discovery and research was completed in such a short time. Compared with the enormous amount of time, effort, equipment and money needed for medical research today, this achievement by two men and a small laboratory within a few months seems incomprehensible.

However, this is the way of life. But in these days when everything comes high priced (in every facet) such a repetition seems most unlikely. ***

Have Low Cholesterol

IF YOU'RE one of the many who are confused about the pros and cons of the cholesterol you have in your bloodstream, you have lots of company: but this in no way lessens its importance. You won't find many scientists today who do not agree that saturated fats found in meat and dairy products are definitely related to heart disease, while the polyunsaturated fats in vegetables are not.

With heart disease killing thousands of persons a year, and many more dying annually of other artery disorders, it behooves each of us to take a look at the cold facts and how we may avoid becoming part of such dire statistics.

Cholesterol is the whitish fatty substance that we obtain in two ways; it is manufactured by the body from the foods we eat and it is obtained directly from meat, egg yolk and dairy foods. There is no cholesterol in plant foods such as fruit, vegetables, grains, cereals, and nuts.

Dr. Campbell Moses medical director of the American Heart Association, states: "Cholesterol is a very important component in the body's economy.... We make about 20 times as much cholesterol in a day as we take in (less than a gramme a day) ... Cholesterol will vary 15 to 20 milligrammes in the course of a day, but it doesn't jump around 100 per cent like blood sugar.

"In most cases," he says, "our mechanism for handling cholesterol is reliable and effective. Occasionally, people will inherit just plain bad cholesterol genes, and they will have abnormal metabolism in very early life. In recent reports there have been indications that one in every 100 newborns has a very high level of cholesterol."

For such cases babies are put on a low fat, low cholesterol diet to correct the condition. Doctors assure us that if children are properly cared for early enough in their infancy, lives can be saved.

What is a normal cholesterol level? At 18 years of age, both boys and girls have an average level of 180 milligrammes. The male level rises rapidly, until by the age of 40 it has reached 240 milligrammes. Females, however, have a low cholesterol level (it does not reach 240 milligrammes until menopause) and they are much less vulnerable than males to a heart attack until they reach this period in their lives.

Other factors which must be considered as highly relevant in the production of cholesterol include the following:

1. A high calorie intake increases susceptibility to a high level of cholesterol.

2. Stress—both physical and emotional, with corresponding high blood pressure, has much to do with manufacture of cholesterol.

3. Insufficient exercise to keep hearts and arteries in shape also causes increased cholesterol. A flabby body is unhealthful for many reasons.

4. Overweight should be avoided. It takes from between 10 and 20 years for cholesterol deposits to build up and result in atherosclerosis, and during this time there are usually no symptoms. Therefore, the best advice for preventing heart disease is given by Dr. Roger J. Williams, famous biochemist.

"Concentrate on the QUALITY of the food consumed ... those which are generously endowed with essential nutrients, should take precedence over those processed foods that crowd out the good foods, contribute mostly calories and provide very little in the way of amino acids, minerals, and vitamins."

Limit the number of eggs eaten —even lacto-ovo-vegetarians need to be careful of their intake. No more than two or three a week is advisable.

If possible, have a regular medical checkup once a year. ***

Guide to Healthful Living

Cataracts

CATARACTS HAVE been defined as any opacity of the crystalline lens of the eye. Any loss of transparency of the lens reduces the acuity of vision regardless of the cause of, or age at, the onset of the loss. The removal of cataracts is one of the oldest surgical procedures recorded in history. It is mentioned in the famous Ebers Papyrus of ancient Egypt.

Cataracts may occur in anyone from 30-35 years of age and onward. However, they are most common after 50. Cataracts acquired during adulthood may arise from unknown origins, they may develop slowly or appear spontaneously, they may be subsequent to trauma or may follow any of a number of eye diseases. The type of cataract, its character and rate of development, varies greatly among individual sufferers as well as between the two eyes of the same person.

This column is concerned primarily with developmental and degenerative cataracts that are acquired during adulthood and particularly during the later years of life. However, it has been shown that cataracts may occur quite early in foetal life or may be associated with certain hereditary or familial anomalies. Various metabolic problems such as the inability of the newborn to convert a type of sugar known as galactose to glucose may contribute to cataract formation in early life.

Although the cause of cataract formation are not always identifiable it has been shown that a number of factors predispose to their development. Systematic diseases not infrequently play a part, diabetes being a common offender. They may develop following injury to the eye. Studies have shown that prolonged exposure to high temperatures such as endured by glass blowers and steelworkers favours the development of cataracts. Some investigators believe irritants such as wind, excessive dryness, and chronic infections of the eyelids and conjunctiva, along with nutritional deficiencies, play a major role in the development of cataracts as commonly seen in some parts of the world. Manson-Bahr describes eye changes in cholera. Severe dehydration brings about an opacity of the lens, a state that may be reversible when water has been restored. He also states that a cataract may develop suddenly in the stage of collapse and may have a basis similar to that of diabetes.

Cataract formation frequently accompanies the aging process while senility that may be premature takes its toll in other parts of the body. Usually both eyes are involved, although one is generally further advanced than the other. The opacity ordinarily begins near the edges of the lens while the centre remains transparent for a time. The time required for the development of a ripe cataract resulting in blindness varies from a few months to many years. The process may become stationary at any time.

In spite of good living habits, an adequate diet, excellent eye care, and the avoidance of all substances that might irritate or place strain upon the eyes, time marches on. As the human mechanism grows older certain unavoidable changes take place. It is with these that man must learn to cope. In the event of failing vision due to cataracts decisions must be made. Elective surgery is available and is to be recommended at the discretion of the attending ophthalmologist. However, in considering surgery Sloane has pointed out certain criteria that should be fulfilled:

1. If both eyes are affected the eye with the least vision should be operated on first, particularly if the better eye shows progressive disease.
2. Fully mature cataracts should be removed, since leaving them may result in other difficulties.
3. If it is believed the cataract is associated with glaucoma or the subject has developed allergic reaction to it, the offending cataract should be removed.
4. If the subject's work requires normal vision in both eyes, the bad eye should be cared for first and fitted with a contact lens.
5. If advance cataracts develop in both eyes, progressing at the same rate, and adequate facilities and services are available, consideration should be given performing cataract removal during a single period of hospitalization, the surgeries being done three or four days apart. This entails slightly greater risk but provides a much greater convenience to the patient, allows for the fitting of glasses for both eyes at the same time, and shortens the total period of convalescence.

Vision is one of the most valuable senses provided by our Creator. As an avenue to the soul it should be sacredly guarded, providing it with the best care humanly possible. ***

Dr. J. D. Henriksen

MAN'S THREEFOLD PROBLEM :

"cares of this life"

We are living in an age of anxiety. All seem to have worries of one kind or another. Could it be that this is because our lives are too selfcentred? Could it be that despite this modern age we fear for tomorrow simply because we have lost the spiritual dimension to life?

Consider the timeless words of the New Testament: "Have no anxiety about anything but in everything by prayer and supplication with thanksgiving let your requests be made known unto God. And the peace of God which passeth all understanding will keep your hearts and your minds in Christ Jesus." Is it not sad that such beautiful counsel is unheeded today?

dissipation

The word "dissipation" means fundamentally "overeating," but it also has the connotation of "overdoing." In this way it epitomizes the trendy manner we have of hunting for more thrills. The "over-stimulation" from the many impulses of our daily living has a deteriorating effect on our nervous system. Not only would this include the rush of daily life but also the urge for new forms of entertainment, that today grows more than ever permissive. Hunger for excitement indicates the emptiness of the soul and mind. The narcotics epidemic, the university campuses unrest, the hippy cults, the pop music fever, all the new revolutionary out-breaks, are really a reaction to the empty way of life that pertains in the adult world. These and other forms of dissipation will undoubtedly show up in the future by what has been termed the "misplaced generation."

Dr. Thorstein Guthe, Chief Medical Officer for the World Health Organization reports in *World Health* on the increase of venereal diseases in spite of preventive and curative methods available:

"In 1970, in Scandinavia, and in England and Wales, venereal diseases were among the most prevalent of reportable health conditions. In the U.S.A. they were first." It is now a major health concern in India.

"The recent changes in patterns of sexual behaviour contribute not only to social problems but to disease. Young people are more active socially, and V.D. rates are increasing faster among them than in the population as a whole. One case of syphilis in three is found in teen-agers; gonorrhoea rates are often high among the most educated members of the community—university students, for example."

One of the worst forms of dissipation today is abuse. Those addicted to drugs admit that it is crazy. One said: "We threw off our home upbringing because it did not give us anything. Our education did not give us anything either. We have not learned enough. We protest in our way. Instead of guns, revolver, bombs and such like, we use the "stuff"—there is a war against the establishment. It is the war of the young people and is a form of suicide to open the eyes of the older generation. We do it because the adults do not lend us a hand." Tragic words that should make every adult and parent think very seriously as to how they treat their children. One can hardly open a newspaper today without finding criminal acts, homicides, suicides, performed by young drug addicts. An honours graduate of one University got addicted to LSD the hallucinatory drug. He said, (before he shot himself between the eyes) "After you have taken so much of that stuff you just really don't know where you are. You don't know if your reasoning is correct. It is hard to distinguish between what is real and unreal. You are lost. I really don't know if I am nuts or what."

A youngster recently said: "You can't blame us for doing this when our fathers go out to the pub every night and our mothers are chainsmokers. Why shouldn't we experiment?" Did not this young person have good reason to say this? The adult world has not given the young ideals to live up to. On the other hand it has given them all too effective examples of egocentric living in bearing responsibilities. Because of the selfishness of the adult world a great percentage of young people have grown up without that love, affection and interest which is their birthright.

The World Health Organization has reported about the use of cannabis (also called marijuana, grass or hash) which the drug users demand should be free from all purchase controls. Research has revealed that the contents of the psycho-active ingredients this material contains differs from plant to plant. That is why the so-called europhic reactions differ from time to time. The effects which are closely related to doses range from mild anxiety and euphoria to manifestation of acute psycho-toxic reactions. Also reliable reports indicate that often acute panic and other reactions follow the use of quite small amounts.

The use of this quite "mild" drug often leads on to the use of "hard" drugs because the effect does not give a big enough "thrill." Cannabis users, therefore, frequently end up on other dependency producing drugs such as alcohol, amphetamines, barbiturates and morphine. Within a couple of years they become mental and physical wrecks, if not caught in time by some helpful treatment programme.

drunkenness

While the misuse of drugs is relatively new there is also a sharp increase everywhere in the use of the oldest drug of all, alcohol.

Professor Svend Skyum-Nielsen states that between 100,000 to 200,000 persons in little Denmark (population 5 million) are "problem drinkers," the new term for alcoholics. The average use of pure alcohol for all adults has increased from 5 litres in 1961 to 9 litres in 1970. The use of alcohol seems to bring great loss to the country. Alcoholics come to work late, are often sick, get into accidents frequently, have family problems, make bad decisions, lose contracts and have heavy medical bills.

Thirty-seven to forty per cent of car accidents are caused by people who drink before, or while, they drive. From California comes an alarming study on 1,251 deaths from car accidents. Fifty-eight per cent of the drivers, 47 per cent of the passengers and 36 per cent of the pedestrians had alcohol in their blood—from 150 milligrammes per cent or higher.

Physical and mental effects of alcohol intake results in a prolonged state of illness and early death. The acute consequences associated with alcohol intake range from mild nausea to cardiac or respiratory arrest.

A 19-year-old university student died at a Christmas party. The host was the vice-Chancellor of the university and he had invited the honour students for a Christmas party. The young man who died was a news editor of the university paper, a very cheerful and active person. After the party he was so drunk that the other students helped to carry him to the car and back to his room. They thought that he was heavily drunk and left him to sleep it off. But the next morning he was found dead. His alcohol content in the blood was 475 milligrammes per cent, a level that could and did in this case cause death.

Alcohol drinking has become a widespread social habit among young people and teen-agers. The younger the drinking starts the worse will be the expected results. Alcohol irritates the gastro-intestinal system and creates ulcers, pancreatitis, liver damage, heart problems, kidney stones, damage to peripheral nerves, not to mention the damaging effects on the brain creating psychosis.

No wonder 25 per cent of those receiving psychiatric help in hospitals are suffering from the consequences of illnesses closely associated with alcohol or alcoholism. The diagnosis may be called neurosis or psychosis, delirium tremens, dementia, or paralysis. It is basically the same thing and is caused by this dangerous drug—alcohol.

Another one of our major health problems today is the increasing amount of cigarette smoking. In spite of all the educational information that is given to the public by the government, private agencies and the medical world, never since the days of the "Black Death" in the Middle-Ages has one single cause resulted in so many deaths annually. Lung cancer and heart attacks due to smoking have increased enormously. Cigarette smoke contains not only poisonous nicotine but also up to 27 different tars that can cause cancer. The inhaling of carbon monoxide, while smoknig, can reduce by up to 25 per cent the red, oxygen-carrying, blood cell efficiency, thus preventing normal oxygenation of the brain. Other tissues are similarly affected and this may damage the heart and other vessels of the body.

Man is in such a confused state of mind due to the use of narcotics, alcohol and cigarette smoking, that most warnings are completely in vain. His outlook is foggy because dissipation, drunkenness and the cares of this life have steadily weakened his willpower.

But faith in God, peace of mind, happiness of life can replace this anxiety for the future. Though progress in science and medicine has failed to prevent man's gradual physical and mental degeneration and happiness, a new and fresh approach to this whole problem is available. This is expressed in Matt. 11:28: "Come unto Me, all ye that labour and are heavy laden, and I will give you rest."

The great need of this world is to recapture this spiritual dimension to life, for a return to the basic Biblical principles modern man seems to have lost sight of. The time also grows late. Why not heed Christ's invitation now? ***

Better Meals--Less Nibbling

Fredrik N. Edwardy

Sarita, at 15, has an uncontrollable mouth. As a result, eating all the time has caused her to put on 20 unwanted pounds.

Cuddly three-year-old Ajit clamours for attention and is pacified by his mother with a glass of milk and slice of bread with jam. In an hour he will be getting a dish of rice with another glass of milk for lunch.

Baba, 10, an active little beanpole, is too eager to get to the school playground to take time for breakfast. Mom fixes him a good tiffin to make up for it, but she also gives him money to spend on candy and a soft drink.

Dad grabs a cup of tea and a sweet roll before dashing out to work. His usual lunch is more often than not a bun, banana and one or two cups of tea.

As for Mom, she may not even sit down for what might be called breakfast. She'll just sip a hot drink and nibble on a left-over chapatti before beginning her day's many activities. For lunch she may take time out for a sandwich. Even so, she's really not hungry enough to eat with the family at dinnertime because she's been nibbling and tasting all afternoon while preparing the meal. She may, however, join the family in snacking while they watch a favourite TV programme after dinner.

What's the matter with this all-too-familiar family?

Dr. George M. Briggs, professor of nutritional sciences at the University of California at Berkeley, California, says: "People just don't know how to choose the right kinds of foods. . . . A consumer has to have some knowledge today to know how to choose a good diet."

Dr. Paul A. Fine, New York psychologist-sociologist, puts the blame for this bad state of culinary affairs on the many young mothers in their 20's and 30's who haven't learned to cook at home as their mothers did.

Young women who have begun to cook after marriage have learned from friends, neighbours, mothers-in-law, and cookbooks. But learning to cook takes years. Meanwhile, the family members pick up their own eating habits.

What's the answer? To begin with, Mom will have to recognize her position of responsibility in the home. She must learn the essentials of how to provide a healthful menu for her family.

1. Everyone needs a good start every day with a nutritious breakfast. It should be kept in mind that protein should be supplied in an

amount that's a minimum of one fourth of the total needs of the day (about two ounces of protein per meal). If Mom insists that every member get up in time for an adequate breakfast, there will be fewer sweet snacks during the day and heartier appetites for lunch and supper.

Despite the fact that hot foods help start the digestive system more efficiently, breakfast doesn't have to be a hot meal. Heat isn't a nutrient. Cold cereal is acceptable. A peanut butter sandwich and a glass of milk is good too. If time permits, a scrambled egg, toast, and orange juice provides a better balance.

During the day, if you have youngsters at home, sweets or soft drinks should not be left handy in the refrigerator for snacking. And don't let the kiddies humour the Good Humour man between meals!

Sarita, with her mouth-action disease, will find it easier to keep her weight normal if she eats a nutritious breakfast. This has been proved conclusively by studies made of teen-age girls' eating habits.

2. Make it a point to see that each day your family's menu includes the "Basic Four" nutrients.

* Nuts, legumes, eggs, meat or meat substitutes.
* Dairy or soy milk, cheese.
* Vegetables and fruits—fresh, frozen, or canned.
* Bread and other cereal grains.

Those vitamin pills that are widely advertised as a must for all the family, aren't! If a daily diet is well balanced with quality, wholesome foods, vitamins are a needless expense. They won't increase appetites, and they should be given to a child only if he or she becomes sickly and a doctor prescribes vitamins.

3. Go easy on foods that supply mostly sugar, starch, and fat. Starchy and sugary foods are mainly "empty calories." When eaten excessively they tend to supply energy needs so quickly that no appetite is left for other more nutritious foods.

As to fat: We rarely need to worry whether there's enough of it in our diet. More often the opposite is true. It is the overuse of these fatty, sugary, starchy foods that causes much of our trouble.

Infancy is not too early an age to start moulding good habits of nutrition. Few mothers realize that a fat baby is not necessarily a healthy one. Overfeeding can become the hard-to break habit of overeating in later life. Nutritionists now even question the wisdom of believing that rapid growth of children is desirable indication of health.

For problem eaters like Ajit and others who are finicky eaters: The solution is not in insisting that they eat. Extra attention is what they are really looking for. Finicky eaters should be given tiny portions. If they don't like spinach, let them get their minerals, vitamins, and roughage from carrots or other vegetables.

Parents' eating habits greatly influence those of their children. But if food is provided that is tastefully and attractively served and parents set the right example of eating some of everything and show no preferences, the younger members of the family will learn to eat and enjoy all the foods that are good for them too.

Many children do not like to eat cooked vegetables. Some are sensitive to certain flavours, textures, and consistencies of foods. Vegetables such as cooked cabbage, onions, or turnips may not be as well liked as some others. If such is the case, experiment with serving more raw vegetables. You may be surprised to see how enthusiastically the youngsters take to sliced raw cabbage, cauliflower, or even mushrooms. It is well to have handy at lunch and dinner an ample supply of carrot sticks or you may alternate with radishes, cucumbers, or green onions.

Why should it be vital to make changes and adopt new eating habits if you are enjoying your present easy-going menu?

One answer lies in recognizing the importance cholesterol plays in our general health and longevity. This fatty substance starts building up in our blood vessels from babyhood as a result of eating fatty meats, butter, eggs, whole milk, and cheese.

Peanutbutter is a good replacement for butter; eggs should be limited to three or four a week; and dairy milk may be more healthfully replaced by either the low-fat type of milk or by soy milk. Paneer and curds are preferred to aged cheeses high in objectionable hard fat.

The high cost of food these days may actually be a blessing in disguise because it helps cut down on the purchase of unnecessary "convenience foods," fats, and other high-calorie items ordinarily on the shopping list.

To continue eating as we do means more illness, with hundreds of thousands dying prematurely of heart disease, diabetes, and high blood pressure (hypertension).

Your family needs your help, Mom, because they are dependent upon you for the regularity of their meals, the attractiveness of your menus, and the nutritive value of the foods you serve. But, loving them as you do, and keeping their wellbeing in mind, it really isn't too big a job. Just sneak in the goodies (more healthful dishes) as often as you can and, before you know it you'll have a whole new set of better mouthtraps! ***

Fish Stories

Myrtle O'Hara

Have you ever stopped to think that long before people ever thought of flying, many fish were taking excursions through the air—short trips, certainly, nevertheless they were flying.

There appears to be a big belt of flying fish around the Equator. Their flying is not a pleasure cruise, but a means of escape from their enemies. When they are alarmed or pursued they immediately increase their speed and steer sharply up through the surface of the water. Then they spread their gauzy metallic-blue wings that sometimes glint with iridescent orange patterns. Their long lower tail lobe remains in the water, sculling rapidly to drive the fish to take-off speed.

A flying fish does not beat its wings like a bird. It is a glider with an "outboard motor" that it dips into the water several times during the flight. To deceive its enemy a flying fish will frequently veer from a straight course or even double back until it must go below again. But life for the poor flying fish is always a struggle, and in its efforts to survive, it often goes "out of the frying pan and into the fire." By day, while it is escaping from the jacks and doredos in the sea, hungry birds are waiting to pounce on it as soon as it leaves the water, and jet-propelled squids take over the pursuit by night. Two varieties, elongated needle fish and half beaks, can travel in a series of ricochets for more than three hundred feet.

It seems, however, that fish sometimes take to the air in sheer exuberance of spirits. On one occasion, an estimated 20,000 dolphins, forming a living reef extending to the rim of the ocean, seemed to be engaging in a mass high jump contest. About a thousand at a time were out of the water on jumps averaging three seconds. Their tails were from fifteen to twenty feet above the surface. They seemed to

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PAINKILLER ASPIRIN JAB

Bayer research scientists have succeeded in developing a genuinely water-soluble aspirin marketed as Aspisol. So Aspirin, the veteran painkiller, is now available in jab form.

The aspirin jab is more effective than the tablet, so many patients who at present are dependent on powerful painkilling narcotics such as morphium may now find Aspisol either alone or in conjunction with a small dose of morphium will do the trick.

What is more, Aspisol injected intravenously works almost immediately, and the painkilling effect lasts five or six hours. So Aspisol is particularly suitable for post-operative use, after accidents and in cases of rheumatism and cancer. It could even be used instead of a local anaesthetic in minor therapeutic and diagnostic surgery, since responses to anaesthetics vary from one patient to the next.

—German Features

HOPE FOR KIDNEY PATIENTS

A wearable artificial kidney that could someday free thousands of hemodialysis patients from the necessity of receiving their blood-purifying treatments in hospitals or at home has been developed at the University of Utah Medical Centre, in Salt Lake City, U.S.A. The portable kidney—which, its developer predicts, may be in wide use in three years—weighs less than five pounds and is about the size of a standard dictionary. The kidney machine now in use is about the size of a large laundry tub. For treatment, a patient must lie or sit relatively still while receiving a five-to seven-hour therapy three times a week. The new machine according to its inventor, Biomedical Engineer Steve C. Jacobsen, Ph.D., could do the job in three hours, on a daily basis. It also could accompany the patient wherever he or she goes—be it on vacation or a trip to the store. The portable kidney, says Dr. Jacobsen, has been successfully tested at the University of Utah, but one bug remains to be worked out: Because the filtering surface is so much smaller in the portable kidney than in the standard-sized dialyzer, the new machine does not remove as much urea (the final product of the decomposition of protein in the body). This restriction would force the patient to continue using the standard dialyzer once a week. Dr. Jacobsen is optimistic that better filtering material—he is currently investigating a plastic-coated charcoal—will solve the problem.

—Today's Health

FOETAL HEALTH

From Jerusalem comes a highly interesting and perhaps life-saving, report that foetal kicking may be more important than the heartbeat as an indicator of foetal health.

Dr. Eliahu Sadovsky and associates at the Hadassah-Hebrew University Medical Centre have made studies of pregnant women, using an electromagnetic device that records sudden foetal movements. They state that foetal kicking can stop a day or two before the heart stops—and they advise that when a baby doesn't kick for more than 12 hours it should be delivered immediately, even though the heart is still beating.

—Nursing '75

From page 24

have gone berserk. They twisted and contorted as they leapt, belly-flopped back, dived, sped straight up from the deep, and shot high into the air again.

The story is told about a group of about one hundred sperm whales which were sighted in the Indian Ocean. From time to time depth explosions seemed to erupt from the placid water and shoot upwards in high geysers. Then a sixty foot whale leapt straight up into the air, its tail clearing the water by fifteen feet. It fell back on its side with a loud boom as water flew in all directions.

One of the whales coming up from a dive under the ship from which the observations took place, was run over. Its companions immediately came to its aid and supported it on either side. Their cries of distress (which were mouse-like squeaks) attracted other whales from every direction. They came in small groups until there were thirty-seven of them in the area. Then a baby whale about sixteen feet long turned to examine the boat and was caught by its twin propellers. It swam towards the pack trailing blood like an aeroplane on fire. At once the biggest whale rose vertically out of the water, and by an extraordinary thrashing of its flukes stood quite a while with one third of its length above the waves. It stared at the boat which had hurt two of its pack, and then slid back tail first into the water.

Orcas, or killer whales, are the largest variety of dolphin. Sometimes they work together with fishermen and help them catch whales. Along the coast of New Zealand, fishermen used to go out in boats, harpoon whales, tow them into the beach, and then throw the whale offal to packs of orcas that followed them into the surf. At night the orcas roamed up and down the shore line, and when they encountered whales, they came to the beach and barked to let the men know that whales were there.

The same understanding existed between the fishermen and orcas on the coast of New South Wales. One time two men were trying to catch two whales in the bay at Eden. Orcas prevented the whales from escaping by getting in front of them, catching hold of their lips, and chasing and tiring them. They kept them going backwards and forwards between the points of a small bay, and forced them shorewards to prevent them going out to sea. When the whales were at last killed, they were dragged down by the orcas which ate their tongues and lips. Later the whales rose to the surface and were towed to the shore. After their meal, the orcas, some of them almost thirty feet in length, played with the boat, pulled it along for a short distance, and gambolled about exactly like porpoises. ***

The Doctor Advises

This counselling service is open to regular subscribers only. In reply to questions, no attempt will be made to treat disease or to take the place of a regular physician. Questions to which personal answers are desired must be accompanied by self-addressed and stamped envelope. Anonymous questions will not be attended to. Address all correspondence to: The Doctor Advises, Post Box 35, Poona 411001.

WARNING

Is there any device that would alert an epilepsy patient, or his parents, to an oncoming attack?

To the best of my knowledge, there is no device that would forewarn an epileptic of a seizure. However, many of these patients do receive some warning through visual, auditory, or other sensations.

An electroencephalogram (EEG), a brain-wave tracing, frequently is helpful in determining the type of seizure and the patient's possible response to a specific medication. But the EEG cannot alert patients to imminent attacks.

SLEEPLESSNESS

I am 73 years of age and troubled with sleeplessness. I have an aversion for sleeping pills. Can you suggest some way, other than taking medicine that will help me to sleep at night?

You must recognize that there is a great variation, from person to person, in the amount of sleep required during each twenty-four hours. If sleep does not come, even when you allow adequate opportunity for sleep, do not worry over it. It may be that you are one who does not require as much sleep as many people do.

Two forms of "physical therapy" help in promoting sleep. First, a reasonable amount of physical exercise. At age 73 you should not expect to become an athlete. You will doubtless benefit, however, by taking daily walks of such duration and intensity as come within your personal limit of tolerance. If you are not accustomed to daily exercise, begin your programme of exercise gradually. Exercise has the effect of activating the muscles, improving the vitality of the heart and lungs, and making a person mildly fatigued.

Second, most persons benefit by a neutral bath or shower (equivalent to body temperature) taken just before retiring for sleep. The water should feel neither hot nor cold, and the bath or shower should last about twenty minutes. The skin should then be dried gently so as not to be too stimulating.

Another important consideration is one's mental attitude during the one or two hours before he retires. One should allow his thoughts to slow down gradually by avoiding conversations, reading, or entertainment that are exciting.

Even when following such a programme as just outlined, there will be times when a person who tends to sleeplessness will find that sleep does not come. Then he should direct his thoughts along peaceful lines, avoiding concern because he is still awake. By a little self-discipline the sleepless person may become so carefree that he is sometimes in doubt as to whether he is dreaming or meditating. This is a favourable state of mind and partially satisfies one's need for sleep. A sleepless person should avoid consulting the clock during the night. Let him remain in doubt as to how many hours he sleeps or lies awake.

BOWLEGGED

Our 11-year-old daughter is very bowlegged. Could this condition have been prevented by an intake of more vitamin D as an infant? Can it be corrected by surgery now? She is an otherwise normal and healthy child.

Since you state that your daughter is normal and healthy in all respects except for being bowlegged, it is not likely that this condition could have been prevented by an intake of more vitamin D as an infant.

While simple bowing of the legs can be treated by means of either braces or casts during the first year of life, this treatment is not applicable to older children. Surgery is rather a drastic course to follow, except in the more severe cases.

I suggest your child be seen by either a pediatrician or an orthopedic surgeon in order to determine the severity of the bowing and whether or not there is an underlying cause. The proper course of treatment can then be established.

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