herald of health

APRIL 1975

SMALLPOX

Point of No Return

Message from Dr. H. Mahler

Director-General of the World Health Organization

for

WORLD HEALTH DAY, 1975

World Health Day 1975 marks both the beginning of the end in our campaign to eradicate smallpox from the earth, and—in a larger sense—the beginning of a new era for the World Health Organization itself.

The eradication of smallpox will represent one of the historic milestones in medicine, but—more than that—this first global eradication of a major disease provides an outstanding example of the constructive results nations can achieve when they work together toward the common cause of better health for all.

When the WHO smallpox eradication programme began just eight years ago, 30 countries were endemic and many reported importations of the virus. Now, entire continents have been swept clean of this dread infection, and the population still at risk is but a minute fraction of that over which it held sway just a decade ago.

In achieving these extraordinary results, the public health services of many nations have been strengthened—national reporting systems for the communicable diseases have been improved, better techniques for immunization have been developed and communicable disease control services have evolved.

However, much remains to be done before we can feel assured that smallpox has indeed been vanquished. In the remaining endemic areas, we must identify the few, final chains of transmission and break them. Then programmes of intensive surveillance must be continued for two years to ensure that there are no hidden foci of smallpox lurking anywhere. Finally, international commissions must investigate and verify that the disease has indeed been eliminated.

Until that point is reached, case detection and reporting systems must stay alert; containment systems must remain quick and strong. Only then can we feel absolutely confident—at last—of total victory over a disease that has devastated man since time began.

Then, the resources developed to overcome smallpox can be focused fully on other major health problems that besiege us. However, when these future battles are entered, health services will be all the stronger: armed as they are with weapons shaped in the hot forge of the smallpox campaign.

Surely, the experience gained in overcoming smallpox must provide the basis for a more skilled and concerted attack against other communicable diseases. We can only dream of the great strides which could be made if the peoples of the world would together apply resources and energy to other common health problems as they have in the smallpox campaign—but dream we must.

For as victory over variola becomes certain, we are at the "point of no return". It is the beginning of the end for smallpox, which can never return to ravage the earth as in centuries past. But it is also the beginning of a new era for WHO, which —having shown what can be done to eliminate disease when all nations join together in a unified, co-ordinated effort—can now attack more effectively the multitude of other major health problems still confronting us.

herald of health

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ARTICLES

FEATURES

Just briefly...

NIBBLING HAZARDS

By means of X ray it is now possible to determine the emptying time of the stomach after a regular meal. Experiments have shown that a breakfast of cereal and cream, bread and butter, cooked fruit, and an egg, can be digested and the stomach empty in four hours. A few days after this was demonstrated by X ray the same meal was repeated but with various other foods eaten two hours later. These were the results:

Food taken two hours after breakfast:	Results:
An ice-cream cone	A residue at six hours
A peanut-butter sandwich	A residue at nine hours
A piece of pumpkin pie, a glass of milk	Much residue at nine hours
A banana	A residue at eight hours

Undigested food lies in the stomach, sours, and adversely affects the entire system. Sour stomachs make sour personalities.

CLIPPINGS AND COMMENTS

Though China covers a vast 9,597,915 square kilometres, only 12 per cent of the land is cultivated.

*

Italy is to become the first country in the world with a nationwide network of pollution monitors to keep a check on the amount of waste in the country's atmosphere. The monitors will be set up in such a way that they will keep an especially close check on the level of sulphur dioxide in the atmosphere.

*

Ostrich eggshells serve as containers for precious drinking water for Bushmen in Africa's Kalahari Desert. When the shells break, the fragments are made into ornaments.

*

Jupiter is unique in the solar system. With more than twice the mass of all the other planets combined, it has more than 1,000 times the volume of the Earth. If Mars were placed on the face of Jupiter, it would look like a 25 paise piece on a dinner plate.

*

Alcoholic beverage advertisers will have it a little rougher in the Irish Republic after a new code for television advertising goes into effect. The code seeks to deglamorize alcohol and offset public pressures to drink. Advertisements for whiskey, gin, vodka, and other "hard" liquor will no longer be broadcast. Beer, wine, and "aperitifs" will still be publicized only if they aren't linked to sports, "physical prowess," or sex appeal.

GOODBYE TO

The word "variola" was first used to describe smallpox over a thousand years ago

It was in the year 570 A.D. that the Bishop of Avenches, in Switzerland, wrote a report about an epidemic in France and Italy. He made the first use of the word "variola" to describe the patients' appearance as "spotted".

A great physician of the Islamic world wrote the first medical report about smallpox

It was in a tenth century report entitled "A Treatise on the Smallpox" that the infection was first described by Abu-Bakr Mohammed Ibn Zakariyya Ar-Razi, known as Rhazes. A Persian, Rhazes not only discussed smallpox in this paper, he also distinguished it from measles. However, hundreds of years passed before his work was read and later accepted by physicians in Europe.

Plagues that have scourged mankind

The diseases that have caused the greatest slaughter of mankind throughout history were smallpox, bubonic plague (Black Death), cholera and yellow fever, each of them capable of being transmitted by travellers and seafarers around the globe.

The first battle against smallpox was initially spurred by a beautiful woman whose loveliness it had destroyed

The lovely woman was Lady Mary Wortley Montagu, wife of an eighteenth century English Ambassador to Turkey. She barely survived the smallpox attack that struck her at the age of 26 and marred her beauty. Later, living with her husband in Turkey, she noticed a method used there to prevent the disease—for which, then as now, no effective **treatment** has ever been found. On her return to England she urged the adoption of this preventive, called variolation.

The first primitive method of fighting the disease—variolation—is of unknown origin

Variolation was employed in ancient India, and under the Tcheou Dynasty of China when there were outbreaks of so-called "taitu" disease. The method involves taking material from the pox or pustule of a sick person and scratching it into the skin of people who are not yet ill. The recipients usually develop only a mild illness—but they can infect others and their illness is not mild. Provided a person survives this first crude technique of immunization, variolation prevented him getting the disease in a more serious form. This method of protection was employed in Europe until early in nineteenth century and in remote populations of Ethiopia and Afghanistan—was, until recently, widely prevalent.

Smallpox was the first disease to be made preventable by a modern method of immunization

Among those who took a particular interest in Lady Mary Wortley Montagu's experiences in Turkey was a young English doctor named Edward Jenner. He also made the crucial observation that milkmaids did not seem to get the deadly smallpox if they had first caught the relatively harmless cowpox from their animals. Jenner dared to wonder: could it be that material from a cowpox pustule might somehow prevent smallpox? He tried the experiment in 1796,

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when he inoculated material from the pustule on the hand of a dairymaid into the arm of a little boy of eight. About seven weeks later, he inoculated the boy with matter from a smallpox pustule and, as was expected, the boy did not contract the disease. He called the first material **variola vaccina,** in other words, the smallpox of cows.

Jenner's discovery rapidly became widely known

A copy of Jenner's report so excited Dr. Benjamin Waterhouse of Boston, Harvard's first Professor of the Theory and Practice of Physic, that in the year 1800 he asked an English colleague to send him a supply of vaccine. A ship eventually brought him a bottle with a glass stopper containing threads of cotton that had been soaked in pustule matter and then dried. Waterhouse promptly vaccinated seven of his own 13 children, with results exactly as described by Jenner. Later, one of the vaccinated children, a boy of 12, was inoculated with fresh smallpox matter and even left in a room with a smallpox patient. The boy remained well, and Waterhouse had inadvertently proved that a smallpox vaccine could safely travel overseas. The discovery was of such importance that President Jefferson personally assisted in obtaining widespread distribution of the vaccine throughout the United States.

The principle of immunization against other diseases was inspired by Jenner's discovery

For decades, the smallpox material was the only vaccine known to the world of medicine. Not until the 1880s did Louis Pasteur of France discover a vaccine against the animal disease anthrax and, soon afterwards, a vaccine against rabies. As he acknowledged, his investigations were inspired by Jenner and the principle of inoculating an organism (virus or bacteria) to produce an innocuous infection which would subsequently protect against the much more severe natural disease.

Smallpox vaccine now became available in dried form

In 1894, Dr. Chambon and Dr. St. Yves Menard, at the Institute de Vaccine in Paris, dried vaccine in a vacuum-bell jar and used hot air to complete the evaporation process. Today, a freeze-dried vaccine has proved invaluable in the World Health Organization campaign to eradicate the disease. Because dried vaccine is more stable than liquid vaccine, there are obvious advantages in hot countries with poor communcation and storage facilities.

International concern about smallpox came comparatively late on the scene

Only in 1926, at the insistence of a Japanese delegate to an International Sanitary Conference, was the disease made internationally notifiable, as bubonic plague, cholera and yellow fever had already been. But before long, smallpox became the disease for which an international certificate of vaccination was virtually universally required from travellers around the world.

A revolutionary method of vaccination was first tried in 1968

A bifurcated needle, with double points, proved highly efficient in giving mass inoculations. It improved the rate of successful immunizations and required only a fraction of the amount of vaccine when compared with the single-pointed needle. With the bifurcated needle, a vaccinator can give protection against smallpox to over 1000 persons a day.

A "strategy for surveillance" made its appearance on the medical scene

Most national health services started off the theory that the formula to beat smallpox was simply to vaccinate everybody. But presently it became clear that, while mass vaccination plays an important role in slowing down smallpox transmission, the strategy must be one of surveillance and containment to break the chains of transmission from one person to another. Teams of health workers therefore maintain a continuing search for outbreaks of smallpox, and take fast and efficient steps to isolate and contain them.

Smallpox would be the first disease to be eliminated by man

This year, smallpox is expected to disappear from the earth as the World Health Organization finishes its mopping-up operations in the eradication programme begun in 1967. At that time, the disease ravaged 30 nations of the world and was imported by travellers into many others. In 1974 it was being stamped out in the last three countries. But the surveillance teams will continue to search for any hidden outbreaks and will be ready to pounce should any be found during the next two years. An enemy of mankind throughout the ages, smallpox is at last being controlled and wiped out by a well-co-ordinated international effort.

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ONCE
A
MONTH
CRAMPS

DYSMENORRHOEA

by ERWIN A. CRAWFORD, M.D.

ONE OF THE most common gynæcological complaints in women is painful menstruation. It is a symptom complex rather than a disease process. Primary dysmenorrœa usually appears one or two years after menstruation begins. The first few menstrual periods are not associated with ovulation (the production of an egg), and are called anovulatory periods. With this type of menstrual cycle, pregnancy will not occur, and the periods are not as painful.

When ovulation does occur, the ovary, during the last two weeks of the menstrual month, develops a special hormone called progesterone, and it is under the influence of this hormone that fluids are retained in the body. Many women during this part of the month are able to detect a significant weight gain.

The basic complaint of dysmenorrhœa is pain. If you pick five adolescent girls with menstrual discomfort, about three will have cramps, while the other two will complain of pelvic ache and discomfort. Cramplike pain in the lower abdomen, which comes and goes like a labour pain, may be sharp and griping. Sometimes at its peak it is almost unbearable, in fact, some women have found their actual labour pains no harder to bear than their previous severe menstrual cramps. Nausea and diarrhœa occasionally accompany this type of hard cramp. The steady, dull ache in the pelvis is accompanied by a bearing-down feeling over the bladder area and extending down the legs.

If these were the only symptoms, the percentage of cures would be much greater with our modern treatments. However, many of these patients complain of any combination of abdominal distention, painful breasts, nausea and vomiting, premenstrual tension, depression, irritability. Some of these symptoms may precede the actual bleeding by seven to ten days. However, the usual pain comes on 24 to 48 hours prior to the menstrual flow and persists for a varying time beyond the start of bleeding. Usually the severe cramps disappear within 12 hours.

What causes painful menstruation?

With such a wide range of symptoms it is understandable that no one specific causative factor explains all the variations. However, we lean toward the thought that the high-pressure age in which we live contributes to the symptom complex of the modern adolescent girl. Modern treatments have little to add to the bygone methods of rest, massage, hot baths, and remedial exercises. The mechanism of pain may be varied.

A mechanism that has been blamed for a long time is cervical obstruction. Normally the opening in the cervix of an adolescent girl is about the size of the lead in a pencil, while the same opening, after the birth of the first child, is nearer the size of the whole pencil. This may explain why so many women have relatively little trouble with cramps once they have had a baby delivered through the birth canal.

Occasionally the cause is associated with a womb that is not fully developed. This may reflect a poor nutritional state or deficient stimulation or use of the hormones made in the ovary (estrogen and progesterone).

If there is an imbalance of these two hormones, the contractions normally noted inside the uterus are increased in number and strength. When progesterone is not made, there is little or no pain. As menstruation is about to begin, the small coiled arterioles go into spasm, producing a lack of oxygen to the uterine muscle, causing pain much like that experienced in a leg cramp or the heart muscle during a coronary attack.

There is a growing belief that links this type of pain with constitutional and psychogenic factors, and it is well recognized that the individual tolerance of pain varies widely.

It is likely that the depression and irritability noted at the time of the period are due to the action of progesterone. This is a well-known culprit that constricts blood vessels and causes retention of water and

salt in the tissues. If there is œdema (swelling) and ischemia (lack of blood) in the brain cortex, this may then be the explanation of the increased sensitivity.

Attitude important

Certainly, the attitude of the woman toward this monthly visitor is important. To the woman who is afraid she might be pregnant, the onset of the menstrual period is a "friend," and it is rarely painful. But to the woman who looks on it as the "curse," the onset is painful, and any treatment is relatively unsuccessful.

Some investigators who say that the cause is psychogenic (all in the mind) are unable to explain why the well-adjusted woman receives benefit from specific medication but none from placebos (fake medicine). It well may be that the apprehension of dysmenorrhœa is the result and not the cause. Those who believe that the psychic trauma is the cause of the pain each month are unable to determine which comes first —the pain or the psychogenic response.

Meena sat in the physician's office, pain written all over her. Never in her nineteen years had she suffered agonies like this. What could be the matter? Physical examination gave absolutely no clue; she was a healthy young woman with no organic reason for her severe dysmenorrhœa. A little tactful exploration of another sort was indicated. Casual chitchat revealed a good relationship to her parents and no great problems in school or work. But gentle conversation regarding her social life was different. A very recent serious break with her fiance had threatened Meena's engagement. Emotional turmoil writhed its way into her womb and cried out in her pain. And as quickly as her dysmenorrhœa came, it left, once the rift with that very special young man was healed.

Simple treatment

The simple treatment of dysmenorrhœa should be tempered with the thought that the symptoms are of short duration, and the woman should be educated into what is normal. It should be stressed that discomfort is usual and normal.

Many well-adjusted women can be given "verbal analgesia" (reassurance as to why pain occurs) and obtain some relief of pain when they better understand themselves. As they improve their posture, exercise judiciously instead of going to bed, and avoid fatigue, they will note improvement from month to month. When combined with a low carbohydrate diet, a low salt diet, and either a laxative or a diuretic to remove the excess fluid retained in the body at menstrual time, very little other medication will be needed.

And as for the discomfort that may, with some, remain even with faithful attention to these measures, take cheer. Really, the symptoms don't last so **very** long. When you understand the significance, a "normal" amount of discomfort can be borne with patient equanimity.

The average woman during her menstrual life may expect only about 360 periods (about 13 a year), and more than one third of these are painless. Subtract from this number 10 to 12 for **each** pregnancy (18 if the baby is nursed at the breast), and the remainder are not hard to face. In this space age, time passes rapidly, and so does each menstrual period. They become almost a habit so that when this monthly visitor no longer comes, many women feel that they have lost a "friend."

The continuing adherence to the suggestions given above should steadily decrease your discomfort and increase your appreciation of your gift of femininity.

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LOAFER'S HEART or ATHLETE'S HEART

by ERNST JOKL, M.D.

DO YOU HAVE a "loafer's heart?" Chances are too good that you do—if you exercise too little and eat too much! The realization that exercise is good for the heart is relatively new; before 1930 many experts actually thought it to be a potential source of damage. Why this concept which we now know to be so wrong? There were three reasons: (1) many athletes have large hearts, and large hearts, regardless of the cause, were thought to be bad hearts: (2) exhaustion, common after maximum physical exertion, was mistakenly thought to be invariably an indication of acute heart trouble; and (3) infrequent but invariably dramatic fatal collapses during physical activity were erroneously considered to be the result of "heart strain."

Let's consider these three observations and discover what they really teach regarding the effect of exercise on the heart. But first, a bit of historical background.

Where the idea came from

More than one hundred years ago Prof. Karl von Rokitansky, of Vienna, did a great many autopsies in which he noticed excessively large hearts in patients who died from chronic heart disease, predominantly from high blood pressure (hypertension). When he weighed such hearts they were three to four times as heavy as a normal one. He dubbed such a heart **c. bovinum,** or "ox heart." We now know that such abnormal enlargements may also occur when the left chamber or ventricle does not empty completely (obstructive cardiomyopathy).

When it was discovered early in the 1900's that athletes also had large hearts, physicians jumped to the conclusion that intensive physical training may lead to the development of **c. bovinum.** Thus it is easy to understand why exercise was held in disrepute—who wants to have an enlarged heart and drop dead? This theory, of course, gave credence to the semimythological stories of fatal collapse due to physical exertion, such as that of the "runner of Marathon," who reportedly died on the market square of Athens in the year 490 B.C. after bringing the news of the defeat of the Persian invaders by the heroic Greek armies. Such yarns invariably appealed to the imagination of the man in the street. Strangely, they continue to appeal today, and not alone to him. In 1957, one of the most respected American medical journals published an article containing a highly imaginative elaboration of the completely unsubstantiated assertion that marathon runners "take such fierce pride in their endurance that they drive themselves to a point of collapse and death."

What about heart size?

Because athletes have been implicated and since it is easier to control their diet, exercise, sleep and other daily habits than those of other people, they have been extensively studied.

During the 1928 Olympic games in Amsterdam, Profs. F. J. J. Buytendijk of Holland and Herbert Herxheimer of Berlin made the first really scientific study of the size of the athletes' hearts. Chest X-rays of the participants showed that the enlarged hearts occurred almost exclusively in competitors in the **endurance** events— long-distance running, cycling, and swimming. Because of detailed studies that have been carried on since 1928 to learn the effects of exercise on the heart, we now know the differences between Rokitansky's abnormal **c. bovinum** and the top-shape large athlete's heart and the heart of the average sedentary person that weighs around 12 ounces:

C. bovinum

Reduces physical fitness
Weighs more than, 1,000 grammes (34 ounces)
Becomes progressively worse
Results in early death

Athlete's heart

Improves physical fitness
Weighs less than 500 grammes (17

ounces)
Growth stops parallel with a given level of physical endurance
Results in superior cardiac health and longer life expectancy

Heart size in an athlete is meaningful only as it is compared to body size. For example, the 1971 woman champion of the 1,500 metre race of Germany, an **endurance** event, has a heart that, **in proportion to her size,** is twice as large as those of the two male discus throwing competitors in relation to their size. Yet she weighed a mere 112 pounds, while each of them weighed just under 300 pounds.

In fact, to be successful in endurance events it is a distinct advantage for an athlete to inherit a large heart. Swedish girl swimming champions had hearts considerably larger than those of untrained girls. Four years after discontinuing training their hearts were still large, though somewhat smaller than they had been at their peak.

Athletes' hearts may shrink

Walter Ruett, one of the world's best-known long-distance cyclists, had X-rays taken during the twenties and again twelve years after he retired. They revealed that there was a considerable reduction in the size of his heart after he stopped his cycling. Five young athletes were studied before and after twenty-one days of bed rest. During the brief period of inactivity their hearts became noticeably smaller. It took sixty days of daily training to re-establish their pre-experiment heart volume.

Exercise and life expectancy

Prof. Martti Karvonen of Finland compared groups of skiers with physically inactive city dwellers in Finland and found that the skiers lived from five to seven years longer. His research team compared the heart condition of 61 former champion long distance skiers, ages 49 to 78 years, with that of the sedentary city folk. The amount of heart disease in the ex-athletes was distinctly less.

When Dr. Paul Dudley White of Harvard University studied a group of men who had been football players when students and were now more than 60 years old, he found that those who had continued to lead an active life were healthier and lived longer than those who had become careless in their habits.

What about other coronary risk factors?

Are there any other factors that may cancel the beneficial aspects of exercise on the heart? Indeed, and the most common of these are heredity and smoking. On the other hand, some known coronary risk factors do not always cause trouble, such as high cholesterol readings in an outstanding girl athlete, her mother, and grandparents, all of whom are fit and not fat, and whose physical performance capacities are conspicuously high. A routine electrocardiogram (EKG) of an internationally renowned soccer player, recorded during a routine annual medical exam, was found to be abnormal. It was not, however, associated with any impairment of his ability to perform. A similar EKG from a person with chest pain would inevitably have warranted a diagnosis of heart attack. Both the soccer player and girl athlete remained active and enjoyed good health for a number of years after their conditions were first discovered.

But what about collapse after exercise?

Collapse after physical exertion, which is mistakenly blamed on the heart, is the result of either a condition called effort migraine; primary loss of consciousness; collapse upon standing erect; or sudden overwhelming loss of muscle power, sometimes called "powerless attacks." During the 1968 Olympic games at Mexico city they occurred with unprecedented frequency; the altitude was evidently a major factor. Study of the athletes involved showed that none of them collapsed because of any heart problem and none of them developed heart disease.

Exercise and sudden death from heart disease

Unexpected sudden death of **athletes** due to heart disease is a rare event. It can occur in young persons as well as older ones. Dr. J. T. McClellan and I studied the causes of 100 deaths during exercise. We found that the trouble had developed "silently," without giving any warning symptoms and without causing loss of physical fitness. Autopsies showed that the most frequent cause of death was plugging of the small arteries which feed the heart muscle (coronary atherosclerosis), with degenerative change in the muscle of the heart. Other causes of death were birth defects of the coronary arteries, inflammation of the heart muscle (myocarditis), tumours of the heart, and defective heart valves. All of these persons had heart trouble to begin with.

Don't be afraid to exercise

So we now know that exercise is **good** for your heart. The large hearts of athletes are desirable; they supply the nourishment and oxygen that the working muscles must have. The exhaustion which sometimes follows maximum exertion is not a matter of heart failure. And the rare deaths of athletes during exercise were due to previously existing and undetected heart disease. It is apparent, then, that if your heart is normal, even the most strenuous exercise will not cause your death. ***

MODERN PROSTHODONTIC SCIENCE CAN HELP RESTORE YOUR MOUTH WITH BEAUTIFUL, NATURAL-LOOKING TEETH FOR A WINNING SMILE AND AT THE SAME TIME ASSURE REASONABLE COMFORT!

DENTURES ADVENTURES

by JOHN O. NEUFELD, D.M.D., M.S., F.A.C.D

YOUR MOUTH is not an island. It affects your personality, your self-image, your happiness, and your health. Nowadays everything is geared toward youth, virility, and femininity. Advertising has almost convinced us that the use of dentures in its highest form rehabilitates much more than merely a man's mouth. It straightens his backbone, helps him throw back his shoulders, permits him to face the future with confidence, and have a twinkle in his eye as well.

Looking at a face is much like looking at a room. When everything is harmonious and neat your first impression is one of beauty. Now, if a torn or wrinkled newspaper is on the floor, what is the first thing you see? Right! The newspaper. And you miss the beauty of the room. The same principle holds true if the mouth and face are not in harmony; we see the broken-down mouth and may miss the beautiful personality of the individual. Our faces express our friendliness, sincerity, integrity, warmth, personal identity, and attitudes. The teeth either detract from or enhance the face, for the shape of the lower third of the face is affected when natural teeth are lost, and decayed and broken-down teeth reveal miserable neglect.

Prosthodontics not only attempts to restore function and speech but actually rebuilds a person's portrait for physical comfort and mental well-being. Too often this inner satisfaction is lost when the teeth are lost. However, dental science is accomplishing miracles in replacing natural teeth with artificial substitutes that may be undetected by the most scrutinizing eye.

The use of the dentures is and has been for the past twenty years increasing at a fantastic rate. George Washington probably never dreamed that nearly two centuries after he obtained his, artificial teeth would look so natural that they could not be detected. His teeth were an awkward-looking lot, resembling neither his original ones nor

anyone else's in size, shape, or form. They were held in place with complicated spiral springs which had a way of getting out of order at the most inconvenient times.

Granted that today's dentures are a vast improvement over Mr. Washington's teeth, none are so good as your natural teeth that have the roots socketed into the bone almost three-fourths inch. Artificial teeth, instead, sit on top of the bone, with only a thin and often very tender mucous membrane between the hard denture and sharp or rough bone that supports it. This is why dentures are considered to be only about one tenth as efficient as natural teeth. Really they are merely a crutch to help chew and enjoy your food once your own teeth have bidden you farewell.

In spite of living in this modern era, man still clings to a few old-fashioned myths that are very misleading. Some are that to preserve one's teeth he must give up *all* sweets; denture replacements are as good as natural teeth and, at best, even better; it is less expensive to have teeth removed and replaced than to exercise preventive methods; and that dental difficulties are settled for life with dentures.

Too often putting in artificial teeth does not end the tooth problem. In fact, in many cases the dentures begin the problem of searching for comfort, which may prove most elusive. Many individuals have a small fortune tied up in the bags of dentures they carry around. One uncomfortable user arrived in the office carrying his 35 sets, claiming that none of them was constructed correctly. The dentures were blamed for malfunction, but the real reason for the failures was an uncorrected medical problem.

Visit your dentist regularly

Because continual changes take place in our mouths, dentists suggest yearly checkups, even for individuals with partial or complete dentures. Poorly fitted dentures destroy the supporting tissue much faster than do well-fitted replacements.

If your natural teeth had a tendency to collect a lot of tartar and you had to have your dentist remove it occasionally, you will have similar problems with your dentures. Your dentist will clean, smooth and polish them so that they are easier to keep spick and span.

The dentist is responsible for guarding the health of the tongue, palate, cheeks, gums, pharynx, and floor of the mouth as well as the teeth. He may detect hidden or incipient problems, for there are a number of diseases of the body as a whole, as well as certain cancers, that appear first as changes in the mouth, of which the person is unaware. Conversely, many uncomfortable dentures may not be the fault of the denture, but the discomfort or inability to tolerate them may be due to high blood pressure, diseases of the blood or endocrine glands such as diabetes, nutritional deficiencies, and many other problems.

Most important of all reasons for denture wearers to see their dentist regularly is early detection of cancer. Mouth cancer frequently begins as a white patch in the mouth. An ulcer or sore that won't heal in a week, a foul odour, or new growth may be the warning that you are flirting with cancer. About 95 per cent of mouth cancers are curable if detected early. It is easy to understand how a lung or stomach cancer can remain hidden, but there is no excuse for cancer to exist in the mouth, because it obviously can be detected and treated at an early stage.

Immediate dentures

A healthy tooth is a working tooth. If some of the teeth have been extracted, they should be replaced by either a fixed bridge or a removable partial denture, as recommended by your dentist. This prevents the rest of the teeth from shifting and keeps the work load distributed to the whole mouth.

If all of your upper teeth or both upper and lower teeth must be extracted, it is no longer necessary except in rare instances to go toothless for months waiting for the gums to heal. The immediate technique makes it possible to replace your extracted teeth within minutes with dentures that were prepared for you prior to extraction. In this manner the dentist can duplicate or even improve upon the appearance of the natural teeth.

One of the biggest causes of discomfort and misunderstanding following immediate denture insertion is that the gums will progressively change over the next 12 to 18 months. Regardless of how well they are originally constructed, dentures become loose. They are not a permanent fixture, any more than are your glasses. The dentist may have to temporarily reline or shim up your dentures to accommodate changes in the gums. At the end of this severe adjustment period, a new impression is made for the regular reline and the denture is completely rebuilt for comfort and appearance. At times it is more desirable to use the original immediate denture as a treatment denture and later on, instead of doing the regular reline, prepare a new denture. In this way the first denture can be used as a spare, in case of emergency, breakage, or loss.

Mrs. Brown was visiting some friends in San Diego. As she tucked herself into bed one evening her dentures, which had seen many, many years of service, bothered her. So she slipped them out and placed them on the rug under the bed. Morning arrived, but the dentures had disappeared. Chagrined and embarrassed, the toothless guest faced her friends with her tale of woe. Then, to the surprise of all, in pranced Rover, the family dog, smiling through both his and hers.

Relining or balancing the occlusion of dentures is one of the most delicate of procedures, and we see more dentures ruined by poorly done relines than for any other reason. Because of this we strongly advise against do-it-yourself kits. This kind of reline is one of the fastest methods known for destroying good denture-supporting tissue in the mouth.

New dentures, instead of relines, are recommended if changes in appearance are desired. Your dentist can also duplicate the original immediate denture as a spare to be used when regular relines need to be made and the dentist needs to keep your dentures for a few days.

Professional treatment only

The desire to save money is most tempting when quack technicians or dentists offer to make dentures at a bargain basement price in shoddy dental laboratories. You should realize that when you allow anyone to work in your mouth who is not trained or qualified and has no clinical experience in differentiating between healthy and diseased tissue or knowledge of the value of X ray and its interpretations, you are running the risk of injury to your mouth and the possibility of some problem such as cancer.

How to enjoy your dentures

It's most likely you'll never grow another set of teeth! So you need to learn how to enjoy your dentures.

A good mental attitude is your biggest asset. Some people fret and stew about their teeth, just as they do about eyeglasses, shoes, and what have you. Give the dentures a fair chance. Wear them! If sore spots develop ask your dentist to make the needed adjustments. Your mouth was never intended to support dentures.

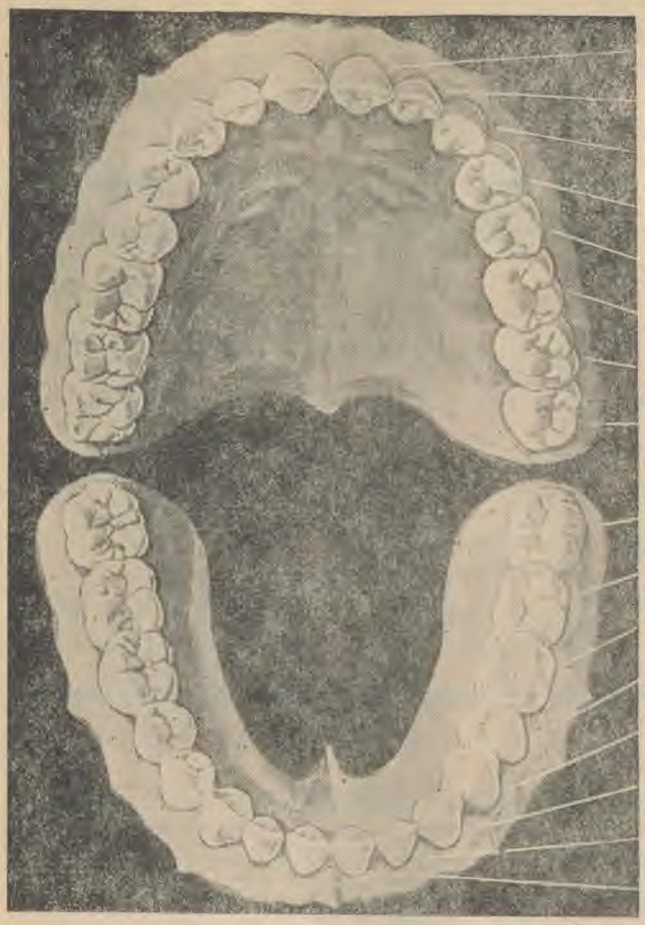
Most denture patients are unaware that the tissues of the mouth are directly affected by their general health. The amount and type of saliva, the texture and resistance of the mouth tissues, the ease with which injury to the mouth can occur, and the length of the healing period are all influenced by your general health. Many common disorders such as high blood pressure, ulcers in the digestive system, and nervous conditions can create problems for denture wearers. Overindulgence in alcoholic beverages, excessive refined foods because they're easy to chew, or poor nutritional habits also can bring on undesirable conditions in the mouth. Loss of weight will make changes in the ridges, and any extended illness will usually affect the tissues of the mouth and hence the fit of your dentures.

Tips for wearers

When you first begin wearing dentures, flavours may not be sensed well, so take small bites of food and don't hurry. Follow the trick of placing half of each mouthful on the right side and the other half on the left. This distributes the pressure and helps stabilize the dentures.

When biting into a sandwich or the like, don't pull as you did with your natural teeth. This is the wrong way to bite with dentures. As you are biting, *push in* on the teeth with the sandwich and twist. This provides the correct leverage to keep the dentures in place.

A lady denture wearer of fifteen years, when informed of this inward pushing pressure, at long



last learned how to eat corn on the cob, apples, and other hard foods that she had not been able to manage before. This inward pressure tends to more tightly seat both upper and lower dentures. Remember that where too much tissue destruction has taken place in the mouth, some foods may be off limits.

A sneeze, a cough, or any sudden blast of air can send your dentures flying! This quick upsurge of air lifts the soft palate and shuttles the blast of air behind the upper denture. So be on the alert for this or tie them in well.

Not very often do five water skiers glide abreast, and Bill was having the time of his life. What fun!—until a sharp spray of water suddenly struck his open mouth and flushed out his upper denture. Dropping rope and skiis, Bill dove for his "china clippers," but never got close enough to capture them. As the dentures rocked downward they seemed to be waving farewell. When Bill got home he greeted his family: "Look, Mom—no teeth. Only one cavity!"

The birthday party was a gay one—especially when Grandpa blew out all 83 candles. Requiring a lot of wind for the task, Grandpa took a deep breath and let go—so did his dentures! They took off and landed on the soft gooey cake, burying themselves in the seven-minute icing. The soft landing strip, fortunately prevented any breakage—but who wants a piece of cake!

Denture hygiene

Should you wear your dentures at night or leave them in a cleaning solution by your bed? If your gum tissue is healthy, you may keep your dentures in at night. Approximately 75 per cent of people with dentures wear them at night. But surveys show that among those who do there are more complaints of irritated and inflamed tissues in the mouth. Particular attention to keeping your mouth clean and massaging the gums will help prevent such conditions.

Your oral hygiene combined with denture care is very important. Twice a day brush the gums for 5 to 10 minutes with a soft gum brush to massage and improve the circulation. At the same time brush the tongue. Bad breath often comes from food decaying on the tongue. Your breath can be kept sweet if dentures and tissues are kept clean. Dentures themselves have no odour.

While brushing your dentures, hold them securely above a towel or a basin of water as a safety precaution so they will not crack if dropped. Brush and clean your dentures with the same detergent you use for washing dishes. A good night-soaking solution to keep tartar off the dentures (not metal partials) is two teaspoons of bleach in a glass of water. When any form of bleach is used to dissolve tartar, a soda solution should be used to neutralize the bleach before wearing the dentures. After soaking, brush them clean.

You can enjoy your dentures

You may never learn to enjoy your dentures until you act as though they are your natural teeth. Don't feel sorry for yourself or grieve about the loss of your natural teeth. Try to improve and learn additional ways of handling them successfully. Though your natural teeth are gone, be glad you don't have to face the world toothless. Dentures improve your appearance, your personality, your speech, and your chewing ability. In fact, they can give you a new lease on life—as well as add years to your beautiful smile. ***

by JONATHAN KELLY

VICTORY NOW IN SIGHT

Victory is now in sight in the World Health Organization's campaign to vanquish smallpox from the earth. With the present tempo of progress, the last case of smallpox should occur sometime this year (1975), freeing our planet, once and for all, from man's most feared and devastating disease.

As no other disease, smallpox, across the centuries, has inflicted untold suffering and death around the globe among rich and poor alike, in every country and in every climate. Until the discovery of mankind's first vaccine, nothing could be done to prevent it and even today there is no cure.

The discovery of the vaccine, in 1796, was lauded both then and now as one of medicine's most important discoveries. And even then physicians with vision recognized in the vaccine the promise that some day smallpox might be eradicated.

But for generations the promise remained only a hope. Not only was the vaccine difficult to preserve and transport, but a mechanism to organize and to co-ordinate the necessary global attack on smallpox did not exist. Millions continued to suffer and die. However, with time and after millions of vaccinations, smallpox began to retreat — from Australasia, from Europe and from North America. In the 1950s, eradication campaigns in the Americas managed to eliminate the disease from all but one country — Brazil — but this country alone was half a continent. In Asia and Africa, vaccination programmes held the disease partially in check, but epidemics continued to sweep both continents.

Finally, the World Health Assembly decided that the time had come to marshal the necessary human and material resources for a worldwide campaign against this disease which for so long had menaced all peoples around the globe. With the World Health Organization serving as the co-ordinator and controller, a Grand Alliance was joined.

That was in 1967, when smallpox was endemic in 30 countries and was imported by travellers into a dozen others. During the ensuing seven years, more and more links in the deadly chain of disease transmission were broken, until in 1975 smallpox remained in only three countries: Bangladesh, Ethiopia and India.

At the outset, most national health services proceeded on the theory that the formula for overcoming smallpox was, quite simply, to vaccinate everyone. Gradually, however, it was recognized that while mass vaccination plays an important role, a more efficient eradication strategy is summed up in the slogan of surveillance and containment. By this is meant continuing search for outbreaks of smallpox — followed by fast and effective steps to isolate and contain them.

Smallpox, or variola, is an unusual disease. Only man can harbour, and then relay, its deadly virus. If he does *not* relay it, the perilous chain of transmission is severed and the outbreak comes to an end. Among some remote or nomadic populations, the chain of transmission may sometimes be broken spontaneously when patients fail to transmit the infection to others. But in more crowded areas a barrier of vaccinated persons must be created to stop its spread. This is done by surveillance and containment teams of health workers.

Good vaccine and a simple and effective way to administer it are essential to the success of any eradication effort. But when the WHO programme began, almost none of the vaccines in use was potent and stable. In many areas, liquid vaccine was in use — a form which could not withstand tropical temperatures for more than a day. The World Health Organization provided equipment and consultants to help the countries produce a freeze-dried form of the vaccine which could be kept for a month or more at high temperatures and still remain effective. During the first years of the programme, large quantities of vaccine were provided by the developed countries — USSR, United States

of America, Canada and many others. But, steadily, vaccine production increased in the developing countries themselves, and now more than 80% of all the vaccine they use is locally produced. The vaccine is regularly tested by international centres and all of it meets accepted standards.

Vaccination techniques in 1967 were almost as much of a problem as the vaccine. In Asia, use was made of a primitive device called the rotary lancet, which caused infection and severe reactions. In other areas, the vaccine was scratched into the skin, but often such vaccination attempts were ineffective. WHO introduced first the jet injector and later the inexpensive bifurcated, or forked, needle. This needle proved to be as revolutionary an advance as was the safety pin in its day. Today, a vaccinator using this needle can give much more reliable protection to many more persons in a day than ever before — while using much less vaccine than with the older techniques.

When the programme started, the endemic areas were divided into four strategic regions: South America, Indonesia, Africa and Asia. South America became free of smallpox when the disease was eradicated by Brazil in 1971. Indonesia accomplished its eradication task in 1972, by which time variola had also been eliminated from most of Africa and Asia.

About this time, investigators began to discover in Africa cases of a strange infection. It closely resembled smallpox, but the infected persons did not spread the disease to others. Curiously, most of its victims seemed to live in places having large populations of monkeys, or where monkeys were consumed as food. And so for a while, scientists wondered if monkeys might prove to be a non-human reservoir of variola. They were understandably alarmed, for if monkeys harboured smallpox, how then could the disease ever be eliminated? Fortunately, WHO reference centres and collaborating laboratories, studying the viruses isolated from the sick, concluded that the mystery ailment posed no threat to the eradication of smallpox, being a human variety of monkeypox, a relatively innocent malady. Only 18 cases in all have been found, the most recent reported from Zaire in August 1974.

In 1972 with evidence that monkeys were not a problem, the eradication campaign embarked on its final phase — with programmes in every part of every one of the seven countries that remained endemic. During 1973, the list of endemic countries was reduced to four and in 1974 to only three. Increasingly, more cases of smallpox were reported as more health workers concentrated more intensively on the shrinking strongholds of the disease, and pushed the virus back into its final refuges. By now there was a clear tone of confidence that this age-old killer *could* be vanquished from the whole world, and of confidence that indeed it *would* be.

Progress against smallpox was by no means easy, or even steady. For various reasons, flareups occurred in different places from time to time. Even in Europe, where there had been no serious outbreak since World War II, 1972 saw a sudden outbreak in Yugoslavia with 175 cases — of whom 35 died. Yet the long-range trend speaks for itself: in 1974 fewer than one-tenth the number of infections were reported than were estimated to have occurred just a few short years ago when WHO launched this historic campaign.

Even within the few countries that are to become the final victors over variola, the disease has already been confined to relatively small areas. Often these areas are particularly deficient in transportation, communication or health facilities: their inhabitants sometimes are resistant to the notion that smallpox can be prevented by some strange pricking on the arm — or even that it should be prevented. The Indian state of Bihar is one such area where the final disease pockets are now being eliminated, to be followed by strict surveillance to detect and contain any possible outbreak in the future.

But there is, unquestionably now, the exhilarating feeling that the world is about to be freed of a germ that has ravaged the human race for all of mankind's history.

Already, in many areas, the resources developed to overcome smallpox have been turned against other serious health problems — tuberculosis, tetanus and measles, among others. But now, when health services enter the struggle against these other diseases, they are all the better armed and alert for the experience and strength they have gained in overcoming variola.

With this triumph, man will look out upon the world and see it for the first time freed of a major disease by his own difficult, but patient effort. He can begin to dream of other health victories he is capable of winning now. Certainly, seeing what he *has* done, there is no escaping the many other challenges that beckon him to prove again what he *can* do to advance the common cause of better health for all. ***

IS NOT THIS the fast I have chosen? to loose the bands of wickedness, to undo the heavy burdens and to let the oppressed go free, and that ye break every yoke? Is it not to deal thy bread to the hungry, and that thou bring the poor that are cast out to thy house? when thou seest the naked, that thou cover him; and that thou hide not thyself from thine own flesh? Then shall thy light break forth as the morning, and thine health shall spring forth speedily: and thy righteousness shall go before thee; the glory of the Lord shall be thy reward." *The Bible.*

Included in the teaching of a sacred book, the Bible, are God's great psychological laws. In the Isaiah passage quoted above, God seems to be saying, Show your love to others and you will receive benefits. By the very act of doing good, our minds comprehend the great mystery of God's love and life's ultimate purpose. . . . and the empathy we feel for the downtrodden members of humanity will endow our physical bodies with new energy that will help take away emotional and psychosomatic illnesses and help to cure even our physical ailments.

The curse of the modern-day religions is not poverty and deprivation but "fulness of bread, and abundance of idleness." It seems to be a belief of some that they become righteous simply by attending to their respective worship services and practising religious ceremonies. But we do not become righteous solely by going to worship regularly, or by practising religious ceremonies even though such practices are commanded in the Scriptures. True religion requires that we exercise the principles of justice, mercy, and humility. This includes love for our fellow man. This love can be shown by ministering to the material needs of the unfortunate, the poverty stricken, the afflicted, and those who carry heavy burdens.

Out of the tragedies that come upon our fellow man, we may receive a blessing.

Spiritual Significance

We do not grasp the spiritual significance of giving, fasting, and observance of holy days if we do these things merely to earn salvation. To be sure, being a devout person does include practising the rites and ceremonies of religion, but it is in the life lived before our fellow men that the presence or absence of true religion is manifested. True fasting is not just a matter of abstaining from food; it includes the sharing of our food with the hungry.

Those who minister to the needs of the downtrodden are promised rich material blessings even in this life: "Give and it shall be given unto you; good measure, pressed down, and shaken together, and running over, shall men give into your bosom. For with the same measure that ye mete withal it shall be measured to you again" (Luke 6:38). Furthermore, we receive the love and gratitude of those unfortunate ones who are helped. Because of these blessings and because we are doing the will of God we are being spiritually nourished.

But more than this, there is an additional blessing. Doing good to others in the spirit of true religion will cause our health to improve. In other words, God says that when we contribute to the well-being of others, a beneficial reaction takes place in our physical bodies. Thus our physical being is intimately related to what we do for our fellow men.

Modern psychological research attests the above statements. God has indeed placed this basic psychological law within our brain and glands. The only requirement is that the good deed be motivated by sincere, heartfelt love and sympathy for the unfortunate ones.

In the lower part of our brains, we find two mechanisms, the hypothalamus and the limbic system. These mechanisms control the emotional

by OMAR L. WAGONER

AN EASY ROAD TO BETTER

side of our lives. When we think gloomy, angry, unkind, or selfish thoughts, the neurons in this area of the brain fire nervous impulses to the pituitary gland that lies just below the brain, causing it to produce a hormone called STL. When too much STL circulates in the blood, it causes the adrenal glands, located slightly above the kidneys to produce too much of the hormone DOC and other substances called the proinflammatory corticoids.

These substances were designed by God to equip the body to defend itself against disease. They cause the blood pressure to rise; the heart to beat faster. Blood vessels contract in the internal organs and expand in the muscles. Inflammation may be set up by these substances in any part of the body, especially in the sinuses, throat, lymph nodes, and intestine. If we have an infection or toxin in the body, these substances help to trap the offending organisms and destroy them.

But when the outpouring of these hormones is caused simply by negative thinking, their effect is harmful to body, mind, and soul. We ache and hurt all over; we feel too hot or too cold; our stomach distends with gas; we feel exhausted, discouraged, and depressed. Long-continued emotional states of a negative nature will eventually cause psychosomatic disease and can finally result in almost any form of illness.

On the other hand, when our hearts are filled with love, tenderness, and sympathy, the hypothalamus and limbic system send forth impulses that cause the pituitary gland to secrete ACTH, which, in turn, causes the adrenals to secrete cortisone and other substances called A-C corticoids. These substances tend to cause the blood pressure and heart rate to return to normal. The internal organs are supplied with additional blood to improve their work of digestion, elimination, and assimilation; any inflammation in the body begins to subside and gradually clears up. The person tends to have a feeling of peace, relaxation, and optimism. Long-continued emotional states of a positive nature result from welfare work properly motivated. The body will be strengthened as a result and be aided in its efforts to repair itself.

HEALTH

A Psychological Law

It was Dr. Hans Selye, of the University of Montreal, who discovered this great psychological law. He found that animals fed on high-salt diets and placed in a stressful environment produced large quantities of DOC and the P-C corticoids. These animals died much sooner than those fed on a low-salt diet in a nonstressful environment. The experimental group showed symptoms of stress and all the negative emotions and quickly developed disease, heart attacks, and strokes. He concluded that the effect of unkind feelings and selfishness upon human beings could be similar.

Thus when the Lord Jesus said, "It is more blessed to give than to receive," He was speaking a great psychological law—a natural law that He had placed in our bodies. Solomon stated the same truth when he said, "A merry heart doeth good like a medicine." We cannot estimate the value of a warm, kindly atmosphere of love, but those men and women who do welfare work in the proper spirit seem to carry with them a soft and gentle atmosphere. Even their countenance radiates and expresses the peace that swells in the soul. This atmosphere will benefit not only their own health but also the health of all who come in contact with them.

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Guide to Healthful Living

EARS

ASK A CHILD what part of his body enables him to hear and he will say, "My ears," touching the external features attached to the sides of his head. But the truth is that what we call the ear is only a minor part of the sense organ for hearing.

There are three distinct parts to the ear: 1) the EXTERNAL EAR is made up of the **projection on the side of the head** which serves as a funnel to direct the sound waves into the **ear canal.** This canal is a little more than 2.5 cm. in length and ends blindly, at its depth, at the **tympanic membrane** (eardrum); 2) the MIDDLE EAR is the **air-filled cavity** located just beyond the tympanic membrane and is connected through the auditory tube (called the eustashian tube) with the back part of the pharynx. Thus the tympanic membrane has air on both sides and can vibrate freely when sound waves strike its external surface; 3) The INTERNAL EAR is really the essential organ of hearing, for in it the energy of the vibrations produced by the sound waves is converted to nervous impulses which, in turn, are carried to the brain. The internal ear includes the **cochlea,** the essential organ for hearing, and the **semicircular canals** which function as the sense organ for equilibrium.

Possible injury to the tympanic membrane constitutes one of the first dangers to be avoided in the care of the ears. Any object introduced into the ears for cleaning out wax is a dangerous practice, and that is why someone humorously said that nothing smaller than a person's elbow should ever be put in the ear! If you are troubled with ear wax, it is wise to have a qualified person remove it to safeguard against injury to the tympanic membrane.

The ear is a delicate organ and an earache can be caused by various reasons. One form of earache is caused by an inflammation and swelling of the delicate skin lining the canal of the external ear.

Another cause of earache is pressure on or injury to the eardrum. This may come from severe pressure, from actual infection of the eardrum, or as a part of an infection of the middle ear (otitis media).

Otitis media is usually caused by germs that have spread from the nose or throat through the auditory tube to the ear. As a rule, it is a common cold that gets the germs started on this path, either due to forcibly blowing the nose or through a throat infection.

This infection is usually accompanied by fever and chills, the ear feeling full, and there may be partial or complete deafness. There is a great danger that the eardrum will rupture, and without proper medical care, permanent damage may result to the eardrum. There is also the possibility of an infection to spread into the mastoid cells behind the ear. A doctor must be consulted in this situation.

If you are confronted with an earache without infection, here are some suggestions that you can try at home:

1. At the first twinges of pain, apply to the ear a hot-water bottle or some other source of steady heat.
2. Consult a doctor if attacks of earache are frequent or if any attack lasts more than a few hours.
3. Temporary relief from pain may be obtained by dropping 2-3 drops of warmed medicated ear drops or olive or salad oil into the affected ear.
4. A nasal decongestant spray or nose drops used four times a day for two or three days will aid drainage and aeration of the nose and auditory tubes.

VACATION

TRAVELLING IS OFTEN a trial. Now that the holiday season has come, many are making decisions where to go, when to go, and how to go. The high cost of petrol may force some to forfeit a longer trip. They will vacation closer to their homes. Whatever the case, no doubt some travelling will be involved.

Travelling with children can be quite an experience. What to eat and how to pass the tedious time are the main concerns. These problems usually fall on mother's shoulders.

What to eat usually turns out to be the easiest problem to solve since a few snack foods can be brought right along in the car, train or bus. Giving the restless child something to eat is an easy way of keeping him quiet and occupied.

But, before you plan such a scheme, think! Is it good for a child (or anyone for that matter) to be eating continually from morn till night? No, it is not. The food we eat, how and when—is one of the most vital things we do in our everyday life. And yet we give so little thought to it.

Overeating and eating at the wrong time are two violations of good eating habits. The functions of the body are based upon rhythmic action. For example, the heart beats regularly, also the process of respiration is carried on in the same manner, without our giving thought to it. The digestive organs undergo this same rhythmic action by way of peristaltic contractions. The contracting movement aids in the digestion and absorption of food as well as in the elimination of wastes. Irregularity in eating disturbs this rhythm and is one cause of indigestion and constipation.

The stomach is normally emptied in four hours. If food is taken between meals, it puts such a burden on the stomach that it has to double its efforts and consequently doubles the time for complete evacuation. This is a major cause for dyspepsia. There is a saying that goes like this: "The way to a man's heart is through his stomach." Well, it could be said that the reason for a man's bad disposition is **because** of his stomach!

* * *

Subscribers of **Herald of Health** have responded to this regular feature, "Around the Home." One writes that she would like to share some of her tasty dishes with the rest of the readers. We welcome such recipes. We prefer that the recipes be vegetarian since we here at **Herald of Health** are vegetarians!

This same homemaker also included in her letter a few household hints that she has found helpful. Here are two:

To aviod foam in the oil while frying such things as murukku or appalams, just add a little tamarind—and presto! no foam.

While boiling eggs, just add a little common salt, and this will prevent the eggs from breaking.

P. Kingsley, Madras

TRAVEL

A fun travelling game for the whole family is to watch the billboards and other signs and see who can find all the letters of the alphabet in order first. Even guessing what colour the next car is going to be can be fun and points can be kept for each player.

* * *

If gummed labels or stamps get stuck together, place a piece of thin paper over them, then iron. They will come apart easily and the gum will be intact.

* * *

Hot vinegar is useful for a festered finger. Dip as hot as possible, and you will find that the finger will soon discharge, and the pain will be eased.

Soak a piece of cloth in vinegar and place across the forehead for relief of nervous headache.

Tired aching feet can be pleasantly relieved by sponging with pure vinegar.

* * *

Wheat products, such as flour and breads, both leavened and unleavened, are not rich in the essential amino acid, lysine. A report from the Central Food Technological Research Institute, of Mysore, shows that adding small amount of lysine (0.3 per cent or less) to flour from which leavened or unleavened bread is prepared, greatly improves the quality and utilization of wheat protein. They suggest that in developing countries where whole-wheat products are the staple food, fortification with lysine would be a benefit.

WHAT MAKES A DRUG ADDICT?

SOME PEOPLE claim to be able to spot drug addicts on the street or in a crowd just by their supposed unusual facial expression and general appearance. I doubt if this spotting can be accurate.

Anyway, addicts, for the most, were perfectly normal people before some combination of circumstances *plus the drug to which they are now addicted* set them apart as different—different because they have become dependent on the use of a drug. And even now their conduct is reasonably normal *provided* they have been taking their usual doses of the drug *provided* they feel certain they will have no difficulty in obtaining the next few doses.

The heroin addict, for example, may have good reason to worry about how he will obtain his next dose of the drug. To obtain the drug in the amounts he requires may cost as much as Rs. 100 per day. Usually he knows where he can get the drug, but getting the money with which to purchase it may not be easy.

In most cases the heroin addict does not have the personal abilities to earn by honourable means the money it takes to support his habit. So, short of experiencing a cure, he has no recourse but to obtain the money day by day in ways that are dishonest or indecent. Thus it is that heroin addicts are usually involved in shoplifting, burglary, prostitution, procuring or drug-peddling. Obtaining money in sufficient quantities and then obtaining the drug becomes the addict's way of life. His first thought as he wakens in the morning pertains to his need for the drug. His last thought at night centres around his plans for securing another dose when he awakens.

Addicts realize their plight and regret that they have become dependent to the extent that they are helpless without the drug. But any good intentions they may have for quitting their addiction are quickly dispelled by the ever-present dread of the suffering they will pass through should they fail to get the next dose on time.

With heroin, the symptoms of withdrawal begin after about eight hours of privation and continue to be progressively more severe for the next three days. The symptoms begin mildly with a running nose and unnatural watering of the eyes. Gooseflesh then appears, along with profuse perspiration. Later muscle twitchings and severe muscle cramps are added. The victim cannot sleep, partly because of his irritability and partly because of vomiting and diarrhœa.

One would suppose that anyone who finds himself in such a plight would be energetic in warning others against the use of habit-forming drugs lest they, too, should become addicted. On the contrary, however, the addict actually becomes ingenious in tricking others into sharing his experience with drugs. The reasons for his aggressive "proselyting" are partly psychological and partly monetary. By persuading others to share his way of life, he partly assuages his self-condemnation and humiliation for belonging to an unpopular minority. Then, if he can serve as the agent through whom new addicts obtain their supply, he can thus get the money with which to provide his own needs.

In this article I am concerned not so much with describing the horrors of addiction as with discovering the answer to the question, *What makes an addict? What makes a person vulnerable to drug dependence in the first place?*

The fundamental conditions that set the stage for addiction vary from case to case. Also, the particular pattern of drug dependence is different with one kind of drug from what it is with another. So, before we find our answer to the question, *What causes addiction?* we must first mention the four categories of drug that are habit-forming:

1. *Narcotics.* The principle examples of the narcotics are heroin, codeine, and morphine. Morphine is valuable as a pain-killer and is used extensively, on doctors' orders, for the relief of suffering from accidents and from the tissue destruction caused by cancer, and in connection with illnesses requiring surgery. Morphine is not dangerous when used expressly as the physician directs. Codeine is also frequently prescribed by physicians for the relief of pain in certain respiratory ailments. Heroin, like the other narcotics, is derived from the opium

by HAROLD SHRYOCK, M.D.

poppy. It has no important use in medical practice, but it is the favourite member of the narcotic group for smuggling and use by addicts.

2. *Sedatives.* Sedatives have the effect of relieving tension and promoting calmness. The sedative drugs prescribed commonly by physicians are the barbiturates and the tranquillizers. Alcohol is a definite sedative, but its effects and its influence on the personality of the user are beyond the scope of the present article.

3. *Stimulants.* The chief items in this group are the amphetamines. These have very limited medicinal value. Their use is forbidden by law except by a physician's prescription. There is an enormous black-market distribution, however, as "pep pills."

4. *Hallucinogens.* LSD and marijuana are the popular examples here. They have no value in treating those who are sick. In recent years they have become popular among drug users because of their influence on the perceptive functions of the brain. Their effect is to distort the sensory experiences so that things are seen and heard differently from normal.

In order to understand how a person may form a compelling habit which forces him against his better judgment to continue taking a drug, we will now consider the two kinds of "drug dependence." By drug dependence we refer to the condition of brain or body by which a drug becomes "necessary" in order for the individual to "carry on."

Psychological drug dependence develops when a drug has such an effect as to enable the drug user to sidestep his problems of personality. When a drug provides an escape from unpleasant reality, when it relieves a person of his feeling of inferiority, when it replaces emotional tensions and anxiety by calmness, when it relieves depression and fatigue, or when it provides unusual preceptions and attitudes that seem to raise a person out of a world of stern reality into a sphere of colourful (though false) creativity, then we have a circumstance which, if coupled with pre-existing personality problems, virtually compels the one who has tried the drug once to use it again.

Persons of stable, mature attitudes who face their existing problems courageously are not easily vulnerable to dependence on drugs. They do not feel the need of a crutch. They spurn the thought of tampering with their established self-reliance. But those who already feel inadequate, those who have not yet tasted success, those who fear they may not attain their goals in life, those who feel crowded out by competition, and those who feel that life has become humdrum, become such easy victims of drug dependence that a single *experience* with a drug which provides an artificial shelter from the storm of their unpleasant attitudes may establish a compelling habit. The element of psychological drug dependence operates in all four of the categories of habit-forming drugs listed above.

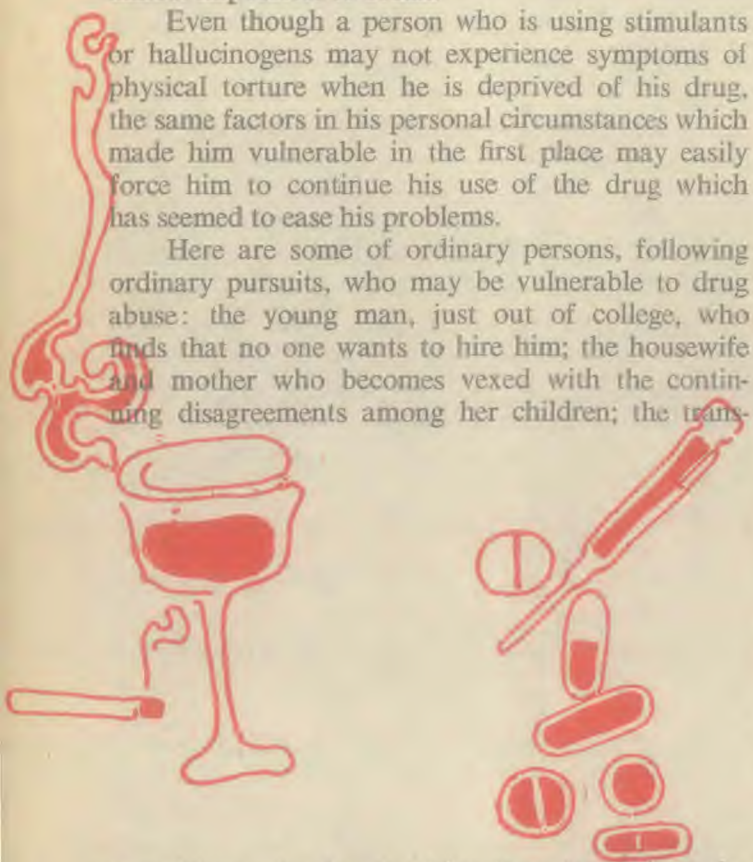
Physiological drug dependence is a condition that develops after a user of narcotics or sedatives has become accustomed to the effects of his drug. It involves a physical dependence in which the body, not the brain, rebels against being deprived of the drug. Here we have the symptoms which appear when certain organs of the body function abnormally as when vomiting and diarrhœa appear among the withdrawal symptoms of heroin addiction.

Physiological drug dependence is associated with the continued use of narcotics and sedatives,

not necessarily with the use of the stimulants and the hallucinogens. It is the combination of psychological and physiological drug dependence that makes it so nearly impossible to rehabilitate the person who uses narcotics or sedatives. However, psychological drug dependence alone, if deep-rooted in an inadequate or immature personality, may be almost impossible to break.

Even though a person who is using stimulants or hallucinogens may not experience symptoms of physical torture when he is deprived of his drug, the same factors in his personal circumstances which made him vulnerable in the first place may easily force him to continue his use of the drug which has seemed to ease his problems.

Here are some of ordinary persons, following ordinary pursuits, who may be vulnerable to drug abuse: the young man, just out of college, who finds that no one wants to hire him; the housewife and mother who becomes vexed with the continuing disagreements among her children; the transport-driver who has to drive long hours in order to meet his schedule; the college student with a major in political science who becomes disillusioned and disgusted with the conditions of society both in his own country and in the world at large.



These would not all be susceptible to the influence of the same drug, for their problems are different. If the unemployed college graduate is so unwise as to try one shot of heroin, he will discover that his troubles are forgotten while under the influence. The distraught housewife is an easy candidate for dependence on a tranquillizer. The transport-driver can please his employer and make his schedule by recourse to the stimulating influence of "pep pills" before he realizes that tolerance for the amphetamines builds up quickly and that the consequences may include damage to his heart, psychological depression, suicidal compulsions, and actual insanity. The disillusioned college student can sharply curtail his chances for actual success by foolishly trying one "trip" with LSD.

Now that we have considered the causes of addiction, let us raise the question that is even more important: *How can a person be spared from becoming an addict?*

First and obviously, if a person never samples one of the drugs that cause dependency, he will never become addicted. *In the experience of every addict, there was a first time. If there is never a first time, there cannot be a second or third.*

As parents deal with their children, helping them to prepare for successful living, they should take occasion to explain the dangers of experimentation with any agent which is said to have an influence on one's moods or thoughts. *The child should be informed that such drugs may be administered in drinks or in smokes as well as in tablets, capsules, powders, sugar cubes, or syringes.*

Recalling the two kinds of drug dependence mentioned earlier, it should be noted that it is psychological dependence that develops first and that operates in all cases of drug abuse. Physiological dependence, when it occurs, comes later—after a person has used a drug long enough so that his body rebels when deprived. This means that if psychological dependence can be forestalled, addiction cannot develop. The second precaution, therefore, in avoiding the possibility of addiction, consists in solving in advance, those problems of personality which set the stage for psychological dependence on drug.

What are the personality problems which, allowed to go unsolved, set the stage for drug dependence? There are many kinds, of course. But, in a word, they are the circumstances of life which cause a person to feel inadequate, despised, unwanted, unloved, rejected, or thwarted. When a person feels thus, it is easy for him to escape from his unhappiness by recourse to drugs. Once he has tried this way out of his dilemma, he is no longer in control of his own destiny.

The ability to solve problems of personality in a wholesome manner begins in early childhood. Then it is that parents have a moulding influence on the lives of their children. Parents who are themselves well adjusted can set the examples of confidence. By manifesting love for and trust in the child they provide the assurance of personal worth which the child craves. By being companionable with the child they influence him day by day to overlook the momentary slights and disappointments in favour of life's long-range goals. ***

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 envelopes. Anonymous questions will not be attended to. Address all correspondence to: The Doctor Advises, Post Box 35, Poona 411001.

STOMACH ULCER

I have had stomach problems for forty-six years. I have had many X-rays, and each time my doctor tells me I have an ulcer about the size of a pea.

Naturally, by now I know what is good and what is bad for my stomach. I do not smoke or drink, use very little coffee or spices. I use cooked wheat instead of prepared breakfast cereals, but I do have a weakness for cakes and pies which I eat often with ice-cream. Sometimes I can go about two months without pain, and then it will return suddenly, regardless of what I eat. Otherwise I am very strong and healthy. I go hiking, and jog several times weekly. My stomach seems to function better when I am on a mountain climbing trip.

Why can't I get rid of this ulcer permanently? Sometimes I am afraid it will turn into cancer.

You will need to remember that even when an ulcer is controlled, the tendency for it to return is always there. That is, today one may heal up, but another will always appear if the things that brought it on in the first place are repeated. It is good that you do not smoke, nor drink tea, coffee, or cola beverages, or eat spicy foods. You would do better to use only whole-grain cereals, whether home cooked or ready prepared, and these should be free from added refined sugar, honey, or syrup of any kind. In fact, if you will greatly limit sugar in all forms from your diet, you will probably do much better.

Then, too, your eating habits can be just as important as what you eat. Eat slowly, taking time to chew and enjoy your food. Eat in a pleasant environment and in a happy mood. Are you a worrier? Constant stress that is not rightly handled is a powerful ulcer-former.

We all face genuine problems. The best thing to do is to study them honestly and try to pinpoint the kernel. Sometimes this suggests a solution. Those that seem beyond our comprehension or remedy we can trust to God, and then insist on using our mental energy in positive ways.

The fact that you feel better when you hike a lot is good evidence that you are more relaxed when you are physically active and in a natural environment. Keep it up!!

Stomach ulcers do not usually develop into cancer. However, you should by all means, keep under the continual observation of your physician.

EYE PROBLEM

What could be causing white spots and flashes of light in front of my eyes? I do not have glaucoma or diabetes.

Your problem is one that cannot be answered specifically without a thorough health inventory and physical examination. The best we can do is make general comments.

The spots before your eyes could be caused by a variety of conditions, most of which pertain to your general health. Many people see flashes when they sit up or stand up. This is not serious—if you get up more slowly, it will not occur. It is also possible that you may have a variety of migraine which has only this symptom without the headache. You might be wise to see your physician.

ENCEPHALITIS

Can you please tell me something about encephalitis or sleeping sickness? Can chemicals cause it? Is there any cure or help?

Encephalitis is a broad term, meaning inflammation of the brain. It can be caused by many different factors, but it is unusual for chemicals to cause it unless they are placed directly on the brain or on its covering, the meninges. This, of course, does not usually happen.

The commonest causes of encephalitis are viruses. There are, perhaps, a hundred or more capable of producing encephalitis under natural condition and many others that can do so in the research laboratory. In this country the commonest

causes are the equine encephalitis viruses, of which we have three kinds, all carried by mosquitoes. They are called equine because they often involve horses. In places they may involve birds and get into wild flocks and also into domestic flocks. Some scientists believe that the virus is capable of "hiberation" or "wintering over" in certain reptiles and snakes.

The term **sleeping sickness** is applied to many different illnesses and has many different causes. Generally, however, when we talk of sleeping sickness we mean Africa's sleeping sickness. This is an entirely different kind of encephalitis. It is caused by a little parasite called a trypanosome, which is carried by a tsetse fly. It is, of course, no problem to us here in India because we have no tsetse flies and no trypanosomes.

FIBROID TUMOUR

I have a fibroid tumour and have been spotting blood for about ten months. My doctor says I need surgery. Please explain what a fibroid tumour is. Would this be a minor or major operation?

A fibroid is a tumour of the uterus or womb. It is made of muscular tissue and is almost always benign or non-malignant. Fibroid tumours are not uncommon; many women have them. Some have only a single tumour, while other women have many.

These tumours may cause spotting of blood, sometimes even "flooding." Many physicians believe that if there is only one fibroid, and it is causing no trouble, it is safe to delay surgery indefinitely. Other physicians believe that because occasionally a fibroid tumour will in some way alter itself and grow without restraint they should always be removed. Usually the surgeon will remove the entire uterus, because as long as it is there it can produce more fibroids.

This surgery is considered major, but if all goes well, it is usually without major complication.

***

BURSITIS

What can a person do as a home treatment for bursitis? What causes it?

A bursa is a sac of delicate tissue that lies between a tendon and a bone, usually near a joint. It produces a natural lubricant. Bursitis is an irrritation of this delicate sac, although it is not always possible to determine the cause of the irritation. Home treatment depends upon whether it is acute, subacute, or chronic. Intermittent cold, in the form of ice packs, or ice cubes wrapped in plastic, relieves the pain in some persons. This should be done for perhaps ten to twenty minutes out of every hour or two. Others find applications of heating pad or moist heat, as in fomentations or terry towels wrung out of very hot water and placed on a dry towel over the painful area, more helpful. Rest to the joint is important at first, but after the acute stage it should be gently exercised. Generally speaking, it is well to consult one's physician if he has bursitis. There are other measures available to him.

***

GOODBYE TO SMALLPOX

From page 5

Ten Facts About Smallpox

1. Smallpox is a deadly, virus-caused infection that produces fever, skin rash, pocks and scabs. Those of its victims who survive are left with scars which last for life, and sometimes blindness.
2. The infection spreads by means of secretions from the victim's nose and mouth and from the pocks and scabs.
3. A smallpox patient falls ill between seven and seventeen days after receiving the virus and can transmit the illness to others for about a month after the appearance of the skin rash.
4. No cure is known for smallpox, but it can be prevented by vaccination, which is a simple and virtually painless medical procedure.
5. In 1967, when the World Health Organization triggered an international campaign to eradicate the disease, smallpox was endemic to thirty countries and was reported in twelve more.
6. At the start of the WHO smallpox eradication campaign, there were estimated to be more than two-and-a-half-million cases a year.
7. In 1974, the total had fallen to less than one-tenth of this figure.
8. By the end of 1974, smallpox persisted in only three countries of the world, and is now being stamped out there.
9. One of the mightiest weapons in the war against smallpox is a vaccine that remains stable and patent, even in hot climates, because it is freeze-dried rather than in liquid form.
10. As smallpox is being wiped out, tremendous resources of human ability, energy and money are being released to focus on other great health problems of mankind.

***

FOR JUNIORS

Who would have thought an ordinary lunch could be so interesting!

by ELISABETH B. GOODMAN

HISTORY IN YOUR LUNCH

What do you have in your lunch today?" Manjula asked.

Savita peered into her lunch box.

"My very favourites!" she exclaimed. "Peanut butter sandwich, potato crisps, a tomato, and a banana!"

Neither Savita nor Manjula knew that once upon a time there were no such foods as peanut butter and margarine. There were no potato crisps. The girls would not have dared to touch a tomato—they were thought to be poisonous!

The "oldest" food in Savita's lunch box was the bread in her sandwich. Tiny, dry wheat kernels, some 6,000 years old, have been found. For thousands of years bread was made in the shape of flat cakes.

Then one day, in ancient Egypt, as the story goes, a lazy slave left some dough in a pan on top of a warm clay oven. Some seeds called spores from a yeast plant accidentally dropped into the dough. To the slave's astonishment the dough swelled to twice its size. He popped the pan into the oven and when the dough was baked he held in his hands the first real loaf of yeast bread. Bread was so popular that the men who built the pyramids received three loaves a day as part of their pay. But Savita would not have enjoyed eating bread made in ancient Egypt. The cooks kneaded the dough with their bare feet!

The first known public bakery opened 171 years before Christ was born, in the city of Rome. The baker sold wheat bread, sweetened with honey, much like the bread in Savita's sandwich.

Hundreds of years later, in the late 1860s, the country of France was fighting a war. Food was scarce. The ruler of France, Napoleon III, offered a prize to anyone who could invent a substitute for butter. The prize was won by a chemist who mixed together beef oleo oil, milk, water and a vegetable dye. He ended up with almost the same sort of margarine that Savita's mother spread on her bread.

Twenty years after Hippolyte Mege-Mouries invented margarine, a doctor in St. Louis, U.S.A., was looking for a food high in protein which his patients could easily digest. He hit on peanuts as the solution to his problem and started grinding them up in his meat grinder, adding a little salt.

The Earl's brainstorm

Why are two pieces of bread with food in the middle called a "sandwich"? The story is that once there was a nobleman who disliked being interrupted for meals when he was busy. He asked his servants to bring him food that he could eat while he worked. He was the Earl of Sandwich, and he frequently dined on two thick slices of bread with a slab of meat or cheese in the middle—"A sandwich," his friends laughed, and the name stuck.

Forty years before the St. Louis doctor started grinding peanuts, a fussy old gentleman went for his holiday to Moon's Lake House at Saratoga Springs, New York. He complained a good deal about the food. Three times he sent back his potatoes to Cook George Crum, saying they were thick and soggy. Cook Crum was angry.

"I'll fix that old rascal," he muttered.

He shaved a potato into paper-thin slices and dropped them into deep, hot fat. Then he sent a plateful to the customer. To Cook Crum's surprise the old gentleman loved them and told his friends about them. Now potato wafers are readily available.

"Poisonous" Tomatoes

If Savita had lived in the days before the Battles of Panipat she would have called her tomato a love

apple. She would have admired the beautiful red fruit in her parents' flower garden.

"Don't touch the love apples, Savita," her mother might have said. "They are poisonous!"

Thomas Jefferson an early president of America, was one of the first Americans to eat tomatoes. He saw them eaten in France, and in 1789 he planted some in his vegetable garden.

But it was not until the early 1800s that tomatoes began to be used for food. One day in 1820 a man living in Salem, New Jersey, stood on the steps of the courthouse and ate tomato after tomato after tomato to prove they wouldn't kill him. By the end of America's Civil War in 1865 they were finally accepted as a vegetable.

Bananas

Bananas were used in ancient China for food and to heal wounds. Their leaves have been used for wrappings. The fibrous leaves of some kinds of bananas are used to roof houses and to make mats and baskets. In India they were sometimes called "fruit of the wise men," for some Indian wise men were thought to eat nothing but bananas.

Bananas were rare in Britain in the early days. Shiploads from the Canary Islands first arrived in 1901 at Bristol.

When refrigeration came into use in the early 1900s it was possible to transport bananas from the tropics to the British Isles in quantity, well preserved in the cool storage areas of ships. Everyone was soon able to buy the delicious fruit with the thick yellow skin.

As Savita slowly ate her lunch, she never guessed how much history was stored in her lunch box.

What do you find in yours! ***

AN EASY ROAD

From page 17

It is said of John D. Rockefeller that he was old at 52, broken in health, and ready to die. The veins in his arms were hard, like lead pipes. For 30 years he had driven himself to satisfy his lust for material wealth. He had used every means at his disposal to gain that wealth and destroy his competitors. Now that he could truly be called the wealthiest man in the United States he was ready to die and leave it all. About to come face to face with eternity, John D. greatly feared his encounter. Perhaps if he would use his money for the needs of others and build great institutions that would be a blessing to mankind, God might forgive and forget. He became kindly and benevolent, giving away millions for the uplift of his fellow man. Because of this and other healthful practices, his health greatly improved. He was far happier than he had been during his money-making days. When he died at the ripe old age of 96, it is said that the veins in his arms were as soft as a baby's.

In this life we have before us two open doors. We may become unloving and unconcerned about the problems of our fellow men. We can become selfish and interested only in serving self, thereby reaping unhappiness and tension, bad health set in an environment of barrenness and loneliness. Or we can open the door to a life filled with love, empathy, and tenderness, resulting in a full and abundant life of service.

"Beloved," wrote John, "I wish above all things that thou mayest prosper and be in health, even as thy soul prospereth." This wish may be achieved partly by doing good to others. ***

NEW DEVICE FOR EYE EXAMINATION

A new Soviet device, the portable OR-2 ophthalmoscope, enables the eye to be examined in both dark and brightly-lit rooms without having to dilate the pupil with drugs. The device lights up the back of the eye more efficiently and allows the observer to detect even slight changes in the retina, the optic nerve and the blood vessels behind the retina. Special attachments permit the device to be used also for studying the optical, refractive properties of the eye and detecting tumours, detachment of the retina and other harmful changes in the conjunctiva of the eye. A slit attachment makes the device particularly convenient for use on small children and the seriously ill.

—Soviet Features

INSULIN FROM A "GUN"

Diabetics, who have to give themselves a daily shot of insulin, need no longer fear the needle. An injection "pistol", developed (West Germany) is childishly simple to use.

The injection is carried out automatically. The patient only has to gauge the necessary depth of the shot and the amount of life-saving insulin required, then operate the apparatus; which has only one trigger and can be manipulated by one hand with ease. The gun is equipped with a metre which shows that the injection has taken place.

And diabetes sufferers can hope for further developments to help them fight their condition from the research labs of Ulm University. Professor Friedrich Pfeifer has developed an artificial pancreas which automatically registers the blood-sugar level and controls it via measuring equipment and a mini-computer. The first implantation of the artificial pancreas should be made in a few years time.

—German Features

REVERSIBLE STERILIZATION

Reversible sterilization of women under age 30 is in the clinical study stage. The procedure: A removable polyethylene device designed to function as an intratubal "splint" is introduced via the fimbriated end of the oviduct and retained in the tube by hemostatic clips or nonabsorbable sutures. The device can be introduced by laparoscopy, minilaparotomy, or culdoscopy. In early trials, no pregnancy has occurred, but proof of reversibility awaits a request for removal of the device. (Dr. Patrick C. Steptoe, Oldham and District General Hospital, Lancashire, England.)

—RN magazine

BLOOD TEST FOR LUNG CANCER

Doctors have long suspected that lung cancer may be the result of genetic factors. Now, Charles R. Shaw, M.D., chief of medical genetics at M.D. Anderson Hospital, in Houston, U.S.A., has come up with a blood test he believes will show that about half the population has an inherited vulnerability to the disease. Dr. Shaw cites an enzyme arylhydrocarbonhydroxylase (AHH) as a primary cause of lung cancer. AHH, he explains, transforms cancer producing chemicals found in tobacco smoke and polluted air into their active form within the lungs.

Dr. Shaw and his colleagues discovered, through tests, that the level of AHH is higher in individuals with lung cancer than in those who do not have the disease. The team of scientists also determined that the enzyme levels tend to run high in members of the same family. "There are obviously a great many other factors that contribute to lung cancer," Dr. Shaw says, "but the person with a demonstrated high level of AHH is about twenty times more likely to develop the disease than someone with a low level."

—Today's Health

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