

A NATURAL METHOD OF BIRTH CONTROL

On 4th March, 1969, Dr. John Billings was invited to give a lecture on Birth Control and here is a brief summary of his speech.

One of the natural methods of birth control depends on the avoidance of intercourse during the fertile days of women. The rhythm method, which is essentially based on the prediction of the fertile and infertile days of a woman by studying the past history of her menstrual cycles, is unsatisfactory due to unexpected irregularity and great variations of the cycles. In addition, occasional bleeding during ovulation may be mistaken as the menstrual flow.

Thus the most important thing is to determine accurately the time of ovulation. A study of the cyclic changes of the levels of various hormones such as oestrogen, progesterone and FSH yields valuable information in this aspect. For instance, the blood oestrogen peak occurs eighteen to thirty-six hours ahead of ovulation and this coincides with the period of maximum fertility. On the other hand, the peak of urinary oestrogen occurs six hours after the peak in the blood, i.e. it is twelve to thirty hours ahead of ovulation. However, the determination of

the levels of the various hormones involve inconvenient laboratory techniques and some form of simple "fertility tape" which exhibits colour changes may emerge in the near future.

At present, a woman can be taught to determine her own time of ovulation because it is usually associated with three symptoms, namely pain, bleeding and mucoria or mucus symptom.

Fairly sharp pain occurs in some individuals one to some hours during ovulation, while in others, pain occurs particularly one day before ovulation. This pain is attributed to the contraction of uterine musculature.

Bleeding may also occur occasionally in some women but this is uncommon.

The third symptom — the mucus symptom, is common among women. Usually a lot of mucus is discharged four to five days preceding ovulation. The mucus is wet, slippery and resembles egg-white.

With a knowledge of the mucus symptom, the tempera-

ture method of birth control has been employed with success. This combined method may be called the ovulation method. A woman can keep a daily record of her basal body temperature and the resulting graph will have a biphasic pattern. The temperature is lower in the pre-ovulatory period which is then followed by an elevation in association with ovulation. This elevation occurs at the time of ovulation or it may occur one to four days after ovulation. A line can be ruled three days after the onset of the elevation of body temperature. This line is fairly constant for an individual. The third day above the line will be the first late safe day.

Thus keeping in mind that sperms can survive for at most three days (usually three days), a couple can refrain from intercourse during the period between the "wet" days of mucus drop and the second day above the line mentioned above. In this way, a natural method of birth control can be employed for the benefit of the whole family.

SPORTS

In the 4th Council Meeting held on Friday, 28th March, 1969, the softball dispute was discussed.

1. It was pointed out that the Sports Association Council had made the decision in the absence of the Chairman of the Softball Club, who was the key man involved in the issue.
2. It was pointed out that the Chairman of the Softball Club was also the Captain of the Softball Team of the Arts Association. Hence the decision for a replay made by the Softball Club was actually an agreement between all three parties involved, i.e. the Softball Club, the Softball Captain of the Arts Association and the Sports Secretary of the Medical Society.
3. It was resolved in the Union Council that the Sports Association Council should reconsider the Softball Issue.

Wong Chun Kuen
Sports Secretary
Medical Society.

CORRESPONDENCE

Dear Sir,

With reference to the editorial in the last issue (3rd issue) of your paper, the following statement had been made "... that the government should pay so much attention to organize 'pop-ins' rather than to help needy medical students." I tend to disagree.

I think that "pop-ins" are healthy recreation for young people. They provide not only opportunities for them to meet people of the same age group and interest, but also a beautiful channel for expression of their feelings. It encourages and stimulates their interest in music. So far the "pop-ins" organized have been immensely successful and have received overwhelming response from teenagers. I for one would applaud the good job the government has done to cater such a programme for them. Does the editor think that the welfare of several hundred medical students is more important than that of a million? I strongly advocate increase financial support for medical students from the government, but certainly not at the expense of the interest of other young people.

Yours sincerely,
Man

(Continued from page 1)

governing interfaculty matches) and with the notice board in the Sports Centre but we could not find any regulation whatsoever concerning softball. We therefore felt that it was the Club Officials' duty and the umpire's duty to inform both team captains before the start of the match that it was to be a five-innings game. That this was not done was negligence on the part of the Club officials. Consequently, the Sports Captain of the Medical Society protested immediately after the game and a formal letter of appeal was handed to the Chairman of the Softball Club within one hour after the game was finished.

The decision of the Chairman of the Softball Club, who is also the softball captain of the Arts Association, was that a replay would be granted 2 days later. On the day of the replay, the Arts team did not turn up and the Medical Society was granted a walkover by the official umpire present. On the next day, the Medical Society team won the final match in softball and emerged as champions in interfaculty softball.

The Arts Association Sports Captain, however, appealed to the Sports Association Council and moved the motion that the decision of the Softball Club on the replay be considered null and void.

This motion was passed at the 5th S.A. Council Meeting after voting with 14 for the motion and 12 against it. It was understood that by this motion the Arts Association had won the match over the Medical Society and that no replay should have been granted.

We feel that this decision is not justified and we are appealing to the Union Council to rectify the dispute. We hope you will discuss this matter at a Council Meeting as soon as possible.

Thanking you,

Yours sincerely,
Crawford Chung,
General Secretary.

cc. Chairman, Union Council
Chairman, S. A. Council
Chairman, Softball Club

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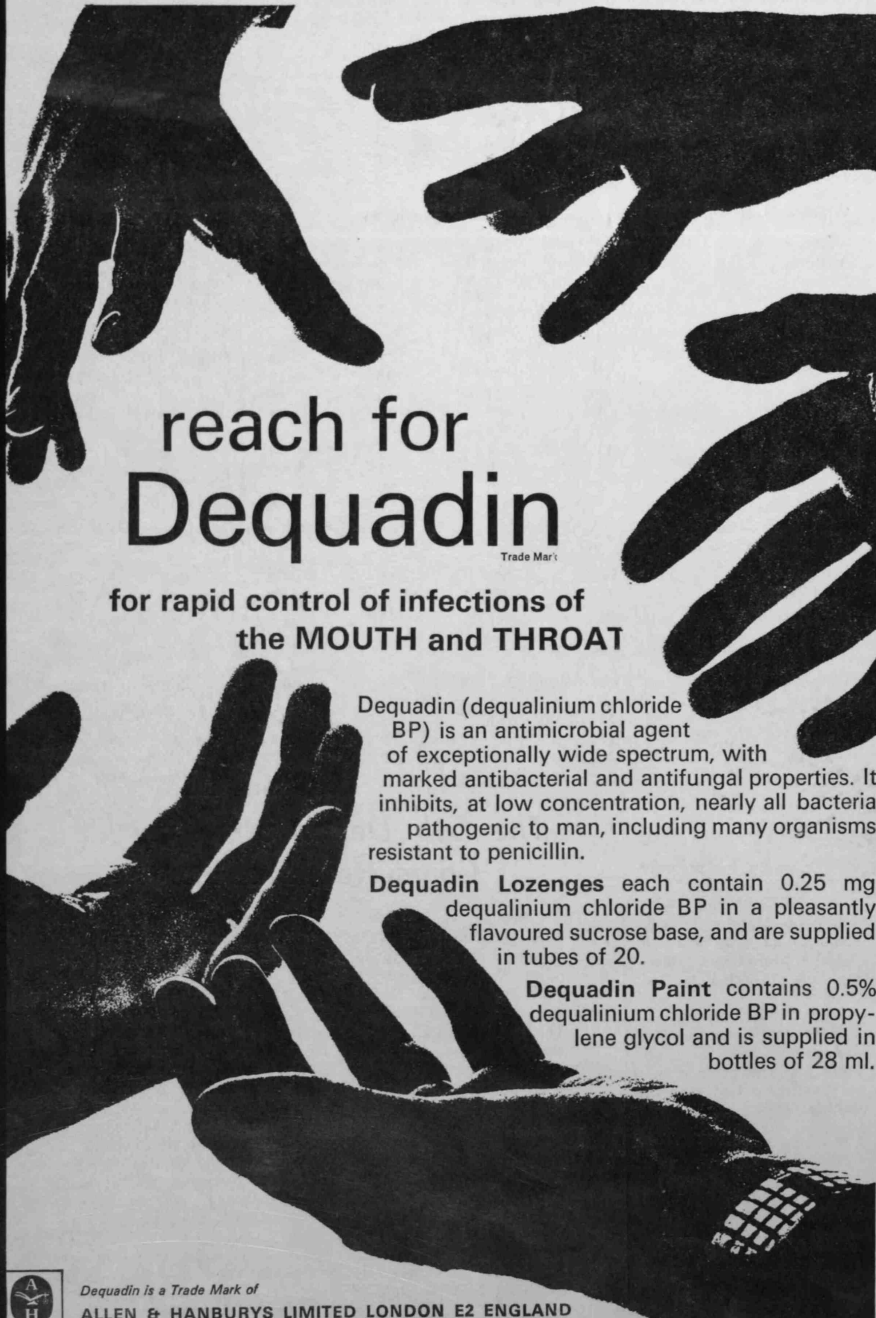
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THE ARTIFICIAL CARDIAC PACEMAKER

by F. W.

In normal heart, impulses generated in the sino-atrial (SA) node pass through the atrial muscle to the atrio-ventricular (AV) node; through this node to the bundle of His; and through the branches of the bundle of His via the Purkinje system to the ventricular muscle. Normally the SA node discharges most rapidly, its rate of discharge determines the rate at which the heart beats. It is therefore the normal cardiac pacemaker. The SA node, the AV node, the bundle of His and the Purkinje system together form the conduction system of the heart.

In certain conditions, when one or more parts of the conduction system are diseased, impulses generated in the SA node cannot reach the ventricles, which thus beat independent to the atria, constituting a condition known as partial block. Heart block may be partial or complete. In the latter case, the ventricles beat at their own intrinsic rate and may be as low as 30 per minute. Causes of heart block are many, the more important of them are coronary disease, aortic stenosis, rheumatic fever, digitalis overdosage, diphtheria and syphilis, cardiomyopathies, congenital heart disease and heart block associated with open heart surgery especially those operations in the region of conducting tissues. One of the complications of heart block is Adams-Stokes syndrome, characterised by slow and occasional irregular pulse, vertigo, syncope, pseudoepileptic convulsions, and sometimes Cheyne-Stokes respiration. The condition is probably a result of impairment to the cerebral blood flow. Prognosis is usually serious and drug treatments are all unsatisfactory. The use of an electrical artificial cardiac pacemaker may be life saving.

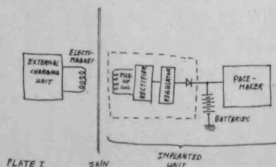
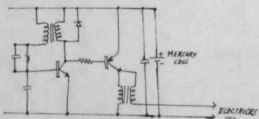
Artificial pacemaker, technically speaking, can be divided, into 3 types (1) external; (2) totally implanted; and (3) induction and radio frequency — the transmitter is external with implanted pick-up coil and receiving unit.

All pacemakers, whether external or totally implanted, are basically oscillators that can deliver pulse trains of sufficient voltage to stimulate the myocardium and of correct pacing, i.e. rate. The threshold for electrical stimulation of the heart varies with the period of the cardiac cycles and the types of electrode used. With most electrodes in current use, the values for human heart are about 2-6 volts and 2-5 milliamperes. As to the rate, it can be varied from 50-150 per minute. Most external model of pacemakers have variable rate settings, while nearly all of the totally implanted models are of fixed rate design. The rate is usually in the region of 70/min.

Electronically, a popular commercial design is a blocking oscillator with or without transformer output. This is especially true in the totally implanted models because of the simplicity of the circuit and the unit can thus be built very compact. Other designs, eg. phase-shifting oscillators multivibrators or relaxation oscillators, are also used.

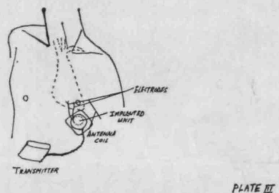
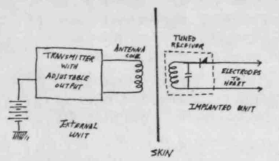
In order to minimize reaction by the body, the totally implanted units are potted with epoxy resin and covered with silicone rubber both of them are inert in the body. One of the advantages of totally implanted pacemakers over external models is the elimination of the external electrode wires which are liable to easy breakage and lead to failure. It also eliminates the possibility of ascending sepsis along the tract of the wires. But it also has its own inherent weakness, namely, the short life of the batteries. Replacement of nickel-cadmium cells by mercury cells has extended the life of the implanted unit to about 4 years. After that replacement by a new unit is required and which involve surgical operation.

One manufacturer has attempted to solve the problem by a very ingenious method. The batteries of the implanted pacemaker is rechargeable through an external charger by induction. A schematic diagram may illustrate the condition better.



Another approach to solve this problem of battery supply is the application of induction and radio frequency techniques. The pacemaker consists of two parts

— the external unit is a small transmitter, the output of which is fed to an electromagnet or antenna coil; the implanted unit consists of a pick-up coil wired to a simple detector. The electrodes are directly applied to the myocardium. Radio frequency is transmitted across intact skin. When in use, the antenna coil is placed directly opposite to the pick up coil of the implanted unit.



The advantages of radio frequency induction pacemaker are many. The implanted unit is much simpler than that of the self-contained one and so can more easily be accommodated in the subcutaneous tissues. Since the power source is outside the body, it can be renewed without operation. Rate and power can also be adjusted at will.

Recently, more sophisticated pacemakers has been successfully produced. Atrial-triggered pacemaker is one of them. It follows the atrial rate and supplies impulses to the ventricle after a suitable delay (PR interval). "On-demand" pacemaker is another example. It emits a stimulus to the ventricle only when there has been a preset delay since the previous QRS complex. These advanced designs have their indications in individual disease.

With the advance in thin-film and integrated-circuit technology, the production of a really minute pacemaker is no longer an impossible task.

Medicine Today

CHANGING PATTERN OF TYPHOID FEVER

Typhoid fever has long been known since the days of Hippocrates, but with the improved methods of diagnosis and treatment, typhoid nowadays presents quite differently from what has been described in older literature. This is especially so with the advance of chloramphenicol treatment. A significant percentage of typhoid fever nowadays has a more abrupt onset with atypical features such as acute gastroenteritis, hemiplegia and haematuria. The fever is variable. It may be moderate or high, and it may be continuous, remittent or intermittent. Sometimes, typhoid may present itself with chest signs of bronchitis, encephalopathy or splenic enlargement while the classical signs of rose spots and bradycardia are now uncommon. Blood culture and rising Widal agglutination titre are still confirmatory investigations, but a wide range of variation is now encountered. Many of the cases show an early high antibody titre but in some of the others the titre actually falls in the course of chloramphenicol treatment instead of the classically diagnostic rise. Blood culture is usually sterile after treatment. (This survey was held in India)

(Au KW)

POSTURAL HYPOXAEMIA AND ERYTHROCYTOSIS

Erythrocytosis may be either absolute (true increase in RBC mass) or relative (decrease in plasma volume). Absolute erythrocytosis is subdivided into primary (Polycythaemia rubra vera) and secondary types. In the former, the increase in red cell production from the marrow is independent on erythropoietin control, while in the latter, the increased red cell production is a response to increased erythropoietin level in the circulation. This classification of erythrocytosis embraces most cases encountered, but there are a few patients whose erythrocytosis apparently lies outside this, and to this the name Gaisbock's syndrome (mild unexplained erythrocytosis, moderate obesity, and mild hypertension without splenomegaly) has been allocated. This name was suggested in the days when methods of estimating erythropoietin level were still crude and insensitive. Recently, with the improved method of erythropoietin level estimation using the synthesis of haemoglobin in bone marrow culture as the indicator, it is found that erythropoietin level is inevitably raised in patients with this syndrome. Experiments were undertaken to study the cause of this rise in erythropoietin level in 7 patients with unexplained erythrocytosis, and the result was that there was a hypoxaemia when the patients were supine. In most normal subjects, there is probably also a slight hypoxaemia of the order of 5 mm. Hg in PaO₂ during sleep, but in the patients studied, the hypoxaemia was more marked. Pulmonary function tests, however, fail to reveal any abnormality. It was also found that in correcting the postural hypoxaemia by breathing pure O₂ during sleep, or by reducing body weight of the patient (thus lessening the load of the abdomen on the diaphragm), the erythrocytosis disappeared and the erythropoietin level fell to normal. It is, therefore, very probable that postural hypoxaemia may offer an explanation to some cases of unexplained erythrocytosis.

(Au KW)

CONTROL OF GROWTH-HORMONE SECRETION IN HEALTH

At present, three factors are known to affect the secretion of human growth hormone (H.G.H.)

Blood-glucose levels affect H.G.H. secretion by a negative feedback mechanism. A certain receptor is present in the hypothalamus which effects H.G.H. secretion by secreting a growth hormone releasing-factor, the latter being carried to the adenohypophysis via the hypophyseal system of portal vessels.

The second factor is the amino-nitrogen level of the blood. After a protein meal, the high amino-nitrogen level stimulates H.G.H. secretion. The blood-insulin level in this case is also raised and it has been suggested that the two hormones together promote protein synthesis.

In addition, stresses such as trauma, major surgery and fear are also known to stimulate H.G.H. secretion and their effects are independent of the blood-glucose level.

However, long term observation reveals that H.G.H. is secreted in intermittent bursts and this phenomenon remains unexplained.

(Ng FH)

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The Faculty Meeting Room is ready for night reading. As the library close at 10 p.m. students may find it inconvenient when they want to study later into the night. A resident student is required to be responsible for the keys of the room. Now the Faculty Meeting Room is ready for such purpose, but up to the end of March nobody has gone to fetch the keys.

(Continued from page 1)

introductory course for 1st year students on the use of library will be necessary.

- (6) The Dean agreed that the Board Room might be used as study room by students in Medic Centre.
- (7) The Dean said that from now onwards, students in Medic Centre (Surgical and Medical Special Clerkship) will be called to Q.M. for interesting cases.



