

The Malayan Medical Journal

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A Monthly Journal of
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VOL. XII

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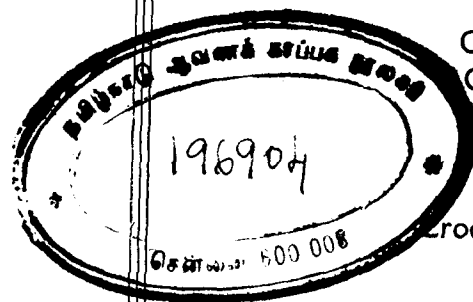
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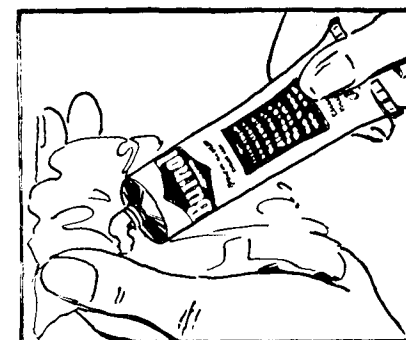
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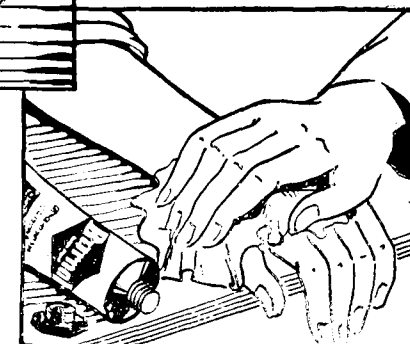
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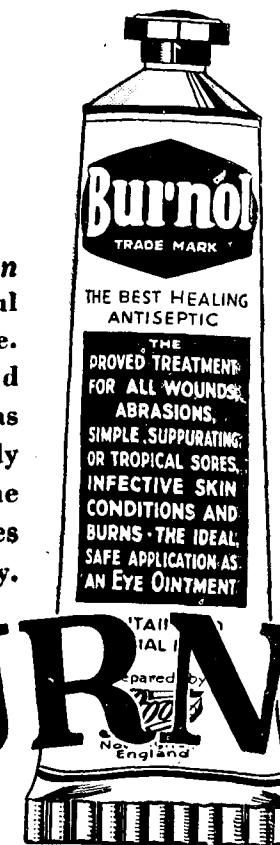
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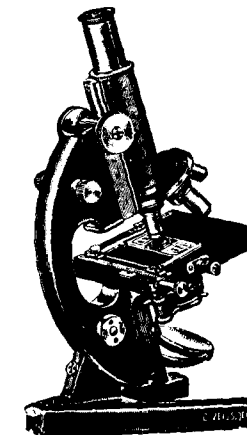
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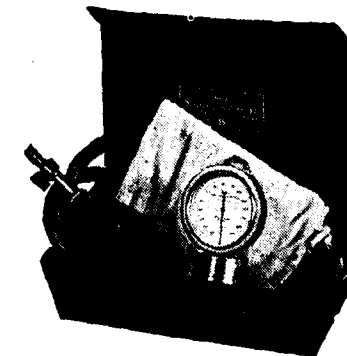
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An Aid In Fighting Chronic Sepsis

PHOSPHORUS

POTASSIUM

MANGANESE

CALCIUM

SODIUM

IRON

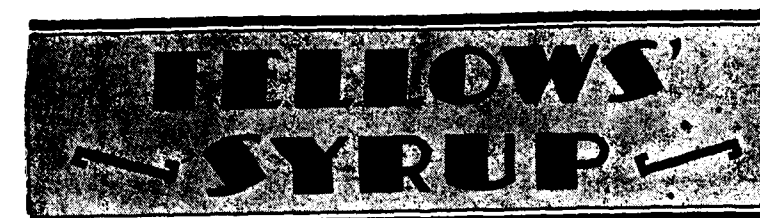
Chronic cholecystitis, chronic prostatitis, chronic colitis are but a few of the rather common conditions which give rise to a state of chronic sepsis.

Fellows' Syrup in these conditions supplies the required mineral elements. The dose suggested is one teaspoonful four times daily, in water.

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—Bacteriology and Immunity—Topely and Wilson, page 1407.

Anti-toxic and Anti-bacterial sera against *B. Welchii* septic,
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the bleeding was controlled
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from a prominent gynecologist in the course of
correspondence concerning sex hormone therapy.

I have your letter of August 19th together with the
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We use large amounts of Antuitrin-S, and we believe
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where we always treat the patient with Antuitrin-S before
we suggest an operation for uterine bleeding. Of
course we are always very careful to rule out malignancy
as best we can.

We have had several patients who came to us with
bleeding associated with small uterine fibroids. In
some of these cases it would have been fair to assume
that the bleeding was caused by the fibroids. Even such
patients we have treated with Antuitrin-S before operating
the fibroids or before treating the fibroids with radiation.
And in many cases we have found that the bleeding
was controlled entirely by Antuitrin-S.

We believe that a great many of the functional menopa-
usal bleedings are amenable to treatment with
Antuitrin-S. We use it in other conditions also, but I
shall not discuss them in this letter.

With kind personal regards, I am
Sincerely yours.

Antuitrin-S (Ap-
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diaphragm-capped
vials, each
cubic centimeter
containing 100
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THE VALUE OF JACOBÆUS OPERATION IN THE TREATMENT OF PULMONARY TUBERCULOSIS IN THE TROPICS*

BY

O. PANETH, M.D.

Kaban Djahe, Sumatra.

The treatment of pulmonary tuberculosis in tropical countries, such as Malaya and the Dutch East Indies, encounters special difficulties, because the inhabitants here are generally:—

1. Badly housed and, therefore, exposed to repeated heavy infections through the numerous sufferers from open tuberculosis.
2. Scantly nourished, thus particularly inclined to develop tuberculosis in general and especially the more malignant forms of the disease.
3. Subject to the influence of a permanently moist and hot climate.
4. Frequently weakened by other chronic diseases, such as malaria and ankylostomiasis.
5. Uneducated; therefore it is exceptional if they apply in time for medical help; consequently, pleural adhesions accompanying pulmonary tuberculosis are frequently encountered.
6. Poor; that means unable to afford the costs of the treatment.

It is obvious that these circumstances must influence our method of treatment. Conservative treatment, with long resting cures and sojourns in the sanatorium, is for the greater part of our patients not only insufficient but utterly unobtainable. We are obliged much more in this part of the world than in Europe to apply collapse therapy, especially artificial pneumothorax; and that largely as an out-patient treatment. Now it is generally agreed, that even in a sanatorium, the results of incomplete pneumothorax are far inferior to those of complete pneumothorax; the more so in the case of out-patients, not only because they are not benefited by resting cure, etc., but also because the regularity of insufflations very often leaves much to be desired. In the case of complete pneumothorax this is not always of very great consequence, because even if the lung is partially re-expanded, the diseased parts, having a tendency to shrink, are likely to remain fairly well collapsed. It is quite common to see the comparatively healthy underlobe re-expanded, whereas the upper lobe, which

may be mainly affected, is still sufficiently collapsed. Should it, however, be fixed to the chest wall by means of adhesions, there arises the danger that not only the diseased tissue, irritated through incessant traction, cannot heal up, but that collapsed cavities may open up again with disastrous consequences. We must, therefore, strive to make every pneumothorax in the shortest time as efficient as possible, in other words, to eliminate as many adhesions as possible. It follows that not only artificial pneumothorax must be resorted to much quicker than in Europe, but also the Jacobæus operation. It is my custom to perform the operation 2 to 6 weeks after pneumothorax has been induced; in case there are adhesions interfering with proper collapse, I am quite ready to admit that a small part of those adhesions might stretch sufficiently with prolonged pneumothorax treatment, but the great majority of the patients cannot wait so long.

Two questions arise immediately:—What are the dangers of the operation? and what results can be expected in our patients here? I will try to answer these questions by aids of the following statistics, which comprise my Jacobæus operations during a period of three years.

The number of operations performed (185) is greater than the number of patients operated on (157), because some of them were operated two or three times, either on one side, or on both sides successively. The operation is sometimes very easy, sometimes very difficult, or even impossible. In most cases that cannot be ascertained beforehand by means of X-rays, but only by thoracoscopy, which frequently reveals disagreeable surprises, because even important adhesions may be totally invisible on the X-rays. Difficulty and danger of the operation depend not so much on the number and extension of the adhesions, but chiefly on their length and thickness ("length" of the adhesion means the distance between chest wall and lung tissue). Short adhesions must be cauterized immediately on or even in the chest wall ("shelled out") to avoid damaging the lung, which may lead to empyema. The same applies to thick adhesions, even should they, regarded superficially, seem to be of passable length; for there is no means of ascertaining how far lung tissue may stretch towards the chest wall in the invisible centre of the adhesion. Maurer's illuminating probe is of no use in such cases, because adhesions more than a few mm. thick cannot be transilluminated, at least not in such a manner that their structure could be recognized. Therefore it may be laid down as a rule that all adhesions which are short, or thick, or both, have to be shelled out,

JACOBÆUS OPERATIONS PERFORMED AT KABAN DJAHE FROM JANUARY, 1934 TO DECEMBER, 1936.

	Number.	Percentage.
Patients	157	
Operations	185	
" performed on or in Thoracic wall (adhesions "shelled out")	128	69
Haemorrhage during or after operation	8	4.4
Fever after operation, longer than 1 week	7	3.8
Fever after operation, longer than 2 weeks	11	5.9
Pleural Effusion higher than 5 c.m. above centre of diaphragm	15	8.1
Lung fistula following operation	1	0.54
Empyema, following operation	2	1.1
Operation mortality	1	0.54
Condition advanced (deteriorated) through operation	2	1.1
Satisfactory collapse not obtained	60	32.4
" " obtained	125	67.6

which of course is a far more serious performance than burning through a thin membrane of sufficient length, albeit of great extent. The necessity to operate on or in the chest wall chiefly determines the character of the operation; the criterion of operations inside the chest walls is, that there should be no stump left on the costal pleura but only a depression, a scar. In my statistics, the majority were difficult cases; small wonder, considering that most of the patients are in an advanced state of the disease.

In 8 cases (4.4 per cent.) there occurred a haemorrhage during or after the operation; one of them was fatal; another resulted in a permanent deterioration through gradual obliteration of the pleural cavity (obliterative pleurisy); the others were of small consequence. Most, if not all haemorrhages, could have been avoided, if from the beginning I had followed the rule to coagulate safely all adhesions, even the most innocent looking ones, before burning

them through. All the haemorrhages observed during operations arose out of seemingly innocuous thin membranes or strings, which gave way very quickly—too quickly!—as soon as they were touched by the scarcely incandescent cautery. It is important to begin with particularly low current when cauterizing thin adhesion. Fever during a few days is common, even in uncomplicated cases, and probably due to abrupt collapse of the lung, comparable to the elevation of temperature frequently seen in artificial pneumothorax after insufflating big quantities of air. Fever of longer duration is mostly due to pleural effusion. In two cases empyema developed, in one of them certainly due to lung fistula; both had been extremely difficult cases with very extensive short thick adhesions; one of them at least would have been better treated by thoracoplasty; in both cases the culture showed pneumococci and both did well after drainage.

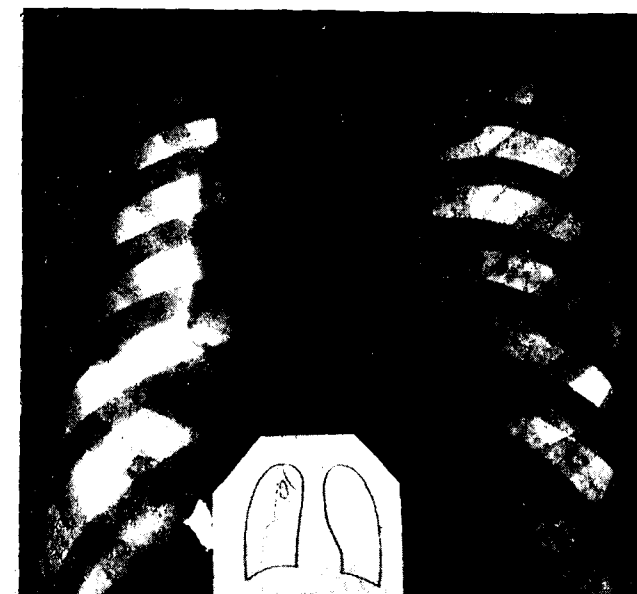


Fig. 1-A.

Imb. (Malay) open tbc. of right lung with big cavity in upper lobe, fixed above by a strong adhesion.

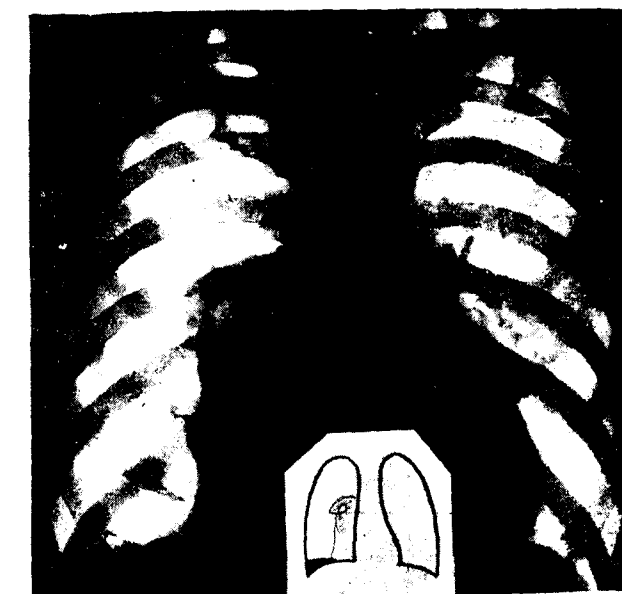


Fig. 1-B.

10 days after Jacobæus operation. Lung detached, cavity much smaller, stump of adhesion clearly visible.

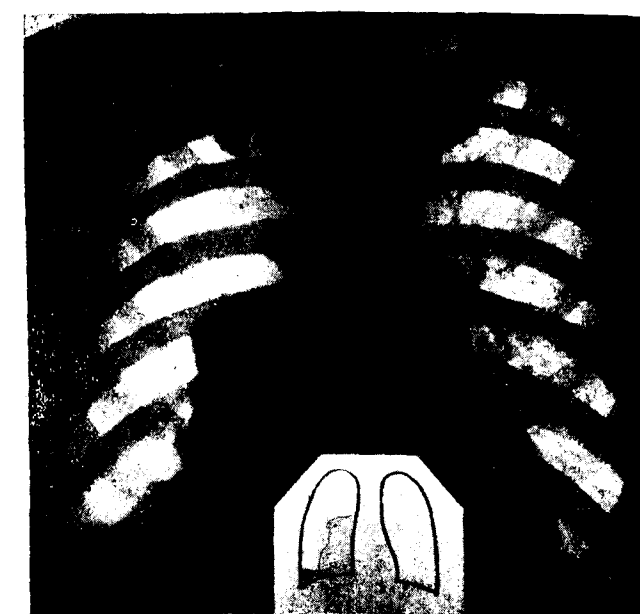


Fig. 1-C.

31 days after operation; cavity nearly invisible. Sputum negative.

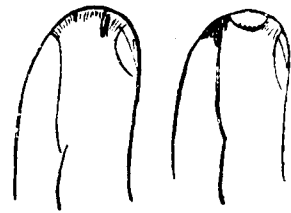


Fig. 2-A.

Oc. (Atchinese). First Jacobaeus operation (21-1-35) shorte, broad, strong adhesion fixing the lung top to the cupola; boundary of lung not clearly visible. Adhesion partially severed, partially carved by means of cautery to a certain depth.



Fig. 2-B.

10 days after first incomplete Jacobaeus operation. Lung still attached by broad adhesion; big "suspended" cavity.



Fig. 2-C.

Second Jacobaeus operation (23-3-1935). Two thick short adhesions; the medial one partially fixed to the big blood vessels, behind it a thin string; all adhesions severed respectively shelled out.

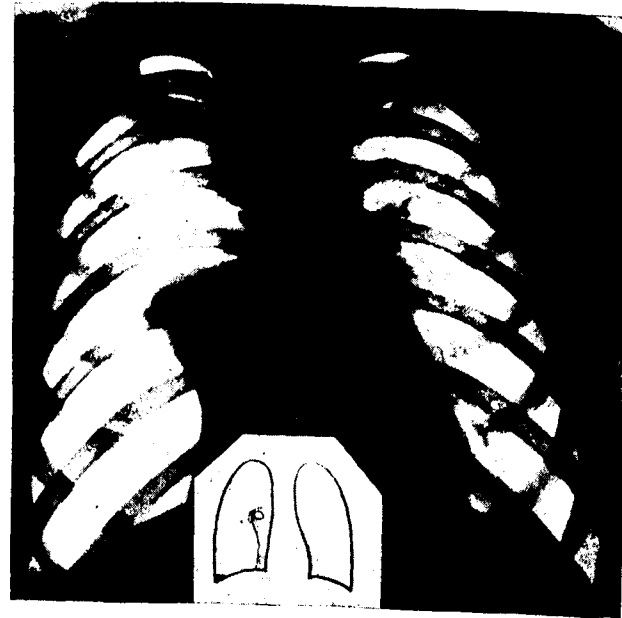


Fig. 2-D.

12 days after second Jacobaeus operation; lung completely detached, cavity much smaller; stump of adhesion clearly visible.

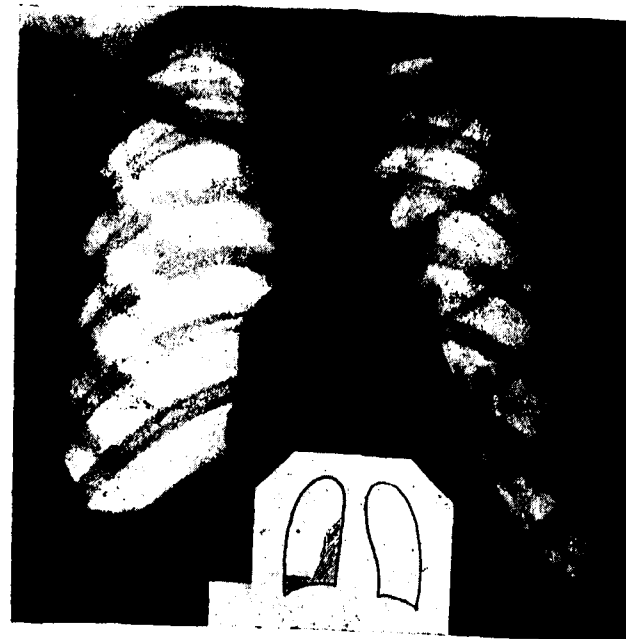


Fig. 2-E.

2 months after second Jacobaeus operation, cavity not to be seen, sputum negative.

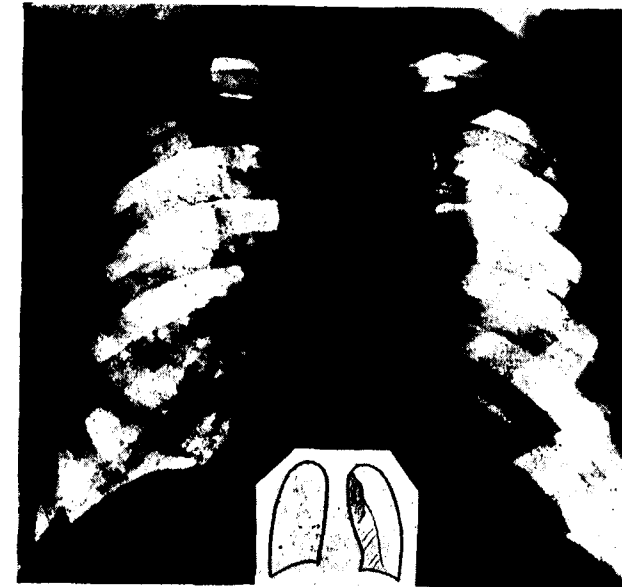


Fig. 3-A.

H. S. W. (Chinese) Diabetes; with restricted diet and 3 x 30 units Insulin sugar-free. Cavity in left upper lobe, adhesions medially above.

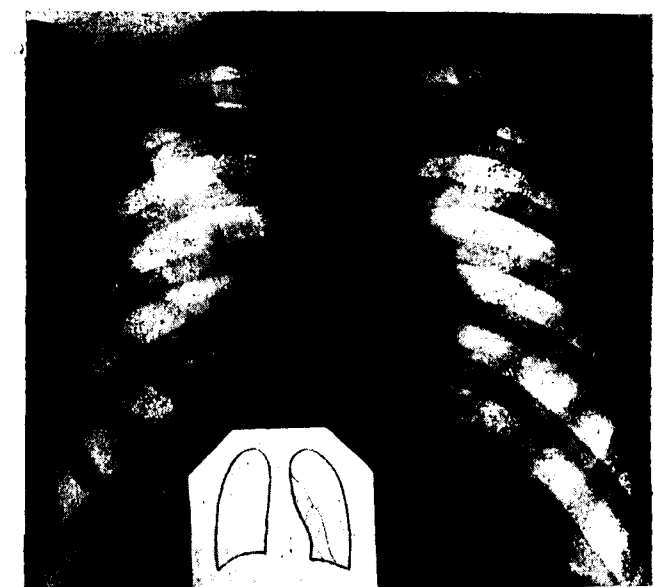


Fig. 3-C.

39 days after Jacobaeus operation, cavity not to be seen, sputum negative.

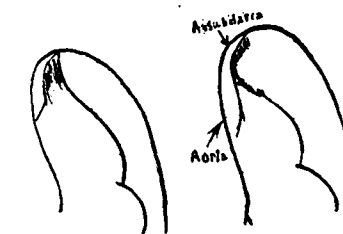


Fig. 3-B.

Membrane in angle between aorta and art. subclavia; cauterised close to the big vessels.

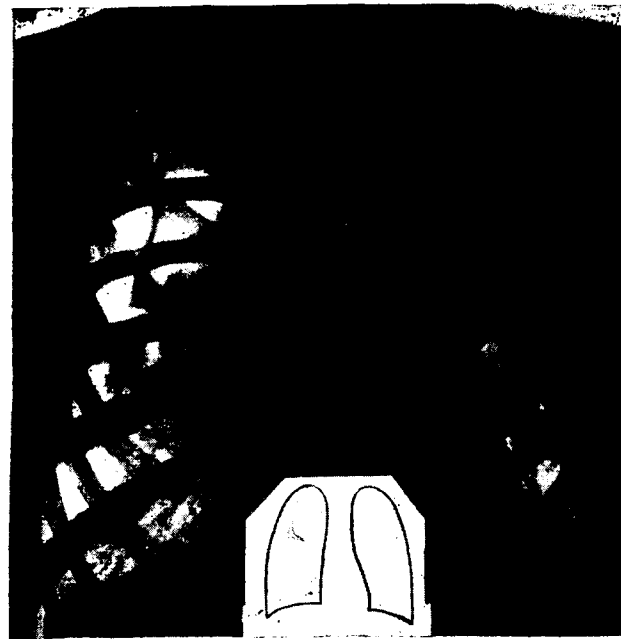


Fig. 4-A.
lbr. (Malay). Very serious bilateral tbc. with cavities on each side; tbc. of larynx. Pneumothorax r with very large "suspended" cavity.

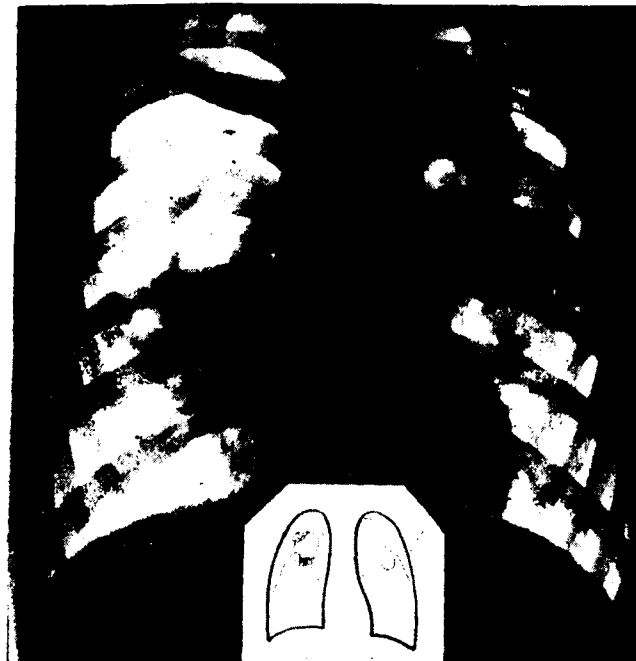


Fig. 4-C.
11 days after the first Jacobaeus operation (r). Right lung completely detached, cavity smaller, stump of adhesion clearly visible. Bilateral pneumothorax artificial. On the left side adhesions above.

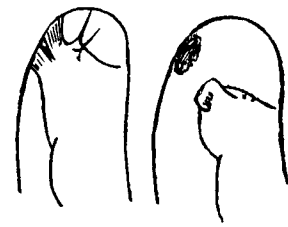


Fig. 4-B.
First Jacob. operation (r). Short strong adhesion laterally and above, about 6 x 5 cm., shelled out, medially several thin strings.



Fig. 4-D.

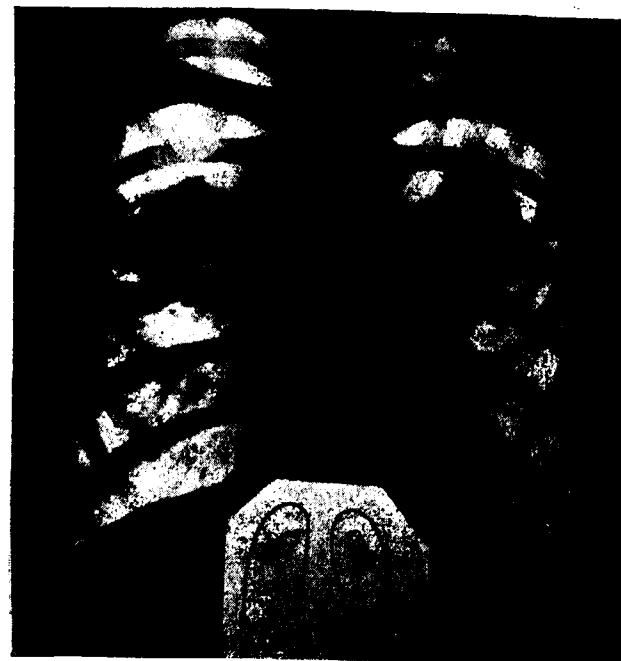


Fig. 4-E.
8 days after second Jacobaeus operation (l). Both lungs completely detached. Cavities much smaller but still clearly discernible. Condition stationary; sputum positive. Prognosis remains unfavourable in spite of the successful operations.

Satisfactory collapse was attained in 67.6 per cent. of the operations. "Satisfactory" means either complete collapse or the so-called "mediastinal" collapse, which allows the lung to retract wholly towards the spinal column.

Certainly not all cases where satisfactory collapse could not be obtained must of necessity run a fatal course; even incomplete operations may effect a cure, if the cavities are not too big or unfavourably situated; such cases however are not entered in my statistics as "satisfactory collapse." On the other hand it is unfortunately far from true, that all patients with satisfactory collapse are cured or recovering. That depends on a lot of other circumstances as well: size and nature of the cavities, extension and character of the lesions, and last but not least on social conditions. I am considering here only the operation and its immediate purpose: the satisfactory collapse, which is a necessity for successful out-patient treatment of pulmonary tuberculosis. Notwithstanding the great proportion of serious cases among the patients, that purpose could be achieved in about two-thirds of the operations (with regard to the number of in-patients in about 75 per cent.); and the danger of the opera-

tion is not very great, the mortality being only 0.54, per cent.

SUMMARY.

Treatment of pulmonary tuberculosis in Malaya and the Dutch East Indies must be largely an out-patient treatment with artificial pneumothorax, if we are to help a noticeable number of patients. This demands much more than sanatorium treatment, namely a satisfactory lung collapse, which mostly can be obtained only by means of the Jacobaeus operation. Considering that the danger of the operation is small and the desired effect attained in about $\frac{2}{3}$ of the cases, the conclusion is:—

The Jacobaeus operation is here still more than in Europe an indispensable part of tuberculosis therapy, destined to be of great value for our patients.

During the last few years the number of pulmonary tuberculosis cases in the educated middle classes in Malaya has, in my opinion, slightly increased, and that this state of affairs is due to economic conditions brought about by the slump from which we are just emerging and retrenchment by government and mercantile firms—Louis Sammy, Singapore.

WET MOUNT RIMMER*

BY

L. LOUIS HARROP, L.R.C.P. & S. (Edin.)

Penang Sanitarium and Hospital, Penang.

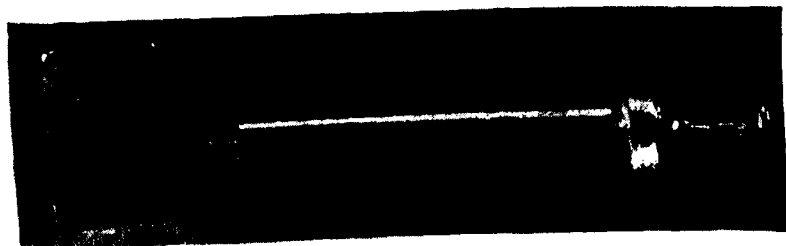
Wet mounts are used by dermatologists, gynecologists, general practitioners and laboratory workers in particular. The classical way, understood by almost every one, is that of trying to dexterously coax a bit of vaseline which has adhered to a dipped applicator around the area of a slide over which a cover glass is to be placed. The difficulty in the use of this method is probably as universally recognized as the procedure is practised.

instrument. This second part is composed of two pieces of square brass tubing. Both of these tubes are closed at the top where they are attached to the pump. The thickness of these tubes is about $1\frac{1}{32}$ of an inch. The top on the inner tubing is also about $1\frac{1}{32}$ of an inch in thickness. The thickness of the top of the outer one is about $\frac{1}{4}$ of an inch, so as to take up the strain of the connection and is also drilled and threaded to receive the screw end of the pump. These tubes are separated from each other on the four sides by two small screws on each side. This permits the vaseline which is placed in the pump to be pressed between the two square tubes, allowing it to run out in a square form.

No. I.



No. II.



No. III.



After two years of dissatisfying results, I thought to make a device which would do a neater and more efficient job and also do it more quickly. The device is herewith illustrated.

It consists of a pump $3\frac{1}{2}$ inches over all in length and $\frac{1}{4}$ inch in width. This is attached by means of a screw thread to the second part of the

The use of the instrument.—The instrument is placed upon the slide, a firm contact is made and the piston of the pump is either tapped gently or with a little force depending upon the height of the vaseline column desired. The rimmer is then removed and the slide with the vaseline rim is placed in an inverted position over the substance in solution to be examined, which is upon the cover slip. The slide is then again inverted and ready for use.

*Received for publication, 4-4-1937.

CANCER AS AN INTRACELLULAR
SODIUM CHLORIDE OEDEMA
A STUDY IN INCREASED ELECTROLYTES*

BY

HANS SCHROEDER, M.D.

Paracelsus claimed 400 years ago that cancer was due to minerals in the blood. My recent researches into the oedema have convinced me that cancer is a sodium chloride oedema of a special form. This is a constitutional disease with local manifestations.

Since chemical or physical irritation is perhaps always at the basis of cancer production in the human, we are confronted with the question: Why does cancer result in one individual and not in another under similar conditions? The answer is evidently: Constitutional differences. For this reason we cannot deny a constitutional basis. This is also the opinion of Prof. Fränkel (1), and of König.

I would say that all diseases, acute or chronic—with the exception of traumatic insults, physical or chemical (including bacterial), that follow a regular course—are due to constitutional disturbances.

Again, the reverse may be assumed, *viz.*, that all diseases are local, but the difficulty in many instances would be to determine the organ responsible. The recent work on the endocrines shows how futile would be such an attempt, for where one endocrine is involved, the others can be shown to be involved also. This brings us back to Paracelsus who said that when there is a disease in an organ, all healthy organs must fight against it; not one alone, but all.

Schmidtbauer (2) in his discussion of senile cataracts speaks of "modernes Salzschwelgen" as the etiological factor. Since all predisposing factors for senile cataract apply to cancer as well, I am satisfied that these two conditions are identical. Difference in course and end-results of the two is due to difference in structure of the tissues involved.

Another factor that led me to the consideration of a sodium chloride oedema is the fluid nature of the cell as reported by Kühne and Ebert (3), who observed in certain muscle fibers of frogs a minute, parasitic nematode worm which moved through the content of the muscle fiber as if it were fluid.

STATUS OF SODIUM CHLORIDE.

Sodium chloride is considered a food, but it is the only mineral that we add to our daily food, and in amounts that are entirely out of proportion to body requirements. Foods in the natural state do not seem to be so utterly deficient in sodium chloride that we have to add such large amounts. The fact that sodium

and chlorine are constituents of foods and of body tissues is not sufficient reason for us to indulge in this mineral to the extent we do. Because the deleterious effects of this mineral are insidious is no reason to regard it as harmless. A single overindulgence in sodium chloride is responded to by the organism, if sufficiently large: with vomiting, if less: with an increased demand for liquids to dilute and excrete this substance. A food would never cause such a reaction. When such indiscretion is repeated daily for a lifetime, something is bound to happen—and it does, just as with alcohol. Neurasthenia is perhaps the earliest manifestation. Vascular disorders and cancer do not appear till later, because we are dealing with a slow poison.

AGE INCIDENCE IN CANCER.

296 deaths among physicians are reported as due to cancer in the Journal A. A. M. during 1934 (4). The significance of this group, to me, is that we are dealing with a slow poison which rarely becomes fatal till middle age is reached. The youngest one of this group is a case of cancer of the testicle at the age of 28, the oldest one is 89. While 47 physicians died at a more advanced age than 89, it seems that at this age the vitality of the cell is not sufficient to react with hypertrophy and rapid multiplication, *i.e.*, the vital forces are too low to react, just as we have the same phenomenon with foreign proteins injected intramuscularly in individuals of low resistance. Ziegelroth (5) is of the opinion that cancer is a sign of degeneration of the organism, while Muller (6) believes that it is a regeneration increased to pathological proportions and that hormones are involved in it, especially in the metastases. Maldeyer, as a stern anatomist, says: "Nobody can obviously hear the grass grow and nobody has till now seen with his own eyes an undisputed cancer cell evolved from an epithelial cell, nor from a lymphendothelial cell, nor from a fixed connective tissue cell. This strict demand for proof will be fulfilled when we succeed to produce cancer at will experimentally in transparent media. Till then we have to content to draw conclusions from inanimate pictures to life processes which may have caused them."

SOCIAL FACTORS IN ETIOLOGY.

Some social factors in the production of cancer are:

So-called modern life. Most of us to-day live under a high tension in the chase after the pot of gold at the end of the rainbow, and in the pursuit of imaginary pleasures.

Our modern transportation facilities and the labour-saving devices have greatly reduced our physical exertion and we do not perspire as freely and as often as our ancestors. Ice water, frozen desserts

*Received for publication 16-12-1936.

and "cold drinks" were unknown 100 years ago; and so were electric fans and air-conditional rooms.

Our modern bill-of-fare relies to a great extent on cooked foods. Cooking precipitates the natural salts and we add sodium chloride to make the food tasty. Reinhold Gerling claimed some 35 years ago that the amount of seasoning added to the food at the dinner table determines the social status of the person, in that prostitutes and their associates, as well as heavy drinkers, use the largest amounts. Some interesting observations as to the effect of religious customs I shall report in connection with my studies on senile cataracts.

I have asked myself why the incidence of fibroids in Negro women in New Orleans is as 10:1 of that of the whites. When we consider the large amount of salt meat consumed by these people of the low income class, the reason becomes quite apparent. The men usually do not suffer the effect, for they are mostly employed as manual labourers and perspire freely in the sweltering sun outdoors.

Our taste for salt is largely acquired and is due to custom; we can get along with very little of it. Our so-called strenuous way of living dulls our appetites and we try to stimulate them with all sorts of seasonings in and on the food.

Our so-called modern life has been held responsible for the undoubted increase in cancer. Better diagnosis and that more people reach the cancer age have been theories advanced to appease the fear of public and physicians in the face of an increasing morbidity and mortality rate from cancer. Such interpretations of statistics will never explain away an increasing cancer rate.

DISTRIBUTION OF CANCER (7).

From the foregoing it will become clear why cancer is more frequent in large cities than in rural districts and that it is more common among the well-to-do and the prosperous than among the poor. It is a disease which appears to afflict peculiarly those who are especially well nourished and in good general health. Likewise, it is primarily a disease of civilized peoples for it is rarely found among our native races, particularly among our native Indians, who, in their native state, are practically free from it. The same conclusion applies to South American Indians. I may mention here that the Indians used little salt and had sweat houses.

Salt-eating as a sign of our civilization is shown by the reports that the African cannibals did not like the flesh of the early missionaries, as it was unpalatable for them on account of its high salt content.

Since the Eskimos in their native state live on frozen raw meat without salt, my interest was aroused as to the incidence of cancer among them. Inquiry

revealed (8) that such incidence is about proportional to ours. A recent report by Duffield (9), again, states that the incidence of cancer is apparently extremely rare among the Eskimos of Greenland.

Urquhart (10) states regarding cancer: I have not in my seven years' experience in the north (Aklavik, Northwest Territory) seen a single case of malignancy in either Eskimo or Indian (a population of about 4,000).

Wu states that "while Chinese were more subject to some diseases, they were less subject to heart and kidney troubles and to cancer." In the past there was a tax on salt in China; their idea of a democratic distribution of taxes, since rich and poor alike use salt. Economy forces them to restrict its use; this is solved by the custom of using the liquid form (the brown brine in chop-suey places over here), and the morsels of meat are dipped into it, thereby using less salt than if it were added to the cooking.

PHYSICAL FACTORS IN ETIOLOGY.

For an understanding of the changes taking place in the cancer cell I shall present some fundamental facts of biology and chemistry (3).

IRRITABILITY OF THE CELL.

The general properties of living matter are: motion, growth, reproduction, respiration and irritability.

The degree of irritation, or stimulation, determines the fate of the cell.

When irritation is absent we get atrophy of the cell.

Subnormal irritation results in subnormal function of the cell.

With normal irritation normal function results.

Increased irritation produces increased function, and

Excessive irritation disorganizes the cell structure and results in necrosis.

ETIOLOGY OF CANCER CELL.

Irritation of the cell may be electrical or mechanical; by the former I mean the nerve impulse; the latter may be chemical or physical irritation. The irritation in the cancer cell is mechanical and not dependent on the nerve supply, for Herzog (12) found that specific nerve endings were entirely missing in the cancer cells.

In cancer we usually have a history of trauma or chronic irritation. This involves two phases: action and reaction. The former is clear: it is with the latter that this study is concerned. What is this reaction of the cell that determines its fate, whether it shall undergo necrosis, repair, or unrestrained hypertrophy—which we call cancer? The individual cells, as well

as organs and organisms, are subject to the conditions of their environment. This environment in the case of the cell is the tissue fluid and the blood plasma.

The controlling factor in cell metabolism is the cell wall. When this cell wall suffers slight damage through trauma or chronic irritation the cell is trying to protect itself against the environment; it can only do so by increased metabolism (specific or general), which again leads to increased size. This increased size reaches its physiological limits in the cancer cell. I regard it as the biological counterpart of muscular contractions which are not under the control of the will, as found in certain maniacal states and as capable of being produced in the hypnotic state.

CHANGES IN THE CELL.

Trauma or chronic irritation damages the cell wall and increases its permeability. Cell metabolism is therefore increased (13), due to lowered protection against the surrounding medium (14). This is also shown by the surprising sugar tolerance and the decrease in blood sugar content in cancerous diabetics (15). The increased growth energy and malignancy of cancer with high blood sugar content are in favour of an increased requirement for sugar in cancer and that it usurps the blood sugar offered. Händel and others found that carbohydrate food increased the growth of the tumour. Stickl concludes that cancer satisfies its sugar requirements without regard to the lowered blood sugar level, and thereby damages the organism as a whole still more. By giving insulin the organism as a whole could be damaged more than the cancer.

With an increased cell volume the surface is also increased. Since absorption of oxygen is proportional to the size of the cell, cell metabolism in the cancer cell is increased. The cell membrane, which regulates the oxygen metabolism of the cell, is very much thinner in the cancer cell and we therefore have increased metabolism on account of increased cell surface and greater permeability of the cell wall. KCN decreases oxidation of the cell, but the cancer cell is less affected than the normal cell (15).

CELL PROLIFERATION.

The stimulus for the proliferation of the cancer cell appears to originate in the changed chemistry of the individual of advanced years. Cancer of the young is relatively rare, for the abundance of life forces seems to be able to cope with the altered condition of the cell, which already contains more water than in the adult individual. The germ cells form an exception. Trauma to the testicle, for instance, with release of the germ cells into the blood stream, invariably is followed by cancer of the entire system. The germ cells are wandering cells and are not bound up by the intercellular cement substance. They can therefore easily be carried to distant parts by the blood

stream. Since proliferation is their outstanding quality, they multiply rapidly wherever they find lodgment.

FUNCTIONAL PROPERTIES OF NaCl.

FUNCTION OF SALT AND WATER IN TISSUES.

It has been found that by increasing the total amount of salt in protoplasm many cells may be stimulated and egg cells of some animals caused to develop parthenogenetically without the aid of sperm.

Water is a great solvent and has the property, so important to the cell, of accelerating all kinds of chemical reactions. All protoplasm contains a solution of salts, and these salts are of the nature of those found in the sea.

One of the properties of most fundamental importance is that aqueous solutions of the common salts conduct the electric current. Arrhenius' ionic theory states that the osmotic pressure of solutions of electrolytes is higher than the osmotic pressure of equally concentrated solutions of non-electrolytes. Applied to cancer this means that the osmotic pressure of the fluid surrounding the cancer cell is higher on account of the increased NaCl content of the blood, NaCl being an excellent electrolyte. Since the cell membrane of the cancer cell is thinner than that of the normal cell, for reasons already stated, osmosis through this membrane becomes facilitated and increased.

When a salt dissolves in water then, as it does in living matter, there are reasons for believing that it breaks, in part, into electrically charged particles which, like so many tiny electrodes, each bearing one or more electrical charges, float about in the protoplasm and become thereby capable of doing many things. Living matter contains before it is stimulated, then, a large number of electrically charged particles, and it is clear that if in any way an accumulation of positive particles in one place and of negative particles in another could be produced, and if the negative and positive particles had different actions on the vital processes, momentous changes might be brought about in living matter. This is what happens when an electric current is sent through protoplasm. Moreover, it is clear that if the nature of these little electrodes is changed so that instead of carrying one charge each carries two or three, or if they carry them at a different potential, the electrical equilibrium of the protoplasm might be upset as surely as if a separation of opposite electricities had occurred. The ionic theory, then, is at present fundamental to an understanding of the nature of electrical and chemical stimulation and depression of protoplasm; of the action of salts and drugs on living matter; and it also enables us to see how if by any reaction taking place in living matter a change in the distribution of positive and negative ions could be produced some-

thing in the nature of a condenser might be formed which, under suitable conditions, would discharge. It may be stated, also, that oxidation in protoplasm is accompanied by such an electrical disturbance which in its turn probably acts as a stimulus to the surrounding parts of the protoplasm, the stimulus being propagated in this way.

Applied to the cancer cell this means that on account of increased permeability the NaCl of the blood serum can enter the cell more rapidly and thereby greatly increase the electrolytes, the results of which are the greatly increased life processes as compared with the normal cell. This would adequately explain the changes in the cancer cell.

The importance of the electrolytes to the body economy I cannot emphasize better than by quoting Hawk (16): "The pronounced influence of electrolytes upon the action of pancreatic amylase and other amylases has been demonstrated many times. In fact, the removal of electrolytes from pancreatic juice by dialysis yields a juice which possesses NO POWER TO SPLIT STARCH."

Neutral elements have been transmuted into radio-active substances. Copper and common salt have already been transmuted, the latter providing radiations three times as powerful as radium (Ernest O. Lawrence).

Another property of salt solutions of great interest is their high internal pressure. The internal pressure of salt solutions, or even of water alone, is very high. By the internal pressure is meant the cohesive pressure due to the attraction of the molecules for each other. This pressure in water is probably between 5,000 and 10,000 atmospheres. The addition of salt to water increases this pressure still higher, and the more salt there is added the greater the internal pressure becomes. It is the internal pressure which is probably at the basis of osmotic pressure. The osmotic pressure is that pressure which is just sufficient to prevent any increase in the volume of a solution when it is separated from its solvent by a truly semi-permeable membrane. The cause of the osmotic pressure is evidently ultimately the attraction of a physical or chemical nature between the solvent and the solute molecules. It is the cohesive or internal pressure of the solution. Since salt solutions and all things in solution exert osmotic pressure, protoplasm has a decidedly higher osmotic pressure than water.

SURFACE TENSION.

Fats, soaps and bile salts decrease the surface tension, while sodium chloride added to water increases it. Salt has an internal pressure so great that the substance is a solid at the ordinary temperatures; it is much higher than water. The surface tension plays an important physiological role in its

relation to the absorption of water by the cell colloids. In cancer there is a lowered surface tension of the blood plasma and tissue fluids, according to Freiberg (17). This is to be expected since the cancer cell reduces it in its rapid metabolism. The cell has a definite structure due to its colloids, which are organized, and which is essential for metabolism.

SODIUM AND POTASSIUM SALTS.

In the comparison of sodium and potassium salts it always takes a higher concentration of a potassium salt to precipitate than that of a sodium salt, and bivalent and trivalent ions are more effective in precipitating, for they unite two or three or more colloidal aggregates into very large aggregates. It is generally true that salts of bivalent metals ionize less readily than monovalent. In some of the colloids, as in the globulins, which are soluble in dilute salt solutions but not in water, the addition of a little salt is able to cause the colloid to dissolve. In cancer we have less organization of the structure; perhaps this can be explained on this basis.

The first effect when a cell is placed into a solution is on the delicate membrane surrounding the cell which will almost at once, because of its thinness, alter its state of swelling to that of the solution in which it is placed. Hofmeister showed that gelatin would absorb fluid from a 2 N solution of KCl in the ratio of 18.84 to that of NaCl of 22.19.

The cell is ordinarily quite resistant to chemical influences, but with an intracellular oedema as in the cancer cell, the cells are more loosely bound up; this favours metastasis.

Due to a higher rate of metabolism the young are able to overcome any imbalance better than the aging individual.

WHAT IS A FOOD?

I have touched upon this already so far as sodium chloride is concerned. There appears to be no strict limit between food and poison among the substances used in our diet. Individual differences are considerable and there is a great latitude in this respect. Text-books are silent on the effect of overindulgence in sodium chloride. An alleged lack of this mineral is supposed to cause certain derangements of the organism, but we lack definite proof that it is the sodium rather than the chloride which is involved. I shall consider this in connection with the chlorides.

Through the eons of evolution and adaptation foods in their natural states have contained all the elements in proportions needed for the body economy; we do not have to add large amounts of a mineral just because it apparently stimulates our appetite and we suffer no immediate consequences from it.

We are appalled and alarmed at the mounting death rate from cardio-vascular diseases and cancer,

yet we have never given this poison a thought, because it is insidious in its action. The accumulation of waste products of metabolism in the liver and gastro-intestinal tract (hepatic dysfunction) add their share to this irritation. Mathews says: "All substances not foods shorten life when they find entrance to protoplasm, provided they are taken in sufficient amount to affect it at all." Sodium chloride is usually considered a food, but I question this most seriously.

THE MINERALS.

In dog milk the relative proportion of Na₂O to Ca O is as 88.0 to 272.4. In human saliva the proportion of K: Na: CaO is as 457.2: 95.9: 50.11.

67 liters of blood plasma contain (18):
Na 330 gm, K 13.3 gm, Cl. 248 gm.

100 cc of blood serum contain (19):
Na 330 mg, Ca 9.11 mg, K 16.22 mg, Mg 2.3mg.
1 liter mother's milk contains (20):
Na 230 mg, Ca 330 mg, K 780 mg, Cl. 440 mg.

In comparing these figures it is apparent that nature protects the infant from the abuse of sodium chloride by the mother. The overwhelming amounts of Na and Cl in the blood plasma of the human adult may be considered normal, but they are surely not natural.

While the human has a gastric acidity of about 0.3 per cent HCl, the dog has about 0.56 per cent., yet the dog consumes less sodium chloride than the human. The optimum was found by Christensen to be for the human gastric juice 0.020-0.033; for the pig 0.052; and for the dog 0.053 N.

100 gm blood contain (21) in mg:

	Na	K	Ca	Mg	Cl
Whale	180.5	200.5	6.46	4.48	268.5
Pig	178.59	191.7	4.85	5.33	269.0
Horse	190.74	227.3	3.64	3.94	278.5

Ratio in muscle tissue (21):

	Na	K	Ca	Mg	Cl
Man	100	400	9.3	26.4	
Dog	100	354	7.26	25.1	
Rabbit	100	870	40.0	60.5	
Pike	100	1415	145.0	150.0	Cl
Herring ova	100	219.9	5.6	1.6	359.2

In the evaluation of these figures we have to bear in mind that domestic animals often live on the same diet as the human master, and that these figures are therefore not always reliable. The herring ova, like the human milk, show that nature protects the future generation against the salt in, or on, which

the mother lives. These comparisons are just given for examples; no further comment is necessary. It is claimed that carnivorous animals have a higher gastric acidity than the herbivores, yet the pig has twice the acidity of the human. The claim that we need salt in our food to elaborate the HCl seems therefore quite unfounded.

In cancer of the stomach, and of other parts as well, there is often absence of HCl in the stomach. This has been variously interpreted as due to destruction of the fundus cells or due to the absence of secretion. It may also be possible that so much chlorine is utilized in the metabolism of the cancer cell (whose avidity is well known) that there is none available for the elaboration of the HCl.

BILE AND THE BLOOD.

Bile stimulates digestion and aids absorption, thereby preventing the accumulation of putrescible materials, and by its peristaltic stimulating powers it sweeps the bacteria out of the body and prevents constipation. Bile also absorbs toxins and poisons from the intestine. The function of the liver, again, is to detoxicate the blood. Webb (15) says that 87 per cent. of cancer patients suffer from gallstones. This deserves further consideration. Hurxthal (22), as well as Loranger (23), consider thyroid deficiency as the cause of hypercholesteremia and gallstones. Binet (24) states that approximately 82 per cent. of all patients afflicted with cholecystitis, and 75 per cent. of patients with gallstones, are women. Increased blood cholesterolin accompanies the approach of the menses, while conversely its diminution indicates its ending. He states that cholecystitis begins at puberty, but dies out gradually, and is most common in girls whose development in subnormal, retarded, insufficient or weak. Hansen (25) believes this hypercholesteremia to be due to impairment in the function of the supra-renals or ovaries, while Saiki (26) says that gallstones are due to deficiency of vitamin D. Royster (27), again, considers cholecystitis as a sequel to inflammation of the liver.

The bile salts constitute the main active principles of bile, and therefore share the actions and uses of the latter, perhaps with the advantage of more constant composition. They stimulate the secretory activity of the liver, increasing both the fluids and solids of the bile.

Cholesterol is most abundant in brain tissue and in fat; it constitutes 19 per cent. of the skin fat. Malignancy should be most frequent in these structures, yet old people have little skin fat and develop cancer of the skin.

ABSORPTION.

The difference in solubility of O₂ and H₂ in water and serum is due to the salts in the serum. A

salt solution dissolves always less gas than an equal volume of water. Indeed, by the addition of salt, gases can be salted out of their solutions just as the proteins can be. When CO_2 enters the blood corpuscles, they swell. This change is very significant, since it shows how small a change in acidity is required to cause swelling changes in vital structures. Increased oxidation takes place with increased water content of the cell. This means that in the cancer cell less O_2 is received, and on account of increased CO_2 swelling takes place with increase in water content, which will bring the oxidation back to normal again.

Human blood corpuscles contain more K salts than Na, whereas dog's corpuscles contain more Na. K salts are particularly efficient in increasing the percent of saturation of the hemoglobin.

POTASSIUM, CALCIUM AND SODIUM.

Ca and Na are somewhat antagonistic in their action and one will replace the other. The administration of calcium salts has been shown to decrease the permeability of the cell. Accordingly, it lessens all transudation phenomena, and has been found useful against the skin rashes of serum disease, against other urticarias, against diarrhoea, etc. Calcium is also concerned in the regulation of nervous, glandular and muscular activity, and in the coagulation of the blood. Watermann (15) showed manometrically that in the rat sarcoma, mouse carcinoma, and human skin carcinoma, glycolysis is directly dependent upon the calcium ion content of the Ringer solution and that therefore a direct relation with the permeability of the cell is present. Glycolysis decreases with increased calcium ion content of the Ringer solution. According to Cramer (15), Potassium increases cancer growth.

The beneficial effect of calcium in tropical diseases, especially in those of the skin, as reported by Beregoff (28) recently, may be noted here. Behan (29) noted curative action on cancer tissue by the administration of calcium, which he employed to control pain. Again, it has been shown that in experimental cancer in mice the growth increased more rapidly when the animal was fed a diet to which sodium chloride had been added.

THE PROBLEM OF THE CHLORIDES.

In vomiting and diarrhoea it is the practice to replace the chlorides lost by sodium chloride. Muscle cramps due to excessive perspiration while doing heavy manual work, or in overheated rooms, are also treated with sodium chloride, yet in tetany calcium salts are used. Why the lost chlorides should be replaced by NaCl and not by CaCl_2 is not clear to me. Since we take an excess of sodium in our food, there seems to be no justification for this theory; CaCl_2 should be used in all these instances.

Acne, Addison's disease and irradiation sickness have just been reported to be benefited by a high sodium chloride intake. I have grave doubts that the Na ion is responsible for these results.

This and the following section will be considered in full in another paper on the chemistry of cancer. Since this paper was written Tislowitz (30) reports improvement in Addison's disease by the use of vitamin C.

OTHER CAUSATIVE FACTORS.

While I have so far considered only sodium chloride in the etiology of cancer, I am not unmindful of other causative factors; these I shall give in the paper to follow. Certain substances containing the phenanthrene nucleus are claimed to initiate cancer, but why certain members of a group can produce this change and others can not, has not been explained. The fact that the phenanthrene nucleus is found in sex hormones, sterols, bile acids, and certain vitamin principles (31) has led to much speculation. Loeb (32) says that the carcinogenic effect of the sex hormones is confined to the secondary sex organs. If the sex hormones are responsible, why do we get cancer in the female after the menopause? Also, on this basis, what causes cancer in other organs? (33). Dodds and Cook (34) assume the opposite position: "If estrin is responsible, directly or indirectly, for the production of natural immunity, we should expect cancer to be most prevalent when the production of estrin ceases. This is the case, at any rate, in the female, since cancer is most prevalent after the menopause."

Despite the unfavourable discussion of Ziegler's alkalosis theory (35), there are students of the subject who still maintain such a theory. If cancer were due to an alkalosis, it should not occur in diabetics, for they are known to tend toward an acidosis; yet, cancer occurs among them quite frequently, provided they reach the usual cancer age. The favourable effect of fever in the case by Meyer (36) can be interpreted in other ways.

With sodium chloride the problem is different; it is much like the atmospheric pressure; we are unaware of it until extremes are reached. As a balanced diet contains adequate amounts of the minerals, I can hardly imagine a sodium chloride deficiency; an excessive amount, again, is received by practically all civilized people. Finally, it has not been proved that with these other factors operating, sodium chloride can be ruled out as not having any effect in these cases also.

CONCLUSION.

In conclusion, it may be objected that this consideration is largely theoretical, but so are all theories about cancer. I claim for my theory that it

has the advantage of chemical and biological fundamentals in its favour. If civilized man becomes sodium chloride conscious and we achieve a reduction in the incidence of cancer and vascular diseases, our efforts shall not have been in vain. The chemical relation of the elements to cancer will be discussed in another paper.

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THE MODERN TREATMENT OF MALARIAL FEVER.

BY

ERIC C. SPAAR, B.A., M.D., B.S. (Lond.), M.R.C.P.
Late Senior Physician, General Hospital, Colombo,
Ceylon.

As was remarked by S. P. James in a discussion at the Royal Society of Medicine, the time has passed when it can be regarded as satisfactory or sufficient to make a diagnosis of malaria and to begin at once a standard quinine treatment. Experience gained in recent epidemics with synthetic drugs, and the experimental treatment of induced malaria under controlled conditions and with prolonged observations of the afterevents following on the cure of a primary attack, where there has been no possibility of reinfection, enable us to consider the treatment of the disease in a truer perspective; and thus, although it is not yet possible to devise any standard treatment that will suit all conditions, since a true specific has yet to be found, it is profitable to review the measures at our disposal that are most likely to stave off the grave complications that so often lead to a fatal issue, if not to bring about a permanent cure.

Before any course of treatment is adopted, it would appear to be necessary that the physician should know not only the species of parasite concerned in a particular attack, but also the geographical strain of such species, particularly that of the many races of *Plasmodium falciparum*, and further, should form a correct opinion as to whether the attack is a primary one, or a recrudescence. This can be determined from the history obtained and the laboratory findings. Medical men practising in the tropics would do well, it may be mentioned, to familiarize themselves with the implications connoted by the terms recrudescence, relapse, and recurrence introduced by S. P. James to characterize the clinical phenomena that are apt to follow upon the cure of a primary attack of malarial fever, artificial though they may be. A recrudescence occurs within a period of eight weeks, with a return of parasites in the peripheral circulation and fever; a relapse occurs between a period of eight weeks and twenty-four weeks; a recurrence occurs twenty-seven weeks or later, after recovery. These incidents apply to benign tertian infections; in infections with the subtertian parasite, although it is held by some observers that relapses and recurrences do not occur, it is thought that such phenomena are quite late events, occurring

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many months later than is the case where *P. vivax* is the cause, since Ziemann has reported such a phase in himself eighteen months after the cure of the primary infection; moreover, recrudescences in this type of fever may be prolonged to the time when recurrences occur in benign tertian infections. Thus it will be seen that tertian fever is a chronic disease in its manifestations, while subtertian fever is essentially acute and results in a permanent cure within a period of about six months in most cases.

Further, it has been found that in infections with *P. vivax* febrile manifestations may remain latent for six months or more, but not in infections with *P. falciparum*, where the longest period that has intervened has been seventeen days. Nor would it appear that cessation of the fever is a sign of the termination of the general infection, since parasites are stated to have been found in the blood as late as 159 days after recovery from the last febrile recrudescence in benign tertian fever; there may be a persistence of parasites in the peripheral circulation for a longer or shorter period after what appears to be complete clinical recovery.

TREATMENT OF BENIGN TERTIAN AND QUARTAN FEVERS.

As regards treatment of the ordinary attack of benign tertian or quartan fever, the choice of remedies lies between quinine and atebirin. They are equally efficacious in controlling the acute attack. Quinine is more lethal to some strains, atebirin to others. In the hands of some workers a good substitute for quinine has been found in cinchona febrifuge, which is cheaper on the market. It may be obtained in 3 gr. tablets, two of which are prescribed three times a day. Experience shows that relapses are less frequent with atebirin. Recently a combination of atebirin with plasmoquine has been prepared by Bayer-Meister, Lucius in the form of dragées each containing grm. of atebirin and 0.033 grm. of plasmoquine. They are coated in such a way that they are not acted upon by the gastric juice, disintegration taking place lower down in the bowel. It is claimed by those who have used these dragées in Assam and India, that the relapses are even fewer than when atebirin is prescribed by itself, and their toxic effects negligible. There is, however, no royal road to a permanent cure with any of these drugs in all cases. This will depend on the degree of susceptibility of the patient to malaria, the particular strain prevalent in different countries which varies in its resistance to the drug used, the virulence of the infection, and the amount of immunity acquired. The selection

must be based on economic conditions, the state of general health and nutrition of the patient, especially with reference to liver and kidney diseases, ease of administration and period of treatment.

As regards the use of quinine, since it is no longer deemed necessary or even desirable to give a prolonged course with the object of preventing relapses, and the old doses are considered too large, a mixture containing 5 grs. of the sulphate or hydrochloride administered every four hours in six doses for the day till the temperature drops, and then three times a day for the rest of the week, would seem to be the ideal method; or the more cumbersome alkaline quinine treatment of Sinton may be adopted. Similarly the usual five-day course of atebirin may be prolonged to seven days. If it is held to be most important in any particular case that relapses should be prevented, a week-end course of 15 grs. quinine on two successive evenings after an aperient, or 10 grs. every evening for six days in the week, and continued for two months, would appear to be both simple and effective.

In the kind of cases referred to, the oral route alone is sufficient. Intramuscular injections, either of quinine or of atebirin-musunate, are not called for. Such should only be used if the patient is unable to retain quinine by the mouth, if there is severe vomiting, or if the case proves resistant to the drug used. This in most cases is due to want of absorption. Examinations of the urine with a few drops of Mayer's reagent will show whether absorption is taking place in the case of quinine. Non-excretion of the drug in the urine, when atebirin is administered, may, however, mean faulty excretion by a diseased kidney and will lead to poisoning and possibly a fatal issue.

TREATMENT OF SUBTERTIAN FEVER.

The ordinary case of subtertian fever is preferably treated by atebirin, which is consistent in its therapeutic effect. Some strains are not at all susceptible to quinine, though it is claimed that combined with alkalies a permanent cure may be expected in three-quarters of the cases.

In serious and toxic cases of benign tertian fever, where the aim is to bring the patient under the influence of the drug as quickly as possible, intramuscular injections of quinine or of atebirin-musunate may be used. In healthy subjects the latter drug is preferable since the injection is less painful and the control of the fever rather more rapid. It must be borne in mind, however, that both drugs when

administered in this way may cause nodular infiltrations and abscesses, while further, as shown in the Ceylon epidemic of 1934-35, atebirin-musunate may give rise to severe abdominal pain and psychoses. The latter effects, though unpleasant and severe at times, are not, however, of grave import. A more serious objection to the latter drug is the dangerous intoxication caused in the presence of liver derangement, kidney disease, ankylostomiasis, cachexia of all kinds and the toxæmias of pregnancy. In the presence of such conditions quinine is without any toxic effects and is eminently suitable, and may be given intravenously. In algid cases, no time should be lost in tinkering with intramuscular injections, but resort to intravenous quinine must be made at once. At the same time 5 per cent. glucose in normal saline is necessary and may be given up to one pint. Only if the heart is weak need a preliminary intramuscular injection be made before the intravenous treatment is commenced.

For intramuscular use, quinine bi-hydrochloride is the preparation generally used, and may be obtained in sterile ampoules. It is claimed by Leonard Rogers, however, that cinchonine bi-hydrochloride is preferable, as it does not cause necrosis of the muscular tissue. Intramuscular injections of atebirin-musunate are given in a dosage of 0.3 grms. dissolved in 9 c.c. of water one on each of two successive days. Quinine bi-hydrochloride is given in a single injection daily for three days; the prolonged use of it for weeks on end, as is the practice of some medical men in the tropics, should not be countenanced on any account.

In serious cases of subtertian fevers the choice should lie between atebirin-musunate by the intramuscular route, or quinine by the intravenous route. Atebrin-musunate must not be given intravenously. The small dose permissible is without effect on the course of the disease; further, it tends to paralyse the vasomotor centre.

All types of malaria seen in coma or on the verge of it for the first time should be treated by intravenous quinine injections. Quinine bi-hydrochloride, bi-hydrobromide or the acid hydrobromide of cinchonine may be used in 10 grs. doses dissolved, in 10 to 30 c.c. of normal saline. Sterile ampoules are put up by Messrs. Parke, Davis & Co. As much as 15 grs. four times in thirty hours, has been used by Leonard Rogers in algid malaria with success. It must be remembered that besides the fall brought about by the attack of malarial fever, intravenous quinine causes a further fall in blood pressure, which may be

lowered to a dangerous level. The injection should be given slowly over a period of one or two minutes and adrenalin ms. 5 added to it previously or cardiazol-quinine may be used. Lumbar puncture or cistern puncture is of great help in promoting recovery.

Following on the above lines of treatment the gametocytes of *P. falciparum* alone need to be dealt with. In plasmoquine we have a sure specific for their destruction. The use of plasmoquine should be reserved for that purpose. Atebrin is a more reliable and stronger parasiticide as regards the schizonts. Moreover, plasmoquine has a deleterious effect even on the healthy liver. Quite small doses of this drug, however, are able so to alter the structure of the gametocytes as to prevent their further development in the body of the anopheles. Plasmoquine does not, however, prevent their formation in the human host. There is therefore no object in giving a course of this drug unless sexual forms are found in the peripheral blood. Small doses of 0.02 grms. twice a day for five days, alone or preferably combined with quinine in the preparation quino-plasmoquine compound, may then be prescribed.

Recrudescences of fever should preferably be treated with the drug not used in the primary attack. In benign tertian fever the great aim should be to allow immunity to be acquired. Such immunity develops increasingly with a repetition of the fever. In the recrudescences of subtertian fever, atebrin is particularly useful, according to S. P. James who holds that immunity too is more easily acquired in this type of fever.

TREATMENT OF PREGNANT WOMEN.

For pregnant women suffering from malaria, atebrin has been found most useful since the drug is quite without effect on the pregnancy. It may be quite dangerous, however, if the liver is deranged, or if there is impairment in the excretory functions of the kidneys. In Ceylon it was seen that pregnant women were particularly liable to collapse after injections of atebrin-musonate. Quinine in small doses of 2 or 3 grs. administered three times a day at intervals of eight hours has really no tendency to bring about a miscarriage, and may safely be prescribed in this way if its use is indicated. Those who fear to use quinine forget that there is a greater risk of abortion from the fever itself, as those with wide experience of these cases can testify.

TREATMENT OF CHILDREN.

The treatment of children should be carried out on the same lines as adults. Oral atebrin is well borne by them, but atebrin-musonate by injection should not be given to infants. In them death may supervene a few days or a few hours after the injection, and is preceded by collapse or convulsions. Even in older children it would seem that the dose recommended by the manufacturers (0.1 grm. up to 4 years, 0.2 grm. 5-8 years) is too large, for with these doses several deaths were reported during the Ceylon epidemic, though it must not be forgotten that these children were under-nourished and of poor physique and low vitality. In pernicious fever quinine by intramuscular injection is preferable for them. An infant tolerates quite well a dose of $7\frac{1}{2}$ grs. A child of 3 years is well able to stand the full adult dose.

PROPHYLAXIS.

Atebrin and plasmoquine are good casual prophylactics against infection by *P. falciparum*, but not by *P. vivax*. Obviously they are of no use to those living in an endemic area since they are too toxic for prolonged administration. Either preparation might be effective if a stay of only a few days were contemplated. On the other hand, quinine, even in large doses, has been proved not to prevent infection. It is claimed, however, that if taken regularly for a week to ten days after infection, clinical malaria will be prevented. On the whole, the consensus of opinion is that no attempt at prophylaxis need be made in countries where the benign tertian parasite alone is likely to infect one. All residents in an endemic area where subtertian fever is prevalent would be well advised, however, to take a dose of 5 grs. of quinine every night. Even if clinical malaria is not thus prevented, the attack will be milder and the patient will escape the dangerous complication of blackwater fever.

BLACKWATER FEVER.

Atebrin is well borne in all cases of blackwater fever, and should especially be used in cases provoked by quinine. Any desire to prescribe quinine should be limited to such cases as present malarial parasites in the peripheral circulation. It is then permissible to use quinine in small doses, 1 or 2 grs. twice a day at first, and then several times a day when it is clear that the drug is well borne.

SOME DISORDERS OF CARDIAC RHYTHM AND THEIR TREATMENT*

BY

KENNETH D. KEELE, M.D., M.R.C.P. (Lond.)
Casualty Physician, St. Bartholomew's Hospital,
Out-Patient Medical Officer, National Hospital
for Diseases of the Heart, London.

As a group, most of the cardiac irregularities have a remarkably good prognosis *per se*. They are, therefore, of far less significance, when found, than any sign or symptom of heart failure, such as cardiac dyspnoea or anginal pain. Sinus tachycardia, paroxysmal tachycardia and extrasystoles are irregularities which in most instances will not affect the outlook as regards the life of the patient, but they may impair his activity in all degrees from slight inconvenience to complete prostration. It is for this reason that treatment becomes of great importance.

Auricular fibrillation, flutter, and heart-block, being usually manifestations of myocardial disease, the prognosis regarding life as well as function is affected. Fibrillation, being so controllable, it is obviously of the greatest importance that it should be diagnosed and treated early. Any patient with untreated auricular fibrillation goes on to congestive heart failure almost inevitably.

Since diagnosis is obviously the first essential step towards adequate treatment of these irregularities it is proposed in this article to give the salient clinical points of each type—only mentioning instrumental methods of diagnosis, such as the electrocardiograph, where this is indispensable. After all, it was Sir James Mackenzie's great principle that apparatus should be used for the initial elucidation of medical phenomena, after which it was the task of the pioneer to discover simple clinical signs which would obviate further use of the instrument. In his analysis of cardiac irregularities he himself was singularly successful in eliminating the necessity for the use of the polygraph.

(1) SINUS TACHYCARDIA.

In this type of tachycardia the impulse arises normally in the sinus, and the individual cardiac contraction is quite normal. The rate of formation at the sino-auricular node is accelerated, usually from 80 to 150 per minute, rarely more. This acceleration may be brought about by (a) agents acting on the sino-auricular node itself, such as bacterial toxins and the heat of a fever. [The pulse rate rises

approximately 10 beats per minute for each degree of fever]. (b) Nervous action—sympathetic stimulation or vagal paralysis—as in emotion, thyrotoxicosis, nicotine poisoning and other drugs via stimulation of the sympathetic; diphtheria and atropine via vagal paralysis.

The onset of rapid rhythm is always gradual—as also is its subsidence. The rate is often variable.

TREATMENT.

The most important step is to find the causes. In this connection one should lay emphasis on systematic exploration for sources of focal sepsis, particularly, teeth, sinuses and lungs, and attention should be directed to the possibility of thyrotoxicosis, and drugs, such as tea, coffee or nicotine. If all these points are negative the treatment becomes that of neuro-circulatory asthenia, in which psychological assistance may be helpful in some instances, combined with the exhibition of bromides and quinine.

(2) SINUS ARRHYTHMIA.

This, the "irregularity of youth", needs mention only for the purpose of recognition. Mackenzie went so far as to suggest that when present it was a positive sign of health, and that it disappears with any active carditis. This suggestion is not, however, accepted by all. Diagnosis, of course, depends on the relation of acceleration of ventricular rate with inspiration, and may not be revealed unless this simple test is tried.

(3) EXTRA-SYSTOLES.

This form of irregularity may hardly be called abnormal in that probably few people fail to have extra-systoles at some time of their lives. Much of their importance lies in their significance being over-estimated by the patient or his doctor.

Symptoms may vary from none at all in about 50 per cent. of cases to "palpitation", precordial "fluttering", or even submammary pain of severe degree in neurasthenic individuals. The pathognomic physical sign is the prematurity of the beat, best ascertained by auscultation of the apex; for if weak, it may not reach the pulse. The differentiation between premature beats of auricular or ventricular origin is not easy clinically, but is, in any case, of no prognostic importance. Difficulty arises with multiple extra-systoles, where the irregularity is almost complete. In this connection it is useful to remember that the slower the rate the more likely is it to be due to extra-systoles, and on exercise extra-systoles diminish or disappear.

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TREATMENT.

If no symptoms nor other signs are present, it is wise to inform the patient quietly of the irregularity, as he may discover it for himself later, much to his alarm, or some one else may do so and do him the disservice of taking a grave view of his abnormality.

If symptoms are present three lines may be taken:

(1) The elimination of any toxic factor as with sinus tachycardia.

(2) Reassurance and psychological assistance.

(3) *Drugs*: of these bromides hold a prominent place, especially in combination with cinchona. Quinidine sulphate grs. 3 t.d.s. by mouth is a general depressant of muscle irritability, so depressing the ectopic focus, in many cases quite dramatically. In some cases patients may continue for months on the drug without harm. Digitalis is sometimes tried on a similar basis, but is not so successful. One must remember that this drug in large doses actually produces extra-systoles. Sometimes, however, none of the above methods relieve the symptoms.

(4) PAROXYSMAL TACHYCARDIA.

The mechanism in this form of irregularity is similar to that of extra-systoles, an ectopic focus taking over temporarily the function of the pacemaker. Clinically the diagnosis may be made on (1) the abrupt commencement of the attack (2) the constant rate of 120-200 (compare the variability of a sinus tachycardia which may reach those rates) (3) the abrupt finish of the attack. Symptoms again vary from complete unawareness to extreme distress, even resembling a Stokes-Adams attack.

An electro-cardiogram is necessary to distinguish the site of origin, most attacks being auricular in type, but the rarer ventricular type has a serious prognosis usually being associated with myocardial disease.

TREATMENT.

For short, infrequent attacks none is necessary.

(1) *During an attack*.—(a) Postural methods should be tried first. Often some simple trick such as lying down, or touching the toes, will terminate the attack. Patients soon discover this for themselves. (b) Carotid sinus pressure first on the right side for about 30 seconds stops some cases. If unsuccessful, left-sided pressure, and finally eye-ball pressure should be tried. These reflex methods are successful in about 10 per cent. of cases. (c) Drug therapy is unreliable; digitalis and quinidine are the most useful. The latter is given two hourly in 5 doses of 6 grs.

totalling 30 grs. in all, and so is evidently of use only in long lasting attacks.

(2) *Prevention of the Attacks*.—Similar methods to those adopted in controlling ordinary extra systoles should be used—though all are of uncertain effect. Removal of focal sepsis and toxic drugs such as tea and coffee, etc. is necessary. Quinidine in prophylactic doses (grs. 3 t.d.s.) is sometimes very effective. Reassurance should never be forgotten.

(5) AURICULAR FIBRILLATION.

Both auricular fibrillation and flutter are known to consist of "circus movement" at rates of 300-500 per minute in the former and at a slower rate of 200-400 in the latter. Some degree of heart-block is normal under these conditions, and a ventricular rate of about 130, irregular in fibrillation usually regular in flutter, where 2-1 block is set up, is the result.

In fibrillation absolute irregularity is the salient diagnostic feature, and in elderly people the only difficulty lies in multiple extra-systoles. The fibrillating heart usually shows some enlargement or other sign of cardiac disease. The ventricular rate, in untreated cases, is nearly always more than 110.

TREATMENT.

When first seen, most cases of fibrillation show some congestive failure. Therefore, treatment must be directed towards this, as well as the control of the ventricular rate. Rest and digitalis are essential. The first depending for its duration on the congestive signs. The digitalis is best given as the folia 1½ grains four hourly, for one to three days, reducing the dose daily till maintenance amount is obtained, at half gr. per day. In emergency, intravenous strophanthin gr. 2½. — 1½ may be given and repeated, following this up with oral digitalis therapy. Intravenous digoxin 1 mgm. may also be given.

The Role of Quinidine in Fibrillation.—Indications for the use of this drug are (1) absence of present or past congestive heart failure; (2) absence of any organic lesion such as mitral stenosis which by increasing the burden on the auricle predisposes to the fibrillation; (3) absence of history of embolism; (4) recent onset of fibrillation. Where thyrotoxicosis is the underlying cause Lugols Iodine, followed by thyroidectomy is the best treatment. Quinidine is indicated only where the fibrillation still persists after operation. In these cases it induces the return to normal rhythm. Techniques of administration vary, but the patient must be under careful medical supervision, preferably in hospital, during

the course. A preliminary dose of quinidine sulphate grs. 3 is given to test for sensitivity. On the following day 6 grs. are given two hourly for 5 doses totalling 30 grs. (as in paroxysmal tachycardia). This may be repeated three times. If then there is no response, the treatment is a failure. At any time during the course the fibrillation may stop. These large doses of quinidine may be stopped and a small maintenance dose of 3 grs. t.d.s. be substituted for a few weeks. There is a very real risk of cinchonism developing during the course, and the symptoms of tinnitus and vomiting or diarrhoea must be watched for, as also must be a quickening of ventricular rate, which is invariable owing to more impulses from the slower circus rhythm being accepted by the ventricle. But if the ventricular rate exceeds 120-130 the drug should be stopped.

If possible, the effects of the drug should be watched by frequent electrocardiograms.

(6) AURICULAR FLUTTER.

Clinically this condition often cannot be diagnosed without electrocardiogram. Positive points about it, however, are

(1) The patient almost always shows congestive failure earlier and more severely than with fibrillation, if the flutter is persistent.

(2) The regular ventricular rate about 150, unvarying with exercise, etc.

(3) Carotid sinus pressure may suddenly halve the rate, e.g. from 150-75, owing to the changing degree of heart-block from 2-1 to 4-1.

(4) The venous pulse in the neck may be countable at a rate of about 300.

TREATMENT.

For persistent flutter digitalis is the drug of choice, one and half gr. of the folia four hourly for

1-3 days is necessary. Three possibilities arise: (1) The flutter may change to normal rhythm and the drug be stopped. (2) The flutter may go over to fibrillation, which may be further controlled by digitalis, or if this is stopped, normal rhythm be resumed. (3) The flutter may persist. In this case, quinidine sulphate may be tried, careful watch being kept on the several points mentioned previously.

(7) HEART-BLOCKS.

Irregularity is produced by the auriculo-ventricular type of block-failure of the impulse to travel normally, if at all from auricle to ventricle.

Clinically symptoms are perhaps surprisingly absent, even with frequent dropped beats, as in partial heart-block. Stokes-Adams attacks consist of syncopal, epileptiform fits which occur in the pause when the ventricle is taking up its own rhythm, i.e., when partial block is passing over to the complete form.

Partial block may be diagnosed on the slow rate and dropped beats, during which there is absence of any sound at the apex on auscultation, and complete block by a rate of about 30-40 independent of the venous pulse rate at the neck. But an electrocardiograph is often necessary to clinch the diagnosis.

TREATMENT.

This is chiefly of the cardiac disease of which the heart-block is a manifestation, e.g., coronary atheroma, syphilis, etc. In some cases drugs, such as digitalis are responsible, and should be stopped.

Prevention of Stokes-Adams attacks is best achieved by injections of adrenalin in urgent cases, or ephedrine, gr. ½ t.d.s., where a more prolonged action is needed. During a Stokes-Adams attack, where death seems almost certain, intracardiac adrenalin (with a 3 inch needle) may be a life-saving measure.

SUB-TOTAL GASTRECTOMY UNDER LOCAL ANAESTHESIA*

BY

GEORGE BANKOFF, M.D., D.CH.,
Honorary Surgeon to the Italian Hospital,
London.

SUB-TOTAL GASTRECTOMY UNDER LOCAL ANAESTHESIA.

Whenever new ideas or innovations are introduced in the science of medicine, they are usually met with extraordinary conservatism and stubbornness, particularly when these are in the surgical field.

The general public and many professional men seem to be under the impression that the surgeon operates and uses a particular method or technique only for the sake of operating—regardless of whether the patient will benefit from the intervention or not. There is hardly any field where more experiments have been tried than in that of gastric surgery, and surgeons of different schools naturally differ as to the correct method and technique that should be employed for treating gastric diseases.

Whether the sub-total gastrectomy is to be preferred to the different short-circuiting operations or not, we cannot yet say, but if this method is to replace gastro-jejunostomy it is, I think, equally safe and more satisfactory.

The higher rate of death following gastrectomy is due usually to shock, peritonitis, hæmorrhage or post-operative pulmonary complications. The length of the operation is one of its most important dangers and therefore any innovation in the technique or anaesthesia will simplify the operation and reduce its risks.

For these and other reasons I have tried to bring to perfection new methods of local anaesthesia and to simplify the existing procedures of operative technique which are not only completely free from the disadvantages of the general and spinal anaesthesia, but have also as much chance of recovery as by the usual gastro-enterostomy.

By the exact performance of my method of anaesthesia and surgical technique, it is possible to bring the patient into a complete state of insensibility and relaxation, and to shorten the length of the operation itself. Another advantage of this technique is that it can be used on patients in any state of debility or age. My personal experience extends over more than 100 sub-total gastrectomies. The

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success has been absolutely certain, and I have had no fatal results due to the anaesthetic itself or technique. Partial resection of the stomach for carcinoma or chronic ulcer has been performed on patients over seventy years of age, with far advanced heart or kidney diseases, where a spinal or general anaesthesia would have been fatal. To many surgeons the very suggestion of performing an operation of this magnitude on a conscious patient may sound brutal and very cruel, but I am quite certain that after they have seen the whole procedure and followed the post-operative recovery, they will admit that a sub-total gastrectomy is not more dangerous than a simple gastro-enterostomy and should be adopted as the operation of choice in carcinoma or ulcer of the stomach, and what is more, should be carried out under local anaesthesia.

GENERAL RULES FOR LOCAL ANAESTHESIA.

In selecting a drug, one must know about its efficiency, toxicity, duration, etc. One of the most effective drugs generally accepted is Cocaine, but unfortunately it is the most toxic. Novocaine is inferior in its efficiency to the former but no danger arises from it when administered correctly. There are many other drugs which differ more or less in toxicity and efficiency, for example percaine, alypin, stovaine, tropococaine, etc. Other anaesthetics, such as saligenin and apothesine have recently been highly recommended as being very effective with low toxicity; nevertheless, I choose novocaine.

The toxicity of all these drugs naturally varies in accordance with the amount of fluid injected and absorbed directly into the circulation. The time during which the introduction of the fluid takes place also influences the toxicity of the solution. What might prove a fatal dose can be given many times without danger when the introduction is made slowly or the absorption of the fluid is controlled. Concentrated solutions of anaesthetics are much more toxic than the weak, and therefore it is necessary to bear this in mind when a large quantity of anaesthetic fluid is required. It has been reported that the use of over 60 grains of novocaine introduced in weak solutions is not attended with any harmful results.

By controlling the absorption of the anaesthetic fluid not only is the toxicity minimized but also the duration of the anaesthesia is largely extended. The addition of adrenalin or the use of caustic solutions helps in extending the duration of the anaesthesia, and the former has also the advantage of rendering

the operative field bloodless. Adrenalin should be very carefully used when a terminal circulation is present because of the danger of gangrene.

For producing local anaesthesia, there are many methods such as diffuse infiltration, paraneural or intraneural injections, intravenous or intra-arterial infusions, circumferential infiltration of Hackenbruch. The simplest of these are infiltration, paraneural and intraneural injections and they are therefore more commonly used.

TECHNIQUE OF INFILTRATION.

A very fine needle is introduced into the skin, injecting a small quantity of fluid. Through this small painless field a second and larger needle about 4" long is introduced into the subcutaneous tissue. The injection of the fluid is continuous as the needle advances. The needle is then introduced subcutaneously for about 3", a second small field in the skin is injected from the inside outwards. The needle can now be introduced into the second field at once without causing a painful sensation, thus enabling the surgeon to proceed further. Infiltration of the deeper layers is made similarly by introducing the needle vertically through the anaesthetized skin.

It is very important to inject the fluid constantly only when the needle is advancing or during its withdrawal, but never when stationary, thus preventing the danger of an intravenous dose. The necessity of preliminary aspiration is also eliminated when the needle is kept moving.

INTRA-NEURAL INJECTIONS.

The title of this method signifies the deposition of the anaesthetic within the nerve trunk itself. It is obvious that this procedure is more difficult than the ordinary infiltration, but it is very useful for anaesthetizing the terminal nerves of an organ, when a simple infiltration has failed. A very important advantage of this method of local anaesthesia is that its action is immediate and the analgesia complete. The best solution for this kind of anaesthesia is the 1 per mille percaine mixed with a few drops of adrenalin.

PARA-NEURAL BLOCK.

This method means infiltration of the tissues surrounding the nerve trunk. The procedure is much simpler than the one just previously described and as equally effective, particularly when combined with subcutaneous infiltration of the operative field. This combination is very useful in sub-total gastrectomy. The para-neural block of the sensory nerves

of the stomach is done in the following way: All these nerves reach the stomach through the gastrohepatic omentum and come from around the celiac axis, therefore with the right hand making traction on the stomach to put the small omentum on tension, the fingers of the left hand follow up along this ligament to the post-abdominal wall. At this point the aorta can be felt. A long spinal puncture needle is now taken in the right hand and passed backwards until it strikes bone, then withdrawn a quarter of an inch. An empty syringe is attached and suction made upon the needle. If no blood appears, a solution of anaesthetic is injected in order to infiltrate all the tissues around the celiac axis and for a considerable extent therefrom. If blood appears in the syringe, when suction is made on the needle, it means the needle is in the vena cava or other large vein. Nevertheless, if no fluid has been injected, damage is not done and the needle must be withdrawn and another attempt made.

CIRCUMFERENTIAL INFILTRATION OF HACKENBRUCH.

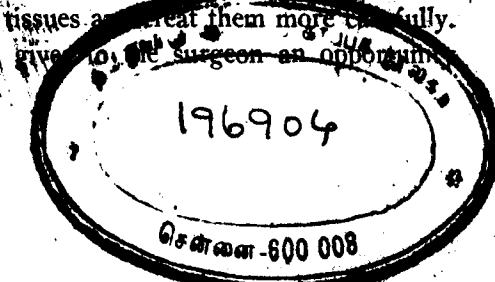
This method consists of infiltrating and blocking proximally the nerves round the operative field. Usually this is performed by introducing the needle through many unanaesthetized points, giving pain to the patient with every fresh prick. However slight the pain may be, he often becomes nervous, thus undermining the confidence placed in the method. For this reason, Maxeiner advises that the infiltration should be done first generally upon the whole operative field.

Often, clever use of combined methods can give great advantages. An unsuccessful intra-neural injection can be converted into a complete success by infiltrating the sensitive areas. A subcutaneous infiltration of the line of incision in the skin, combined with para-neural blocking, permits an operation to be started at once. Otherwise, if only para-neural blocking had been used it is necessary to wait until the anaesthesia is complete.

For many reasons it is advisable for the surgeon to inject his own local anaesthetics, thus giving greater confidence to the patient, and enabling him to control properly the effects of the anaesthesia itself.

Finally, another great advantage in using local anaesthesia is that, although the operative field and organ are painless, it will be always necessary to have respect for the tissues and treat them more carefully. Obviously, this gives to the surgeon an opportunity

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to perfect his operative technique and skill and to the patient less shock, less trauma and a better and easier recovery.

PERSONAL TECHNIQUE.

The procedure I employ is as follows: No patient, entirely undrugged, could lie still in one position on the operating table during the whole time of the operation, and, therefore, a premedication is necessary, not to dull pain, but to relieve apprehension and restlessness. One hour before the operation he is given hypodermically a combined injection of morphia and scopolamine in the proportion of grain $\frac{1}{4}$ to grain $\frac{1}{100}$. The patients, when brought into the operating theatre, are in a condition of twilight sleep.

The operative field is injected subcutaneously with 1 per cent. novocaine solution to form a rhombus, as shown in the diagram and described minutely in a previous article of mine. When the skin and muscle have been cut and the peritoneum is exposed, instead of opening it the whole length of the incision, a small opening is made about one inch long, through which 200 c. cm. of $\frac{1}{2}$ per cent. novocaine solution is poured into the abdominal cavity.



Fig. 1.
Diagram showing the points of novocaine injection.

In my original procedure of this method, it was necessary to wait for ten minutes before commencing the operation. This was done in order to allow the peritoneum and omentum to absorb sufficient quantity of the anæsthetic fluid.

For the sake of shortening the length of the operation in sub-total gastrectomy, instead of waiting for the absorption of the solution, a circumferential infiltration of the great and small omentum along the stomach curvatures is performed. This brings the organ in complete anæsthesia and dispenses entirely with the difficult procedure of blocking the splanchnic nerves.



Fig. 2.
Diagram showing the gastric portion for novocaine infiltration.

This completed, the superfluous fluid is taken from the abdominal cavity by means of swabs or a suction pump.

When every detail of my method is observed precisely, it is possible to bring the peritoneum and the abdominal organs into complete relaxation and anæsthesia. The intestine is paralysed, no kind of peristalsis can be observed, and the work on the stomach is easy. The insensitiveness of the abdominal wall and organs remains for about two hours, and therefore, the stomach resection in the hand of any surgeon of sufficient training and skill can be a matter of normal performance.

The local anæsthetic itself has no effect of any kind on the patient, whatever be his or her condition. The paralysis of the intestine, resulting from the anæsthetic is very easily removed by stimulants such as pituitrin and eserin. Absorption of fluids through human tissue proceeds very slowly, and therefore during the time taken by the operation, it is impossible for it to penetrate in such quantity as to become dangerous to the patient's life.

In conclusion, I cannot emphasise too strongly the advantages of this type of local anæsthesia, also in regard to the post-operative immediate stage. None

of the patients are treated with auxiliary salines and infusions; some of them have water and glucose by the rectum, but they can take all the fluids they require by mouth, a few hours after the operation.

PERSONAL OPERATIVE TECHNIQUE.

The cutaneous incision is in the median line above the umbilicus, thus having the advantage of being bloodless and allowing free access to the highest part of the subdiaphragmatic space. There is no necessity, in sub-total gastrectomy, to go below the umbilicus; upwards the incision may be prolonged to the left of the xiphisternum, when it extends nearly two inches higher than any paramedian can do.

By the separation of the great omentum, its anatomical connections must be borne in mind. This organ is a pouch developed from the posterior mesogastrium and therefore it carries and is supplied by the arteries which bring blood to the greater curvature of the stomach. Its association with the transverse colon and mesocolon is a matter of physiological adhesion, established only during the later months of intra-uterine life. Although the omentum appears to spring from the transverse colon, no anastomosis



Fig. 3.
Division of the great omentum along the greater curvature.

develops between its vessels and those of the large intestine. The usual technique of gastrectomy is to

tie off the vessels of the omentum about two inches from the greater curvature of the stomach which is most certainly wrong anatomically and a waste of time technically. Consideration of the blood supply of the omentum suggests that it should either be detached from the colon and removed together with the stomach or, when it is left inside, its blood supply should also be left.

My technique is very simple and requires less time; the omentum is detached from the stomach along the greater curvature and very close to the gastric wall. In cases of chronic ulcer, the duodenum is avoided and the stomach resected above the pylorus, thus saving at least twenty minutes of the time required for the operation.

On the other hand, avoiding the duodenum, whenever possible, is compatible with surgical principles, and is also free from many dangers. The duodenum has a thick, friable muscular wall, which holds stitches very badly and infolds with difficulty. The abundant supply of blood vessels has to be secured by numerous ligatures before sufficient portion of the duodenum is mobilized so as to allow the same invagination or anastomosis. I am of the opinion that any kind of crushing of the stomach or duodenum must be avoided; it is quite enough to divide the organ with the knife between two ordinary clamps at the point selected.

In gastrectomy for carcinoma or duodenal ulcer, closing of the duodenum presents practically the same problems; in ulcer it may be a little more difficult because of oedema. In some cases, this closure can become extremely hazardous, or even impossible, and we have to think whether it is to be tried at all.

We know that a duodenal ulcer will nearly always heal after gastr-enterostomy alone, unless the stomach becomes narrowed, and acid once more starts to flow over the site of former ulceration. When the access of acid gastric juice is entirely and permanently prevented by division of the pyloric end of the stomach, a duodenal ulcer will heal and be as good as an excised one. For these and other reasons I do think that a transverse division of the stomach above the pylorus even in cases of duodenal ulcer, will be very efficacious and will dispense with the difficult duodenal occlusion, thus saving a good deal of time and discarding the hazardous dissection of the stump. This supra-pyloric resection has also an enormous physiological advantage by saving the alkaline secretion of the Brunner's glands, situated in the antrum pyloricum. It is known that this gland's

product has a potent action in neutralizing acid, whilst it is sacrificed in the ordinary type of gastrectomy.

The amount of stomach to be removed, although guided by two different principles in cases of carcinoma or ulcer, must be at least two-thirds of the whole organ. The reason for this is in case of carcinoma, removing tissues that may possibly have been invaded by the growth, in that of an ulcer, reducing the area of acid-producing mucous membrane sufficiently, to ensure that the acid level is kept below that at which new ulceration can occur.

This cannot be said in gastr-enterostomy or a limited resection of the stomach-pylorotomy; on the contrary, the acid curve is often found to be higher than it was before the operation, once the depressing effect of the intervention has worn off, thus giving cause to recurrent ulcerations.

Over the type of the best anastomosis, the opinions of leading surgeons differ greatly; whilst some consider the first method of Billroth, the Haberer's type, etc., as quite satisfactory, others condemn them entirely and advocate only the Polya method or some modification of it. But the very fact that four varieties of this type of anastomosis are practised, two anterior and two posterior, suggests that there are disadvantages in all. The principle troubles seem to be vomiting in the immediate post-operative stage, and distension after meals at a later date.

In my opinion, every one of the existing types of gastrectomy has its advantages and disadvantages, but if the surgeon specializes in only one type of anastomosis and tries to elaborate a personal method and rules of proceeding, many of the post-operative troubles will be certainly avoided.

I have adopted a modification of the posterior Polya operation in all cases and I have met very seldom with post-operative vomiting or distension after meals. The essentials of this procedure are that the stomach must be cut in an oblique direction, so that the proximal loop of the jejunum must be sutured to the small curvature of the stomach in an acute angle, while the distal loop of the intestine is practically a continuation of the greater curvature. In this way, the jejunum lies almost vertically and its efferent portion runs downwards in direct continuation of the mouth of the funnel-shaped stomach. (Fig. 4.)

The question of the technique of suturing the cut surfaces is also far from being uniform. Some surgeons use the Petz sewing clamp, which crushes the line of intended section and then inserts a double

row of tiny metal clips. They assert that this procedure simplifies the technique and state that this clamp could be used in every case of gastrectomy.



Fig. 4.

Posterior sub-total gastrectomy according to the author's own modification.

It is obvious that this assertion is considerably exaggerated, and I would like to invite some of these supporters to use this technique in a high gastrectomy; particularly, when the method of operation is on Finsterer's lines.

After having tried different types of sutures and used different and most complicated clamps, I have come to the conclusion that the best and simplest method is to throw away all these unnecessary and costly instruments and use only ordinary needles and catgut. This method is, of course, the simplest one; takes less time and is less liable to damage the delicate abdominal organs. The anastomosis is done in the usual manner with a continuous serous suture. After the introduction of this, I cut only through the serosa of both stomach and jejunum about one half inch from the suture line. The following continuous suture includes the muscular coat, and the third the mucous membrane. After the second suture, the stomach and the jejunum are widely opened and the third secures completely the hemostasis.

Now, with an ordinary knife the stomach is cut away and the anastomosis is completed with three other rows of sutures.

The anastomosis is pulled back through the omentum, and the edges of the aperture are secured to the stomach with a few interrupted catgut sutures.

The external abdominal wound is closed in the usual manner.

IMMEDIATE POST-OPERATIVE STAGE AND COMPLICATIONS.

The most important item in the post-operative treatment is to keep the balance between fluid in the tissue and the circulation, and the harmony in this balance in response to circumstance is one of the fundamental mechanisms of biological economy. The condition of shock and decreased blood pressure must not provoke undue alarm; we have to remember that the former is essentially a physiological process and becomes pathological only when it runs riot, and the latter, decreased to a certain degree, will produce no clinical symptoms, being the natural reaction to any injuries. The body can receive fluids naturally only from the alimentary canal, and any other route, through which they are introduced, will provoke protest rather than be accepted readily.

Bearing in mind that the patient operated under local anaesthesia is never greatly shocked and his blood pressure is practically on the pre-operative level, why should introduction of fluids by means of unnatural ways be forced? The patient can start

taking fluids safely during the first day after the operation without any inconvenience, providing of course they are taken in small quantities and in regular intervals.

When the general condition of the patient is rather low, glucose solutions per rectum could be administered. Among the causes of failure after sub-total gastrectomy are, as it was mentioned previously, the post-operative vomiting and a feeling of discomfort after meals, which certainly can be avoided by using the right procedure and technique. Recurrent ulceration can only occur in cases when the post-operative acid level remains high. Many surgeons point out to the dreaded post-operative anaemia, as a sequel of total or sub-total gastrectomy. But we must remember the increased number of stomach resections done at present and how few examples of anaemia come to our observation.

I am of the opinion that a secondary anaemia bears no relation to the amount of stomach removed, but is dependent rather on the functional disturbance produced by the operation and the gravity of the original disease.

Now if we remember that a gastrectomy is only performed on patients suffering from carcinoma or from medically incurable ulcer, we must admit the wonderful relief, which this operation gives to the sufferers.

ENDOCRINE TREATMENT OF DYSMENORRHOEA*

BY

B. M. MERRIMAN, M.R.C.S. (Eng.),
L.R.C.P. (Lond.).

It is probable that much of the doubt which exists as to the value of this form of treatment is due to the use of relatively inactive hormone preparations (1) and a failure to distinguish between the various types of dysmenorrhoea in treatment.

In this paper, which is based on observation in continental clinics, an attempt is made to define the types of dysmenorrhoea most likely to respond to endocrine treatment; it must be emphasised, however, that this is to be regarded merely as an addition to the treatment of difficult cases and must always be supported by the usual methods, physical and psychological.

The chemistry of the female hormones has made great advances recently, (2) and for the clinical work on which these observations are based, the most active form of the follicular hormone was used, as the benzoic acid ester of dihydroxy-oestrin (oestradiol-benzoate). Hydrogenation has been found to increase the activity of oestrin 4 to 5 times, and esterification to decrease the rate of absorption from the site of injection so that a more prolonged action is exerted.

The actual preparation was 'progynon-B Oleosum' (Schering) which is available in two strengths for intramuscular injection, 1 cc. ampoules containing 1-mg. of oestradiol-benzoate dissolved in oil, corresponding to 10,000 international benzoate units, and 5-mg. corresponding to 10,000 international benzoate units.

The injections can be supplemented by oral administration daily of dihydroxy-oestrin dissolved in lipoids in the form of dragées of 1,000 international units.

The luteal hormone is standardised by weight of pure progesterone; 'Proluton' (Schering) was the preparation used and is available in 1-cc. ampoules containing $\frac{1}{2}$ -mg., 2-mg. and 5-mg. doses.

General pain due to pelvic disease, such as uterine polypi or post-operative conditions, from which no improvement can be expected with hormone treatment must be distinguished from dysmenorrhoea. (3) Dysmenorrhoea is considered as either spasmodic

or congestive, and the membranous type is here regarded as an extreme form of the spasmodic.

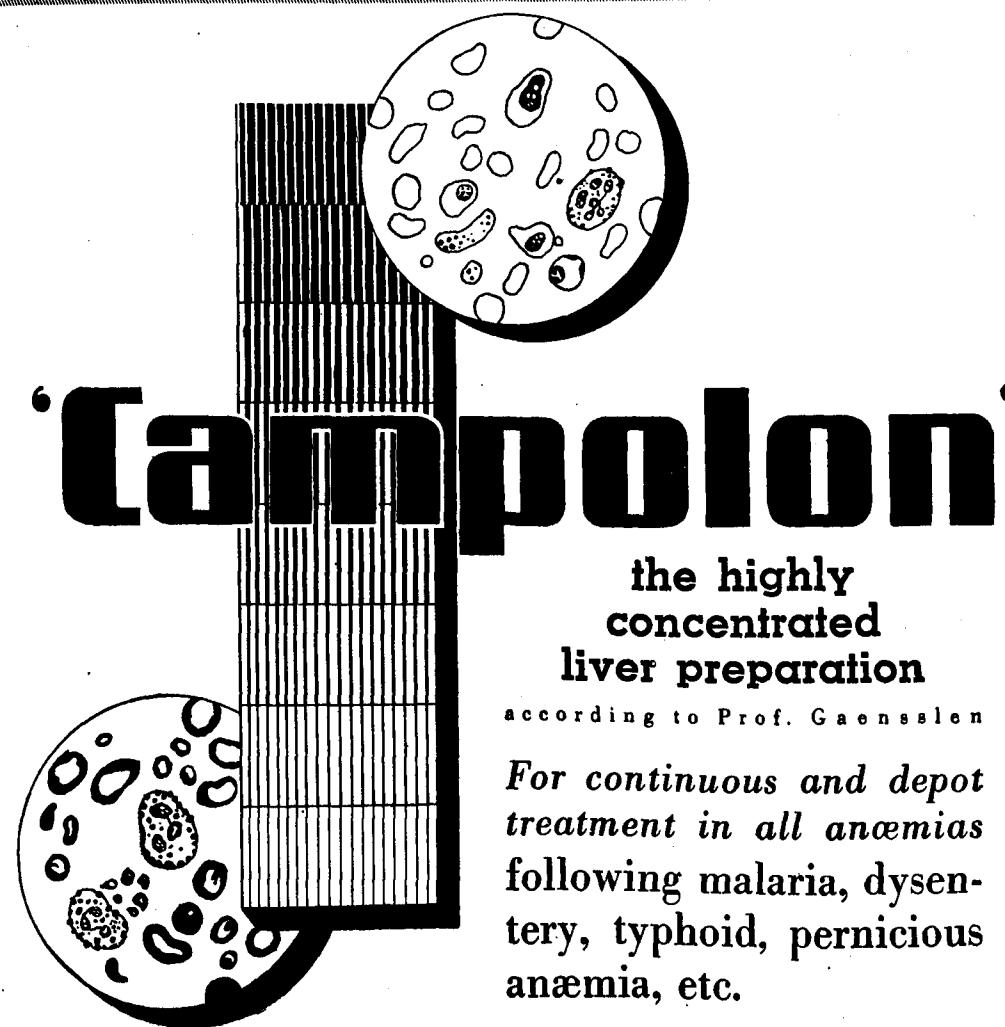
In true, intrinsic or spasmodic dysmenorrhoea, the pain typically begins with the onset of menstruation and gradually diminishes as the period proceeds. It occurs in intermittent, spasmodic attacks which last for a variable time and are usually accompanied by some degree of collapse or even shock, according to the severity of the pain. Numerous theories have been put forward to explain the aetiology of the pain, and two groups are usually recognised—one associated with disorders of uterine structure and the other with disorders of uterine function.

According to Kaufmann, there is almost always abnormal development of the uterus in severe cases of dysmenorrhoea, most commonly persistence of the prepubescent form with small body and relatively long, slender, cervix and small external os. Where there is not an actual persistence of the prepubescent, or even infantile type of uterus, there is often a varying degree of myohypoplasia of the myometrium and the uterus is of the small adult type. Frequently the myohypoplasia is accompanied by displacements (usually retroflexion or acute anteflexion), which are corrected wherever possible before endocrine treatment is begun, and any other necessary steps, such as dilation of the cervix, are carried out at this stage. In many cases the displacement returns after a short interval, but after a course of hormone treatment 'tone' is restored to the myometrium and the corrected position is maintained.

The biological effects of the follicular hormone on the castrated animal in producing a normal development of the atrophic myometrium suggested its use in correcting this hypoplasia. The ability of follicular hormone to produce a normal uterus is dependent on the degree of abnormality, being, of course, impossible with gross mal-development such as bi-cornuate or septate uterus, unlikely in the prepubescent type unless the delay in development is recognised at an early stage, but extremely probable in the slight degree of myometrial hypoplasia that is so often encountered in cases of spasmodic dysmenorrhoea.

The usual method of employing the hormone is weekly, or in more severe cases, bi-weekly injections of oestradiol-benzoate 10,000 I.B.U. for the first twenty-one days of the intermenstruum, supplemented by the administration of dragées 1,000 I.U. three times daily over a similar period. This treat-

*Received for publication on the 9th February, 1937.



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ment is repeated rhythmically until the myometrium is more normal and menstruation occurs with less or no pain; in severe cases this may take many months, but in many cases a favourable result is obtained at the end of three courses of injection.

Where the uterus is found to be normal on examination, the pain is usually regarded as being due to an abnormality in function of the myometrium, or deficient 'polarity'. Since the luteal hormone has been shown experimentally to desensitise the myometrium to irregular contractions, its use was suggested in the treatment of this type of spasmodic dysmenorrhœa, unassociated with hypoplasia.

Daily injections of 2-mg. are given from the sixth to second day before the calculated onset of the menstrual flow. Another technique is to give three large doses (5-mg.) daily as soon as the pain appears, but the former is more usually employed. The injections are repeated rhythmically in an effort to 'train' the uterus to a more normal method of functioning.

Less success, however, is obtained in this than in the hypoplastic type, Elden and Wilson recording complete relief of dysmenorrhœa in 47 per cent. of women with 'normal pelvic findings'. (4)

The luteal hormone is also used in the congestive type where the pain is pre-menstrual in time, and is usually relieved by the onset of bleeding. It is believed to be due to tension developing in the ovary during the premenstrual phase, usually as a result of ovarian adhesions from previous inflammatory changes and may be preceded by 'Mittelschmerz' or painful ovulation some twelve days before the actual onset of the flow. Thus the dysmenorrhœa is a symptom of concomitant pelvic disease, and may be

accompanied by discharge, general abdominal pain and menorrhagia. These may even overshadow the dysmenorrhœa so that it can be taken as a general rule that if the patient's main complaint is dysmenorrhœa, then it is of spasmodic type (Shaw). (5)

The treatment of this type is essentially that of the underlying condition, but where more radical procedures are not contemplated, some relief may be obtained from luteal hormone and by the use of general measures tending to lessen pelvic congestion, such as exercises, massage, hot baths and the prevention of constipation.

Luteal hormone is given in injections of 2-mg. twice weekly over the last 14 days of the intermenstruum in an attempt to lessen the tension developing in the ovary.

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A NOTE ON THE PREVENTION OF VENEREAL DISEASES*

BY

K. V. B. PILLAI, L.M.S.S.A., D.L.O.

(Lond.), L.R.C.P. (Edin.)

Singapore.

Sexual urge is the strongest of all urges. It is greater in the average man than in the average woman. In the cases of sex ratio and family life, conditions in Malaya are not normal. A great part of the population is immigrant, the labouring class predominating. Bachelors outnumber married men. Their stay in the country is temporary. They find that their places of occupation, especially on tin mines and rubber estates are not similar to those they were accustomed to in their own countries, and are not conducive very much to leading thereon married life. The cost of living is much greater in Malaya than in their home countries, in spite of higher wages being paid here. Suitable girls of their own nationality in Malaya are few. This apart, the average immigrant prefers to marry a girl from his own native land. The distance, however, and the expense of voyage are matters of serious consideration. These difficulties prevent a far greater section of the population in Malaya from marrying than what is the case in old, settled countries.

But, the sexual urge is there, and few can suppress it. Even if it is possible, it is undesirable from a health point of view. In the opinion of those who have studied this subject, sexual continence leads to deterioration of mental and physical health and development. Some neuroses, anæmias and conditions of unfitness are attributed to enforced chastity both in man and woman. On the other hand, a moderate indulgence promotes happiness and health.

The vast majority, unable to repress the urge, are forced to satisfy the instinct outside of marriage. The East is new to the ideas of companionate marriage. The old institution, concubinage, however, is extensively prevalent. This is a permanent association of sexes or an association for a certain period usually long. Many men, owing to economic and other reasons, find it difficult to adopt even this way of satisfying the sexual instinct. So they have recourse to casual, promiscuous, temporary association with women, who are either open or clandestine prostitutes, and who are invariably infected with one or

another of the venereal diseases. There is another class of women who are not prostitutes, but are only of loose morals. They are out not so much for money as for having a 'good time'. All of them, not even a majority, may not be suffering from venereal diseases, but that a good number of them, owing to promiscuous association, are infected is certain.

It has also to be noted that women, having gonorrhoeal vaginitis, suffer very little discomfort from it, and so many of them do not know that they have gonorrhoea, and believe innocently but firmly that they are quite free from the disease. Promiscuous connection with such women is more dangerous in that it gives false security and the men who might, in the case of other women, take the necessary preventive steps, do not take them, in the case of the former, with the result that they contract infection.

We have to take things as they are. Prostitution is the oldest profession and it is impossible to prevent women turning prostitutes, especially clandestine ones. All we can do is to take such preventive measures as will reduce the incidence of venereal diseases to a minimum if the diseases cannot be abolished totally. The preventive measures fall under two headings, one, those that the state has to take, and two, those which individuals, men and women, have to take.

General medical practitioners must know as much to prescribe to their clients measures that would prevent them from getting venereal diseases as they know how to cure them, if the clients have contracted infection, in spite of their advice.

The following are "Directions for Men" issued by the 'Society for the Prevention of Venereal Diseases' of London:—

A.—MATERIALS REQUIRED:

- (a) Some cotton wool.
- (b) A small bottle containing a solution of disinfectant.
- (c) Some 33 per cent. calomel ointment.

B.—METHODS OF APPLICATION:

1. If exposure to risk takes place out of doors or where complete disinfection is impracticable.
 - "1. Make water.
 2. Soak a swab of cotton wool with the solution of disinfectant. Draw back the foreskin, carefully swab the head of the penis, especially at the opening of the pipe, and the whole of the under surface of the foreskin.

These steps must be taken within an hour of exposure to risk.

* Received for publication on the 15th April, 1937.

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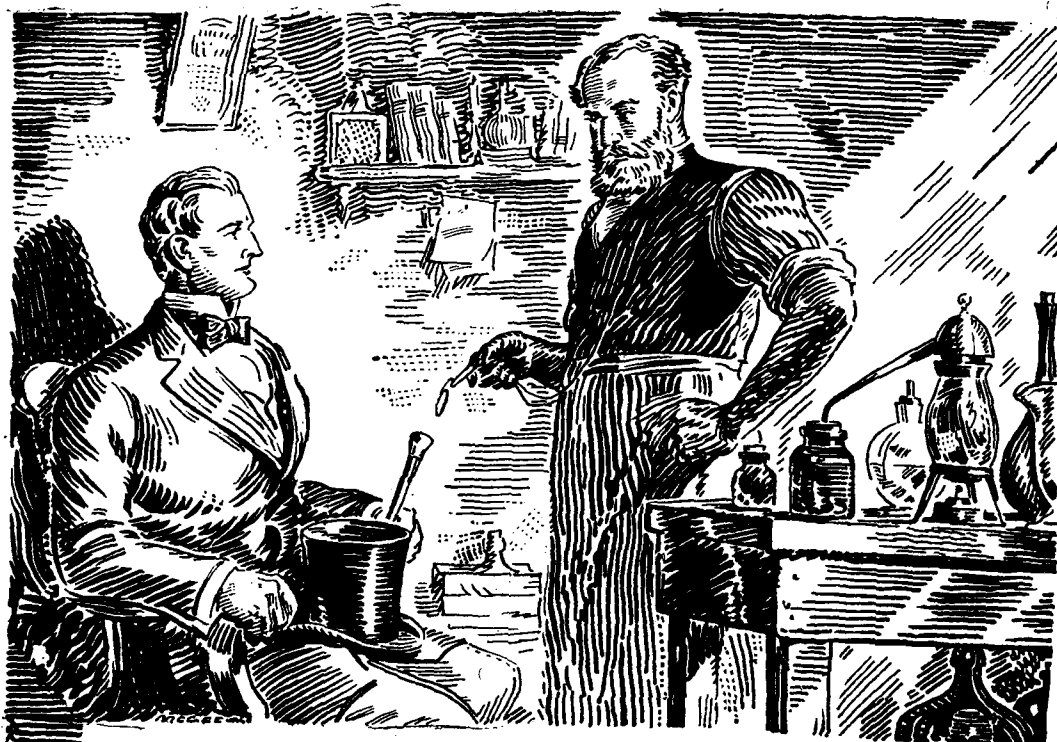
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WHILE LEEUWENHOEK the Dutch microscopist made his famous discovery of bacteria in 1683 through his observations upon tartar scraped from the teeth, it was not until almost two hundred years later that the importance of the old Dutch lensmaker's discovery to the dental profession was recognized.

Through the exhaustive studies of bacteria by Pasteur, Koch, Lister and others the way had been opened for medical science to prevent contagion, to provide cures and to reduce suffering and mortality among mankind. However, it was Professor W. D. Miller who in 1861 first associated bacteria with tooth decay.

Recognizing Miller's work as a distinct advancement in dental science Dr. N. S. Jenkins, a noted American dentist practising in Europe, discussed with his friend Miller the possibility of producing an agent that would not only cleanse the teeth but would destroy the destructive bacteria that inhabited the mouth. Dr. Jenkins, working in co-operation with Professor Miller, continued his study and experiments until 1908.

In a paper entitled "A Dental Contribution to Preventative Medicine" read before the American Dental Society of Europe, London 1908 and which was published in the Dental Review, November the same year, Dr. Jenkins announced to the dental and medical professions the Kolynos formula which was the result of his exhaustive study and investigations.

Realizing the importance of Dr. Jenkins' discovery to the dental profession and to the advancement of oral hygiene, scientists both in Europe and the U. S. A. investigated the germicidal action of Kolynos and verified the claims made by Dr. Jenkins.

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Note I.—The careful swabbing of the penis with the solution of disinfectant is the most important measure.

3. On returning home the sexual organs must be thoroughly washed with soap and water, and 33 per cent. calomel ointment well rubbed into the penis, drawing back the foreskin as in (2) above.

This must be done within six hours of exposure to risk.

II. If exposure to risk has taken place indoors, a more complete immediate disinfection should be made.

1. Make water.
2. Wash the sexual organs and parts round with soap and water.
3. Swab with disinfectant solution as in 'I.'
4. Rub calomel ointment well into the penis.

Note II.—It is an additional safeguard to apply the calomel ointment before intercourse.

III. If exposure to risk has occurred whilst under the influence of alcohol so that the precautions recommended in 'I' and 'II' have not been promptly taken, the chance of infection may be considerably lessened, though it cannot be removed, by taking as soon as possible all the steps mentioned in 'II,' well rubbing the ointment in for ten minutes, and in addition syringing the pipe with disinfectant solution of half the strength recommended for swabbing the outside; that is, add an equal quantity of water to the small glass syringe. Do this three times, and then fill the pipe and hold the solution in for two minutes by pinching the lips of the pipe. This method is not nearly as reliable as the immediate disinfection, and is useless after twelve hours.

IV. If none of the above precautions have been taken, and there is reason to believe that infection is probable, a doctor should be consulted at the earliest possible opportunity.

Note.—The above methods of self-disinfection are only useful for preventing the diseases and are quite useless for cure or treatment if the diseases have already started.

V. Prescriptions for materials required.

(a) Disinfectant solution:

1. Potassium Permanganate.

One five-grain tablet or sufficient of the crystals piled up to cover a threepenny piece, dissolved in half a pint of water.

2. Condyl's Fluid.

One teaspoonful to half a pint of water.

Note.—Four tablespoonfuls (2 oz.) of either of these solutions carried in a small bottle will be enough for one application.

(b) Calomel ointment (special strength):

Calomel 3 parts, lanoline (hydrous) 4 parts, white vaseline 2 parts. Half a small teaspoonful will be plenty for one application."

If the above measures are taken rightly before and immediately after sexual connection, the chances of getting infection are reduced to about 90 per cent. according to several authorities.

Unfortunately, a number of men, before sexual connection, are often under the influence of alcohol. Although they may know thoroughly well the preventive measures and may have actually with them the necessary antiseptic drugs described above, and although they would undoubtedly use them and thus prevent getting infection, if they were sober, are unable to use them, because they are under the influence of alcohol. It would appear that drunkenness indirectly leads to contracting venereal diseases.

As a remedy for failure to take the necessary measures after connection, owing to intoxication, mechanical protection by means of condom or thin sheath made of India rubber may be worn by the male.

Or the women may use some antiseptic jelly or tablets. These, however, are absolutely useless unless they are introduced high up into the vagina and used in such a way as to well coat the cervix and the entire vagina. There are various jellies and tablets, and 'Milsan' is one of the useful preparations. Disinfection, however, on the part of the women, should be considered more as an additional precautionary measure than as a prophylaxis by itself.

The Malayan Medical Journal

SINGAPORE, JUNE 1937

SERUM THERAPY IN LOBAR PNEUMONIA.

A study of the published results of treatment of lobar pneumonia with serum seems to show that, excepting for a certain amount of adverse criticism, they are on the whole very encouraging, particularly in respect of Type I pneumonia. Dochez and others have shown that the pneumococci may be divided by means of agglutination and precipitation tests into various types. By this division 32 types have, so far, been differentiated. But in Britain only Types I, II and III are commonly differentiated, the remaining 29 being described as belonging to Group IV. This bacteriological typing is necessary because it has been shown that anti-serum prepared against Type I pneumococci is useless or even harmful when administered to a pneumonia of another type. Similarly anti-serum prepared against Type II is of little use in Types II and III. The typing is simple and quickly done, and in the majority of instances a correct diagnosis of the types can be made within half an hour. In view of the importance of the typing, government should make provision for it in order to assist smaller hospitals and private practitioners.

The reports that have so far appeared on the serum therapy in pneumococcal Type I, are very encouraging. In respect of types II, V, VII, VIII and XIV the results are promising. Type III, however, is still not amenable to serum therapy. In this connection, it should be noted that, although the relative frequency and the case fatality of the individual types vary considerably from year to year and in different localities, the Type III pneumonia appears to be the least common, the relative frequency of this type in England being only 2.1 per cent., while that of the Types I and II being as high as 45.8 per cent. and 24 per cent. respectively. So, it is fortunate that the type of pneumonia which is most amenable to serum therapy is the most frequent, namely, Type I, and the type of pneumonia which is least amenable is the least common. Yet, it may not be very long

before the recalcitrant Type III pneumonia too is subjugated.

It should be noted that serum therapy gives the best results only when the cases are treated very early during the first 24, 48 or 72 hours, preferably during the first 24 hours, and when adequate doses of the serum are administered. Age of the patient is another important factor. The best results are obtained when patients are below 40 and their standard of health and strength is reasonable. Whether the results are as satisfactory as the advocates of serum therapy claim depends upon the above factors which are considered essential in order to obtain the same results from other lines of therapeutics. The factors are important, especially when one makes a comparative study of the different lines of treatment.

Among the most recent contributions are 'Effects of very Early Serum Treatment in Pneumococcus Type I Pneumonia' by Russel L. Cecil* and 'Studies in the Serum Treatment of Lobar Pneumonia' by G. J. Langley, W. Mackay and L. Stent.† Cecil states that when concentrated antipneumococcus Type I homologous serum is administered quite early, preferably in Type I pneumonia during the first 24 or 48 hours, the result is a complete and dramatic abortion of the infection, the temperature and the pulse and respiration rate dropping to normal, in many cases, within 12 to 24 hours after the administration of the serum. Pleuritic pain disappears and the cough is ameliorated. He explains these phenomena as being due to the fact that in the early phases of the disease before absolute consolidation has developed to its maximum, the specific antibodies of the serum are capable of so affecting the pneumococci in the pulmonary lesion as to bring about a rapid cessation of the infection. It may not be easy to make a diagnosis of lobar pneumonia on the first or second day, but on the third day it should be quite easy. Langley, Mackay and Stent think that in the presence of some

* J.A.M.A., Feb. 27, 1937.
† Lancet, April 3, 1937.

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or all of the following symptoms or signs:—rigor, vomiting, pain in the chest, dyspnoea and cough, it is justifiable to administer antipneumococcus serum early and make the diagnosis later, as is often done with diphtheria antitoxin and antimeningococcal serum; and suggest that a polyvalent serum should be used until the type can be determined. Cecil has collected a series of 160 cases of Type I pneumonia in which concentrated Type I serum was administered during the first 24 hours of the disease. Of these, 37 are his own cases; the rest are from the records of Bullock, Haffron and Rogers. Taking only his own 37 cases, the average age in this series was 36, the average total dose of serum, 181,000 units; the average duration of fever for patients who recovered was 4.7 days, while the average duration for Type I pneumonia in cases in which no serum was administered was 7 days. According to him, in many cases the temperature dropped to normal in less than 48 hours after the onset. In this series of 37 cases, there were no complications such as empyema which occurs in more than 6 per cent. of Type I pneumonia, excepting for one case of acute parotitis. Only two patients died (5.4 per cent.) one of whom was aged 60. Taking the whole series of 160 cases, there were 8 deaths being 5 per cent., which is certainly low for such a serious disease.

Langley, Mackay and Stent deal in their paper with the treatment of Type I and Type II lobar pneumonia with antipneumococcus serum, and conclude that the results of treating 112 cases with serum are highly satisfactory. The treatment is not difficult or troublesome; the intravenous route of administration is easy and painless; and the sera employed were Lister Institute antipneumococcus serum Type I concentrated, and Burroughs Wellcome and Co., antipneumococcus serum Type II concentrated. Most of the results published so far are highly encouraging. They are, however, based upon comparatively small numbers, and so further investigation must be made into this subject.

PROSTITUTION.

The daily papers of Singapore published in last March and April a good number of letters from correspondents on 'Riksha Parade'. One correspondent deplored the fact that prostitutes are allowed to parade certain streets of Singapore in rikshas. Another correspondent styling himself 'Hardened Sinner' retorted that the parading in streets is not peculiar to Singapore but is a feature

in many cities, and mentioned, for example, the neighbourhood of Piccadilly Circus and Regent's Palace Hotel in London, the Boulevard Adolph Max in Brussel, the Champs Elysees in Paris, the Kurfurstendamm in Berlin, the Wenzelsplatz in Prague, the Nowy Swiat in Warsaw and the Ringstrasse in Vienna. Prostitution is prevalent in all countries, and was practised everywhere even in ancient times. It should be distinguished from concubinage which is an inferior form of marriage and from adultery and other irregular sexual unions. Prostitution was at first religious in origin, and, according to a brief historical survey of the subject by Louis Franklin Freed,* was the worship of the generative forces of nature. At the temple of Mylitta in the 5th century B.C. every woman, in the worship of the Goddess of Fruitfulness, had to give herself once in her life to the first stranger who threw a coin in her lap. This primitive sexual promiscuity connected with the worship conflicted with the new moral sense which arose with the development of the institution of individual marriage. Yet, it was thought desirable that, for the general welfare of the community, a certain number of women should discharge their old religious obligations in the old way. These became prostitutes for a term of years at one of the temples. In course of time, economic factors played their part, and the impersonal religious motive gave place to personal, financial gain as in modern times. In the later days of Imperial Rome the religious ideas gradually lost ground until the time of Constantine when the last traces of them completely disappeared.

Serious attempts were made to regulate prostitution in ancient times. The Romans introduced the system of compulsory police registration which is the leading feature of social administration in most European countries to-day. In the middle ages, in spite of all efforts of control, prostitution flourished everywhere. So it was licensed and regulated by law. Thus licensed houses existed in England in the reigns of Henry II, Edward III and Richard II, and also in several countries in the continent. In the 15th and 16th centuries, public opinion underwent a great change. Brothels were closed, and prostitutes and fornication were severely punished. But the incidence of prostitution in no way decreased. In the 18th century prostitutes and brothels were tolerated, and prostitution was again controlled and regulated.

* South African Medical Journal, Jan. 23, 1937.

TREATMENT OF GONORRHOEA WITH A SPECIFIC ANTITOXIN.

Several attempts have been made in the past to discover a specific remedy for gonorrhoea, but all have failed. T. Anwyl-Davis* is in the happy position of stating that the experimental gonococcus antitoxin he has used in his series of cases of gonorrhoea 'would appear to be the most valuable remedy which has yet been forthcoming, since gonorrhoea was subject to scientific investigation'. The preparation is a concentrated gonococcus antitoxin prepared for and supplied to him by Parke, Davis & Co. for clinical trial. In most cases, 5 c.cm. appears to constitute the maximum dose. The average dose was found to be 1 c.cm. intramuscularly. To control the reaction, 3 minims of adrenalin chloride solution, 1 in 1,000, were given with 1 c.cm. of the concentrated antitoxin; 4 mms. with 2 c.cm.; 5 mms. with 3 c.cm. By this combination, it was possible to treat out-patients. Both acute and chronic cases, complicated and uncomplicated, responded equally well, which is in marked contrast to other biological preparations made hitherto. The author's series comprised 157 male patients of which acute, uncomplicated cases were 42, acute complicated cases 84 and chronic complicated cases 31. The percentage of success or otherwise of this treatment is indicated:—excellent 49.6; good 26.9; fair 14.8; bad 5.9. Clinical relapses occurred only in 6 per cent. in this series. In acute uncomplicated gonorrhoea, dysuria, irritation and discomfort subsided, it is stated, earlier and the patients declared how well they felt. In epididymitis, in general, complete relief from pain was obtained, it is stated, in 24 to 48 hours, and occasionally a sudden and astonishing cessation of pain in 5 to 6 hours, accompanied by a rapid decrease in swelling. No fatality occurred among the cases treated. All the reactions were only transient. It would appear that the data given are very promising and should induce other workers to investigate; and the results of their work would be awaited with keen interest.

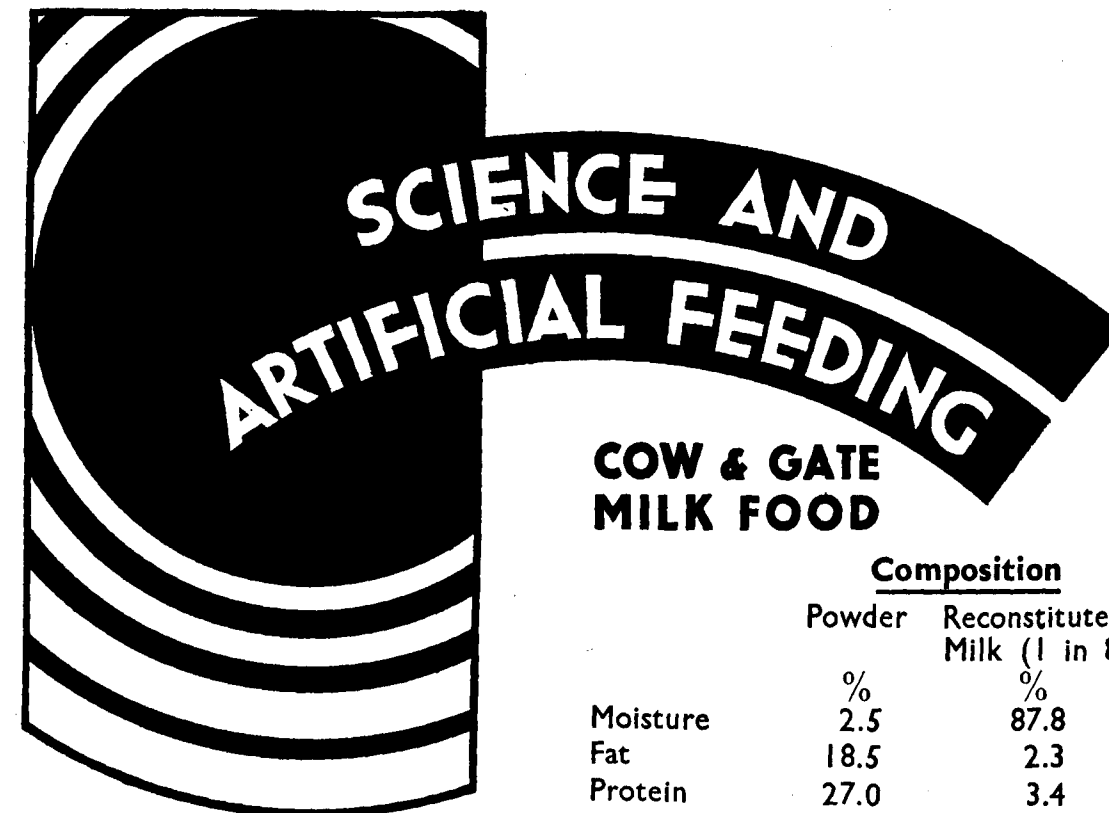
RAW FRUIT IN INTESTINAL DISORDERS OF CHILDREN.

In the treatment of fermentative and putrefactive diseases of the intestinal tract of children Von

*Treatment of gonorrhoea with a specific antitoxin. *B.M.J.*, Feb. 13, 1937.

Noorden was one of the first in 1920 to use raw fruit. Hass of New York tried banana in the treatment of coeliac disease by administering up to 16 a day and demonstrated it to be a success. Favourable reports from the Continent and America have been received on the effects of giving bananas in coeliac disease. The bananas are allowed to ripen until the skin gets black, and two or three of this are given daily. Various workers have obtained good results from apples and various kinds of berries. Raw fruit treatment seems to give the best results in chronic intestinal disorders and not in acute. Merits of one particular fruit are stressed as being superior to those of other fruits. According to R. De Rohan Barondes* in the Heisler-Marco diet method of treating intestinal disorders, the grated pulp from ripe apple was given the child patients, the pulp usually satisfying the hunger and thirst completely, necessitating the addition of water only to the more dehydrated cases. The diet was gradually and carefully increased until there was a return to normal. Barondes thinks there are some drawbacks in this method and recommends apple powder as being superior to raw apple. Dry apple powder has now already been marketed in the form of Aplona which is given as a 4 to 8 per cent. admixture to milk, 20 to 40 gm. being given during the first two days. Barondes states that the powder can be employed in children as young as three months in both acute and chronic cases. It is given usually in a 4 to 8 per cent. suspension of boiled water. No sugar is added to this mixture. Each mixture is to be freshly prepared for each administration and may be given warm or cold, the latter especially in those with high temperature. In the cases showing marked intoxication, protein milk should be given in addition to the powder, beginning with the second or third day, without fear of causing coagulation or curdling (fresh apple pulp frequently curdles milk). The author states that his case records indicate the quick action of the apple powder in controlling diarrhoeas, dysenteries, etc., and the promotion of normal intestinal passages; no ill-effects were encountered; relapses were uncommon when the disease was under control; and when they did occur, they were easily overcome by another apple day diet.

**Brit. Jour. of Children's Diseases*, Jan.—Mar., 1937.



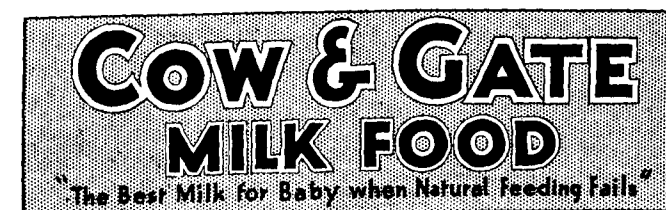
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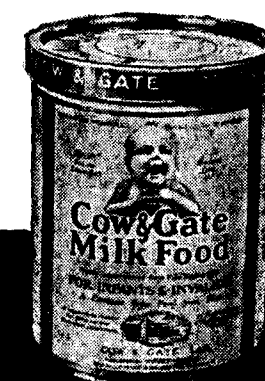
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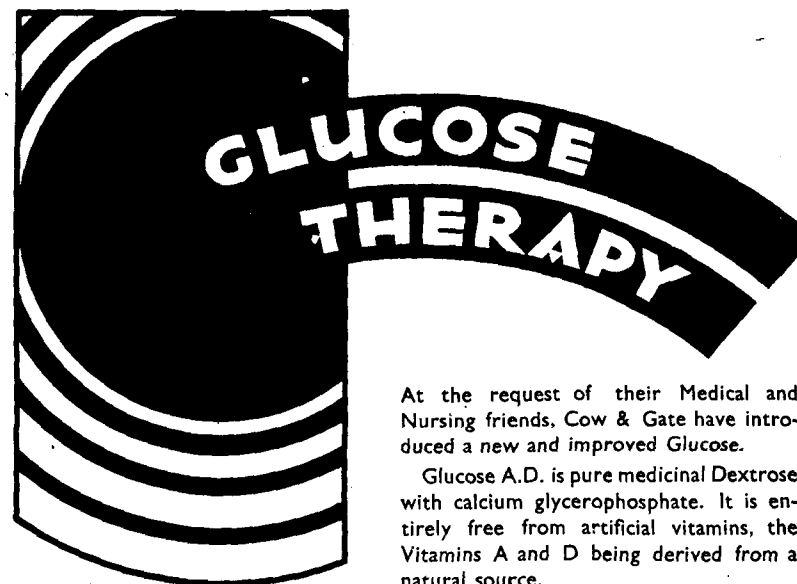
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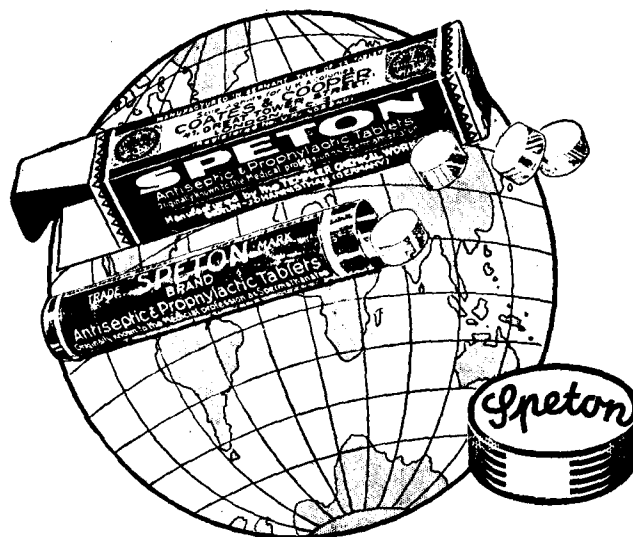
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Reviews.

TEXT BOOK OF MEDICINE.

By various authors, edited by J. J. Conybeare, M.C., M.D. (Oxon.) F.R.C.P.; Physician to Guy's Hospital, London, Third edition; Pp. 1027, XVII, Illustrations 25, X-Ray plates 24, 21/E. & S. Livingstone, Edinburgh, 1936.

Dr. Conybeare has been assisted by experts, who have revised and in some instances rewritten parts of the book. They are physicians from five of the London teaching hospitals and from South Africa, Canada and India. The book is in its third edition and maintains the high standard set by the former ones. Into 1027 pages are compressed all the essentials of the subject. Compression, however, has not affected the clearness of treatment. The various sections are up-to-date and the description of the system diseases is concise. Since the publication of the second edition, Dr. Conybeare has obtained two additional contributors. The main additions and alterations include a complete new section on renal diseases by Dr. A. A. Osman. Other important sections which have been completely rewritten are those on the various forms of anaemia, diabetes mellitus and the pituitary. Much of the section dealing with the alimentary canal has been rewritten. In the section on treatment, which should be useful particularly to general practitioners, many prescriptions have been added, and an attempt has been made to give fuller practical details as regards any special treatment recommended. We are living in a pictorial age and illustrations and plates are necessary features in any textbook. And the 25 diagrams and 24 X-ray plates that are incorporated in the book may be sufficient. But it seems to us that usefulness of some of the sections to readers particularly in Asia, could be increased by adding a few more illustrations and by illustrating sections which are at present not illustrated, such as the one on renal diseases. On the whole the book is one of the best textbooks to students and practitioners and should continue to be useful to them.

A MANUAL OF RADIOLOGICAL DIAGNOSIS FOR STUDENTS AND GENERAL PRACTITIONERS.

By Ivan C. C. Tchaperoff, M.A., M.D., D.M.R.E. (Camb.) Assistant Radiologist and Radium Registrar, St. Thomas's Hospital, London, with a Foreword by Philip H. Mitchiner, M.D., M.S., F.R.C.S. Surgeon to St. Thomas's Hospital, Pp. 256, Plates 286, W. Heffer & Sons, Limited, Cambridge, 21s. net, 1937.

In the modern armamentarium of diagnosis, radiology is an important weapon, so much so that it is no more the exclusive possession of the Specialist. The general practitioner must at least understand the reasons upon which the Radiologist bases his report. Owing to the importance of the subject, it forms part of the medical student's curriculum. The requirement of the practitioners and students is a book that is clear but at the same time concise. Dr. Tchaperoff has succeeded admirably in producing a work of this kind. Within 256 pages all that has to be said on the subject is packed. Though brief, comprehensiveness of descriptions, whenever it is necessary, is not sacrificed for brevity. Descriptions of anatomy and X-ray appearances of injuries and diseases throughout the whole human system are ample. Plates number 286, and the vast bulk of them are X-rays, and they, as the writer of the foreword states, are so "excellent that they may safely serve as a standard with which to compare any X-ray photograph of

which the diagnosis is doubtful". The whole book is printed in art paper in order that the X-rays and sketches may reproduce themselves in the very best way possible. There are eight chapters and the subjects dealt with are, X-ray physics and technical considerations, bones and joints (general), bones and joints (regional), chest, gastro-intestinal tract, gall-bladder, kidneys and urinary tract, female generative system and the foetus, tumours of the spinal cord and ventriculography. We have not come across a better book of the kind in the English language, and we confidently recommend it to students and general practitioners.

ILLUSTRATIONS OF REGIONAL ANATOMY.

By E. B. Jamieson, M.D., Senior Demonstrator and Lecturer, Anatomy Department, University, Edinburgh, Section VI, upper limb, 42 coloured plates, Section VII, Lower limb, 52 coloured plates, E. & S. Livingstone, Edinburgh, 1936.

The general plan of these two handy books follows that of sections I to V already published and reviewed in these columns. Each is made up of loose leaf detachable plates printed in two colours in nearly every plate and occasionally in three colours, and arranged, as far as possible, in a sequence suitable for reference during the progressive steps of the dissection of the limbs. The drawings are original and have been made by artists after frequent reference to limbs in the dissecting rooms and to dissections specially prepared for this purpose, with the result that they are realistic. These two sections, under review, as the previous ones, are literally pictorial and not word illustrations. Where lengthy clear descriptions of anatomical structures by word fail to impress the student, simple, even crude diagrams succeed quickly and remove the cobwebs of mental confusion; and realistic diagrams such as those in the little books should fix themselves firmly in the student's mind. It is obvious that great pains have been taken in the artistic execution of the drawings and in the colouring. The reproduction of the plates leaves nothing to be desired. No student should be without a copy of a complete set of these sections.

VADE MECUM OF MEDICAL TREATMENT.

By W. Gordon Sears, M.D., M.R.C.P. (Lond.), Deputy Medical Superintendent, St. Charles Hospital, London, pp. 368, 10/6 net, Edward Arnold & Co., London, 1937.

This is a book in a convenient size giving, in alphabetical order, an account of the treatment of the diseases that are most commonly met with in general medical practice. For ready reference the busy practitioner will find it very handy, and can carry it about in his pocket or his bag. Physicians differ not only about the lines of treatment but also about the merits of particular remedies. So, although the author, wherever possible, has included in the book the results of his own experiences gained during a number of years of hospital service, he has taken care to consult and compare the standard works of recognised authors and recent literature, and to incorporate the information in his book. Therefore, the practitioner is given alternative lines of therapeutics and remedies which are up-to-date and reliable. He has also included the proprietary preparations he has found useful and which have been generally recognised or recommended by his colleagues. Sections on common affections of the ear and the eye, indications for surgical, spa or other specialised methods, though not within the scope of general medicine, have been included, with occasional references to methods and points of diagnostic importance. At the end, several tables are given, viz., doses of drugs, weights and measures, caloric value of foodstuffs, vitamin content of

common food, approximate time for digestion of food, obstetric table, height and weight, dentition, glucose tolerance test, etc., which one has to search for in several books and which therefore add considerably to the usefulness of this book.

VITAMINS IN THEORY AND PRACTICE.

By Leslie, J. J. Harris, sc.D., D.Sc., National Laboratory, University of Cambridge and Medical Research Council, pp. 240, Figures 66, University Press, Cambridge, 8/6 d., 1935.

In the study of the subject of vitamins not only medical men and medical students are interested but also others—science students, household economists, social workers, university extension pupils and in fact the lay public. If the lay public gets a fair working knowledge of vitamins, it will go far towards maintaining the health of individuals and the nation, and the task of those engaged in the preventive and curative side of medicine will correspondingly be reduced. This book briefly treats of the history of vitamin discovery and research and gives all the important findings of modern work and a summary of our present knowledge. It is written in neither a too technical nor too popular style so that it will be useful to medical men as well as to the lay public. The subject-matter is dealt with under the following headings: the A.B.C. of vitamins, the discovery of vitamins, how many vitamins are there, beri-beri and vitamin B 1, pellagra and vitamin B 2, scurvy and vitamin C, vitamin D and rickets, vitamin A, vitamin E: diet and sterility, dietetics—what to eat, and summary with a useful index for easy reference. The book is well illustrated to show, among other things, how human beings, dogs, rats and birds suffering from diseases due to eating food deficient in certain vitamins, quickly recover soon after the deficiency is supplied. Fig. 13 especially, is striking and shows the magical effect of a fragment of vitamin B1 given to a pigeon with beri-beri, recovery being complete within a few hours. To the rice eaters, who form the vast bulk of our population, especially to the Chinese who have a partiality for polished rice which causes beri-beri, pictures like this would demonstrate the importance of vitamins more effectively than anything else. The usefulness of the book would, however, be greatly enhanced, if tables were given of as many food stuffs as possible—cereals, pulses, vegetables, fruits, etc., with their respective vitamin contents.

A HANDBOOK ON DISEASES OF CHILDREN.

Including Dietetics, Welfare and the Common Fevers by Bruce Williamson, M.D., (Edin.), M.R.C.P. (Lond.), Physician to the Royal Northern Hospital, London, Second Edition, Pp. 329 x, Illustrations 61, 10/6, E. & S. Livingstone, Edinburgh, 1936.

Some of the undergraduate schools have adopted this as a textbook, and it is now in its second edition. These facts should testify to its popularity. The original format which found favour generally has been retained. The book has been completely revised and certain portions have been entirely rewritten to bring it up-to-date. The 29 chapters into which the book is divided treat of the diseases of children concisely but clearly. Tropical diseases like Malaria have been treated but no reference has been made to ankylostoma duodenale which is not exclusively a tropical disease, as epidemics of this disease have occurred in Cornwall, Germany and Switzerland. This is, however, a minor omission. The book should continue to be popular among students and, for ready reference, among practitioners as well.

TOWARDS PEACE OF MIND.

Every day problems of mental health by Karl M. Bowman, M.D., Chief Medical Officer, Boston Psychopathic Hospital, etc., with a Preface by Cyril Burt, Professor of Psychology, University of London, pp. 278 VIII, 6 net, George Allen & Unwin, Ltd., London, 1936.

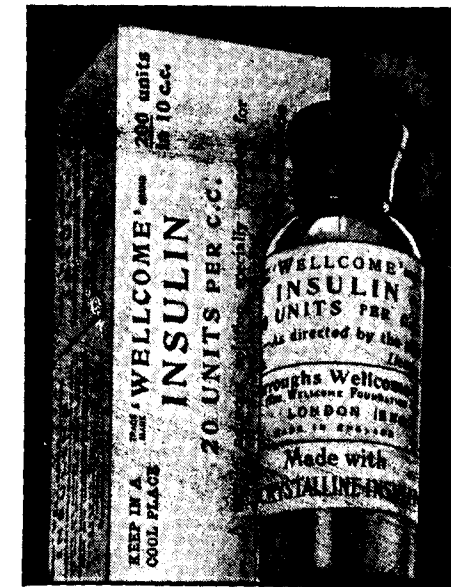
This book presents in a simple and easily understandable manner the important theory with regard to human behaviour, and to apply this to the practical problems of adult life. In the first nine chapters it is pointed out that an individual inherits certain qualities and capacities from his ancestors, and that this inheritance limits and modifies his behaviour; the physical structure of the individual is a definite factor in determining his capacities and limitations; and physical diseases may affect or alter the disposition, intelligence and behaviour of a person. The importance of the first five years of childhood is stressed. It is during this period that the child learns more than in any other periods and the foundations of life are laid. The author points out clearly that many of the problems of adult life are due to failure to deal with situations adequately during earlier years. This is referred to in chapter VIII entitled "Problems in Child Training" which should be of use to parents. Other chapters deal with the Growing Boy and Girl, the road to mental health, fatigue and sleep, tobacco and alcohol, every day problems of the average adult, Sex and marriage, Moral and spiritual values in mental health. A study of the elements of psychology is as important as that of physiology. Mental hygiene is as important as physical hygiene, and this book is a practical guide to mental health setting forth all the essentials of the subject in a clear, succinct manner understandable even to laymen.

THE MEDICAL DICTATOR AND OTHER BIOGRAPHICAL STUDIES.

By Major Greenwood, F.R.S., D.Sc., F.R.C.P., pp. 213, Illustrations 11, 7/6 net, Williams & Norgate Limited, 36, Great Russell Street, London, 1936.

The work of eminent medical men influenced medicine of their times in various degrees, and in course of time was absorbed into the sum total of medical knowledge. Some names are remembered while others have completely been forgotten. In the course of the author's professional duties he has had to make the acquaintance not only of contemporaries but also of men long dead. It interested him to inquire what sort of people these dead and gone investigators were, and this book embodies the results of his enquiries, and consists of studies of seven men who, to a larger or smaller extent, have made medical history. They are Galen, 129-200 A.D., John Freind, 1675-1728, Peter Mere Latham, known as 'Heart' Latham, 1781-1875, William Farr, 1807-1883, Pierre Charles Alexandre Louis of the numerical method, 1787-1872, Sir William Osler of 'Osler', 1849-1919 and Arthur William Bacot, 1866-1922. The book bears the impress of much labour that has obviously been brought to bear upon it and reveals the intimate study of some of the author's contemporaries. Biographies of medical men, engaged in prosaic research work and practice, however eminent, are not and cannot be as interesting as those of men engaged in spectacular fields of action such as politics, adventure, etc. Yet, the author's style and literary knowledge, which is by no means small, have helped him to invest, what would appear to the average reader, humdrum lives of the seven great men with interest that is at once arresting and sustained.

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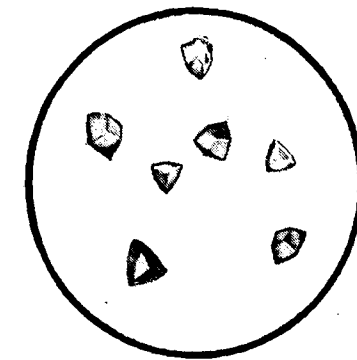
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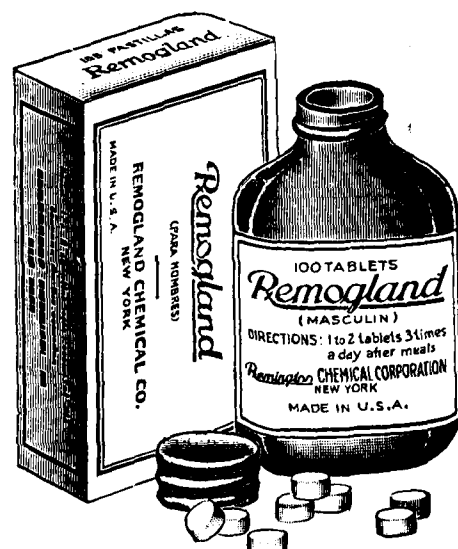
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Abstracts.

PROTAMINE INSULIN.

R. M. Wilder's review of recent contribution on Protamine Insulin, etc. *Arch. Int. Med.* 1937, 59, 329.

In January, 1936, Hagedorn reported that insulin combined loosely with protamines giving flocculent precipitates which were relatively insoluble in tissue fluids. Injection of this "Insulin retard" produces prolonged hypoglycaemic effects. Practically all agree that this form of treatment is an advance, because fewer injections and usually fewer units are required to maintain a satisfactory blood sugar level: the reactions are fewer and less severe, and most important of all, the general health of the patient is improved. Apprehension of delayed hypoglycaemia is only justifiable if precautions are not taken to warn the patient of its early symptoms.

Since Hagedorn's original paper, it has been found that small quantities of zinc added to protamine insulin enhances the property of slow absorption. Zinc has no deleterious effects, and it is a normal constituent of the pancreas, as is cobalt and nickel. Lately many more diabetic patients than formerly require more frequent injections of regular insulin. This is explained on the basis of the greater purity of insulin, notably a diminished content of metallic salts, particularly of zinc. Zinc added to ordinary insulin tends to counteract its quick action.

Patients having only one injection daily are given this before breakfast. If the morning specimen of urine contains sugar, it is obvious the dose is too small and can be increased with safety. If no sugar is present, any evidence of a reaction becomes an indication for a smaller dose. The morning injection prevents excessive lowering of the blood sugar, because of the hypoglycaemic effects of breakfast and the midday meal. On the average 25 per cent. less insulin is required. The explanation of this is unknown, but that ordinary insulin may be excreted is a plausible one. The action of protamine insulin during the first few days is apt to be so retarded that the author advises giving two-fifths of the previous dose of insulin on the first day and one-fifth on the second day, in addition to the equivalent amount of protamine insulin, which later can be reduced in amount. Although most of the published papers deal with its effects on the blood sugar, yet it seems

Reviews continued.

INDIVIDUAL PSYCHOLOGY: THEORY AND PRACTICE,

By C. M. Bevan-Brown, G. E. S. Ward and F. G. Crookshank, Pp. 72, 2/6 net, The C. W. Daniel Company, 40 Great Russel Street, London, May, 1936.

This is individual psychology medical pamphlet No. 15. These pamphlets constitute The Journal of the Medical Society of Individual Psychology, London, which is edited by H.C. Squires, C.M.G., M.D., F.R.C.P., D.P.H., The articles published in this number are, Psychological Schools, A plea for Correlation, Heart and Mind, The History and Basis of Individual Psychology, etc.

BOOKS RECEIVED AND TO BE REVIEWED IN NEXT AUGUST NUMBER.

DIAGNOSIS AND TREATMENT OF VENEREAL DISEASES

By David Lees, E. & S. Livingstone.

that it is able to restore rapidly the carbon-dioxide combining power of the blood in cases of moderately severe coma.

The experienced patient is given a longer period of warning of hypoglycaemic attacks before reactions occur, but because of its insidiousness, patients must be warned of its symptoms, which differ considerably from ordinary insulin reactions. The blood sugar falls so slowly that the adrenals appear not to be stimulated, and tremor, sweating, tachycardia and a bounding pulse may be absent. Then drowsiness, headache, nausea and fatigue become the only criteria, but as these symptoms are also those of diabetic coma, confusion may occur. "Life-savers" (a fruit-flavoured life-saver weighs 2.5 grammes) or a cube of sugar should be taken every 20-30 minutes until the next meal if symptoms persist. A few patients have awakened with bitten tongues and stiffened muscles, and one death has occurred; but with ordinary caution and regular medical care, the risk is not great.

The very severe diabetic is still an unsolved problem. Even protamine insulin, with or without old insulin, has failed in several instances to maintain the urine free from sugar without danger of reactions. The patients, however, felt healthier, and this is the best test.

TREATMENT OF ALCOHOL ADDICTION.

From "The Prognosis and Treatment of Alcohol Addiction", by Alexander Baldie, M.B., D.P.M., *The Medical Press and Circular*, November 4, 1936.

If withdrawal of alcohol is to be sudden and complete, a period of rest in bed is indicated. If confinement to bed or absence from work is impracticable, then the alcohol should be tapered down gradually according to the amounts and kind of alcohol consumed.

DIETETIC TREATMENT.

Diet must be not only nourishing and rich in energy values, but appetising and stimulating. The alcoholic in common with many other neurotic patients, often lacks interest in the creature comforts of life, including food, which is implicit in the healthily integrated individual.

Three factors are of importance in considering the dietetic intake: First, alcohol may have become an expensive substitute for the simple carbohydrate constituents of a normal diet; the reinstatement of such ordinary articles of diet as sugar and sweetmeats is indicated. An

DISEASES OF THE NOSE, THROAT AND EAR

By I. Simpson Hall, E. & S. Livingstone.

BOTANY PART I

Catechism series, E. & S. Livingstone.

SEXUAL POWER

By Chester Tilton Stone, D. Appleton-Century Company.

WORK AND RHYTHM

By E. Roland Williams, George Allen & Unwin, Ltd.

THE PLACE OF PSYCHOLOGY IN MEDICAL CURRICULUM

And other papers by Sir Walter Langdon-Brown and others.

RETURN TO MALAYA

By R. H. Bruce Lockhart, Putnam.

occasional small dose of insulin may assist the process of carbohydrate appetite fixation, being followed by a suitably increased sugar intake. This indirectly reduces the craving for the alternative source of energy. It is significant that few alcohol addicts are fond of sweets, or *vice versa*; the hopeful corollary is that the reinstatement of the sweet habit will facilitate the reduction of the craving for alcohol. The sugar habit must be definitely acquired and practised; one man carried in his pocket a packet of gelatine lozenges almost intact for a week, with unsatisfactory results. The prodigious sweet consumption of some teetotalers, therefore, should be, within reason, imitated. Second, the habitual and routine consumption of liquids is of importance. For this purpose copious draughts, preferably sweetened, of diluted lime-juice are indicated, as not producing the nausea of which some complain after continued drinking of certain other soft drinks. The lime-juice or other liquid should be easily available for frequent use as required. It is curious how easily a habit of this sort can be acquired if its exercise is planned and made effortless and convenient; and how easily it can be broken if the glass, or the water, or soda water, or the lime-juice, happens not to be handy when required. Third, the general constituents of the patient's diet should be not only sustaining, but varied, savoury and stimulating. The intention being that it should be carminative, determine alimentary activity, including peristalsis, and create the maximum sense of well-being and repletion, corrective to the apprehensions and uncertainties of the alcoholised patient. Such a diet of curries and condiments may have some relation to the fact that orientals are less addicted to alcohol than their civilised Western brothers.

Thus dietetically the patient experiences beneficially the energising, thirst-quenching and stimulating effects hitherto derived from his alcoholic intake; further, this is achieved physiologically without toxically deranging the gastric, hepatic and renal mechanisms, and, importantly, without disturbing the autonomic equilibrium on which the subjective and directive life of the individual largely depends.

DRUG TREATMENT.

Drug treatment of alcohol addiction resolves itself usually into the treatment of symptoms, namely, bismuth for gastric irritation; bromides for nervous irritability and excitement; the barbiturates for insomnia. The last have their main value in cases of acute alcoholism; they are not usually so useful in the treatment of the habit itself in so far as their routine administration may weaken a patient's self-control and thereby determine further indulgence. This, of course, will not apply in the case of epileptic drinkers, nor of chronic dipsomaniacs, whose outbreaks may often be prevented by suitable barbiturate medication.

Apomorphine (gr. 1/10 hypodermically) has often cut short a threatened bout; the nausea and vomiting induced being followed often by refreshing sleep.

Recently a pyrazolon product ("Rossium," di-phenyl-methylpyrazolonyl) has been recommended as an antispasmodic relieving tremor, spasm, irritability, excitement and pains. It is said to be of value in delirium tremens, alcoholic neuritis, and in alleviating withdrawal symptoms liable to occur on sudden deprivation of alcohol. The time-honoured combination of capsicum with nux vomica in a bitter tonic has proved its value, and may be considered rational adjunct to the dietetic regimen recommended.

Apart from the physiological adjustments and the medication immediately necessary, the essential problem of the treatment of alcohol addiction is that of personality readjustment, requiring psychotherapy.

SODIUM CHLORIDE IN TREATMENT OF BED WETTING IN CHILDREN.

W. Rosenson and Rebecca Liswood, *Journal of Pediatrics*, December, 1936.—Rosenson and Liswood treated twenty-eight cases of nocturnal enuresis by a dietetic regimen with sodium chloride: successful results were obtained in all but one, in which the child refused to co-operate. Before this regimen is instituted in any given case, any underlying physical or psychologic condition that might account for the bed wetting should be treated. If such attempts fail, the sodium chloride treatment offers an effective method. The child is given his regular diet during the day. Until noon he is allowed to take as much fluid as he desires; after that, fluids are somewhat limited until 4 P.M. At that time he is offered his last drink of water or milk until the following morning. For supper at 5-30 he is served with food containing as little water as possible. Such dry food includes meat, fish, egg, bread, butter, cheese and crackers. When the child is already in bed for the night and all his wants and requests have been attended to, he is given a sandwich containing about 5 Gm. of salt. The salt is given most effectively when combined with fat or meat abundant in binding tissue. Under such conditions the salt is absorbed gradually and the restraining influence on the discharge of urine is prolonged. Measured quantities of salt butter, ham, bacon, boned herring, boneless salt codfish, Swiss cheese, smoked salmon and salt can be used for the fillings. To make the herring or fish more palatable, chopped hard-boiled egg or raw scraped apple may be added. At the end of about two months of this regimen cereal, vegetables and some fruit were added gradually. This more liberal plan was continued for two months longer, after which the salt was decreased slowly. If bed wetting occurred on the reduction of the salt intake, it became necessary for a while to give a larger portion of a salty sandwich. In most cases the reduction of the salt intake was gradually accomplished without any recurrence of the nocturnal enuresis.

ETIOLOGY AND TREATMENT OF FOOD ALLERGY.

A.W. Oelgetz, P.A. Oelgetz and J. Wittekind, *South-Western Medicine*, December, 1936.—The Oelgetzes and Wittekind advise that many chronic invalids complain of a host of gastro-intestinal symptoms but on examination show no abnormal physical signs. Some of these have true neuroses, but the greater number are sufferers from food allergy secondary to pancreatic hypofunction. Because a gastro-intestinal patient's reactions to foods are so confused by misinformation, biases, fads, prejudices, food likes and dislikes, and, in many cases, true food allergy, the history is more often misleading than informative. That part of the external pancreatic secretion produced when food is in the stomach and intestine (Böldyreff) combines with the food and serves a local digestive function, while that secreted when no food is in the stomach is absorbed into the blood stream to act as true buffers, splitting whole serum proteins that are toxic and cannot be used as food to non-toxic split products that can be used. When the serum enzymes are in normal concentration, whole proteins cannot reach the cells in an unsplit state. As whole proteins are regular constituents of normal blood, it is the serum enzymes that prevent all of us from being food allergic all the time. In short, food allergy results from too much food, not too much for nutritional requirements but more food than can be hydrolyzed by the available pancreatic enzymes. Food allergy then is not a disease entity or a specific sensitization but a variation of a normal physiologic process. Pancreatic hypofunction may be secondary to a primary disease, syphilis or gallbladder disease for example, but more

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JUNE 1937

often no primary disease can be demonstrated. The tensions, stresses and strains of modern life with resultant nervous fatigue produce in the low threshold type of individual, first, overstimulation of the vagus (vago-tonia) with oversecretion of the pancreas and, later, fatigue with hypofunction. Extreme fatigue often results in complete pancreatic achylia. Oversecretion of the pancreas produces mild hypoglycemia, while undersecretion permits serum proteins to reach the individual cells in an unsplit state not usable as food but producing the toxic effects known as allergy. Physiologic rest together with underfeeding to meet the lessened pancreatic secretion will quickly remedy many cases. If the reduced intake of food is sufficient for nutritional requirements, no other treatment is necessary. Sedatives help during critical periods. However, since the cause of the symptoms is not only the nervous system but the resulting pancreatic hypofunction, the most effective treatment is the administration of an extract of whole pancreas—preformed enzymes—to help out the inadequate gland. Fifteen grains (1 Gm.) of an active extract after each meal assures a sufficient concentration of serum enzymes to split all the food taken.

TREATMENT OF HYPERSENSITIVENESS TO COMMON COLD.

From Collapse while swimming: The most Dangerous Consequences of Hypersensitiveness to cold, by B. T. Horton, M.D., *Proceedings of Mayo Clinic*, January 6, 1937.

Patients who are hypersensitive to cold are amenable to treatment. Systemic desensitization to cold can be accomplished in two ways: First, by having the patient immerse the hand in water at 10° C. for from one to two minutes twice a day for three or four weeks; this, we believe, is sufficient to desensitize the average subject. Second, patients also can be desensitized to cold by the subcutaneous injection of 0.1 mg. or less of histamine twice daily for two to three weeks.

TREATMENT OF COMMON COLD.

From "The Common Cold", by C. K. Maytum, M.D.,
Proceedings of the Mayo Clinic, December 23, 1936.

The disease is self-limited and there is no specific treatment. One should try to prevent the development of complications and to relieve as much as possible distressing symptoms, which may be marked in some cases. Rest in the early stages probably will do as much to shorten the course of the disease and to prevent complications as any other type of treatment. All of us can recall patients with colds who have insisted on going about their usual activities, or have taken a long motor or train trip with the result that serious complications have developed and in some instances even death has ensued. Rest in bed until fever subsides and avoidance of fatigue and exposure for several days thereafter should be insisted on.

Many drugs may be used but only a few seem to have more than questionable value. In the average case, rest, the increased administration of fluid, steam and acetylsalicylic acid usually will suffice. In those cases in which there are distressing nasal symptoms, cough or constitutional symptoms, administration of $\frac{1}{2}$ to $\frac{1}{4}$ grain (0.016 to 0.032 gm.) of codeine with acetylsalicylic acid often gives considerable relief.

Diehl in his recent and extensive observations on the effect of drugs on colds concluded that a mixture of papaverine and codeine gave the greatest relief. The average dose recommended is $\frac{1}{4}$ grain (0.016 gm.) one dose being given after each meal and two before retiring. Diehl also concluded that its use not only made the patients more comfortable but also seemed to decrease the number of secondary infections. While I do not believe that the use

of opiates is indicated in treatment of all colds, they do relieve distressing symptoms materially and their use is justifiable in the more severe cases.

The local application of solutions of ephedrine or the use of a benzedrine inhaler may help to relieve nasal congestion, although too frequent or prolonged use of either is to be avoided.

Other drugs, quinine, atropine, the coal-tar derivatives and so forth may have some place in treatment but seem to be of less value than those drugs previously mentioned.

Prevention of colds when possible is the most satisfactory type of treatment. General hygienic measures and the use of vaccine are of definite benefit in some cases. While there is no specific treatment for the cold itself, non-specific treatment will make the patients more comfortable and help to prevent complications.

SUGGESTIONS TO FACILITATE VENIPUNCTURE IN BLOOD TRANSFUSION, INTRAVENOUS THERAPY, AND INTRAVENOUS ANESTHESIA, J. S. Lundy, M.D., *Proceedings of the Staff Meetings of the Mayo Clinic*, February 24, 1937.

In some cases venipuncture has been difficult until certain aids were devised and used. I wish to call attention to some measures which I have found to facilitate venipuncture.

The application of moist heat to an extremity is a valuable aid, but it is not effective unless, when a vein in the upper extremity is to be punctured, the hand, wrist, forearm and the arm to a point above the elbow, are enveloped in a warm, moist Turkish towel with an outer wrapping of oil skin or rubber and unless hot water bottles are laid against the rubber covering. When a vein in the ankle is to be used, the entire foot, ankle and leg to the knee should be covered by the towel and exposed to heat. With the extremity in the dependent position and after about twenty to thirty minutes application of heat in this manner, the hand, wrist, forearm and arm become congested with blood so that, when the tourniquet is applied, the veins stand out prominently. The common failure of this measure is attributable to the fact that usually the moist heat has been applied to the elbow but not to the hand, wrist and forearm and so fails to accomplish its purpose.

THE INTRADERMAL TREATMENT OF LYMPHO-GRANULOMA INGUINALE, Mar S. Wien, M.D., and Minnie Oboler Peristein, The British Journal of Dermatology and Syphilis, February, 1937.

The authors state that although treatment of Lymphogranuloma Inguinale is still unsatisfactory, from the results obtained by treating a second series of 200 (the first series 500) patients with Frei antigen, they consider the treatment 'is more effective and has been associated with less destruction and disability than other methods of treatment'. The treatment was by bi-weekly intra-dermal injections of o. 1 c-c. Frei antigen in early acute cases until symptoms were alleviated, with weekly injection thereafter. Treatment was kept up for an average of twelve months after an apparent clinical cure. In those cases treated for a shorter period the incidence of recurrence was high. The number of injections was variable, some patients receiving less than ten while others as many as 100. Success in therapy depends upon early diagnosis and prompt treatment for adequate period.

INEXPENSIVE CONTRACEPTION METHOD FOR

POOR WOMEN, Dr. Marie C. Stopes, D.Sc., Ph.D., F.L.S., etc., writing in *Marriage Hygiene*, Vol. 1, p. 143, advocates the following simple inexpensive contraception method for poor Indian women who cannot afford to buy the more expensive rubber barriers or caps.

The woman should take a small handful of cotton waste. This is not to be confused with what the Europeans call 'cotton-wool'. Cotton-wool is white, prepared, comparatively expensive and loses all its springiness when it is wetted. Cotton waste from her own spinning is springy and soaks up the oil without becoming sodden and flat. It is therefore without expense. The woman should take enough of the cotton waste and make it into a little pad the size of the palm of her own hand and about the thickness of the end of her own thumb. The waste can be held together by lightly winding threads criss-cross like a spider's web so the tufts do not fall apart; or if clever she can crochet a little net for herself into which the pad can be fitted. Then into a cup or small bowl she should pour a little of her ordinary cooking oil. This oil must be a bland one, not mustard oil, but any bland cooking oil she is using. The pad soaks it up and then she should lightly squeeze the pad to drain off the extra oil so it does not drip. This is then inserted high up in the vagina just before she goes to bed. It should be pinched somewhat together until it is up and then should spread out and tuck round the neck of the womb at the end of the vagina. The pad and the oil together form a barrier past which the fertilizing spermatozoa will not be able to enter. It is best to insert this before going to bed so as not to disturb the romantic feeling and peace which sex union should engender. It should remain there in place until the next morning when it can be taken out while dressing and burnt. If the waste has been enclosed merely in loose threads then the whole thing can be burnt, but if the pad of cotton waste has been enclosed in a specially made net, then the net may be preserved and washed, but if so it ought to be boiled to be really clean. It is probably better to hold the pad together with lightly bound threads and burn the whole thing.

The woman must realize she must not remove this pad immediately after the act of union has taken place, for the grease must be allowed thoroughly to deal with the spermatozoa. If removed too soon it would give them an opportunity of swimming in, but if left until the next morning it is almost certain all the spermatozoa would be rendered useless by that time.

There will probably be a good deal of opposition to the spread of knowledge of a method so simple and inexpensive, for unfortunately contraception affords a source of profiteering wealth to many commercial interests. But I trust that this message to poor Indian women may reach them and save them from needless fear of undesired pregnancy and from a needless dependence on commercial interest.

REVERSAL OF SEX IN THE CHICK EMBRYO BY THE ACTION OF MALE AND FEMALE SEX HORMONES, leading article, American Journal of Obstetrics and Gynecology, March, 1937.

Recent experiments by B. H. Willier of the Biological Laboratory of the University of Rochester in collaboration with F. C. Koch and T. F. Gallagher of the University of Chicago (*Physiological Zoology*, January, 1937) have shown that it is possible to alter the sex of chick embryos by injecting known quantities of male and female sex hormones into the developing hen's egg. The female hormones, theelin and theelol (crystalline form, dissolved in ethylene glycol), and the synthetic male hormones, androsterone, dehydroandrosterone, androstenedione (dissolved in propylene glycol), have been used, as well as male hormone preparations from human male urine and bull testis.

Briefly, the method consists of making a single injection of the solutions directly into the albumen through a minute opening in the shell, after forty-eight hours' incubation. Development is continued until just prior to hatching when the embryos are removed from the shell and examined carefully for any changes which may have occurred in their urogenital systems.

The changes in the histologic structure of the sexual organs in the male and the female were complete or partial according to the dosages of theelin and theelol administered which varied from 0.02 mg. to 1 mg., 0.05 to 2 mg., 1 to 2 mg. Recent work with sex hormones in the chick embryo seems to show that it takes more male hormone to bring about reversal of the females than it takes female hormone to bring about reversal of the males. As regards the manner of action of these hormones, it appears that the male hormones bring about a response of all the potential male components of the bisexual embryonic reproductive system while the female components respond only to the female hormones.

TREATMENT OF SKIN DISEASES AND INFLAMMATION OF EXTERNAL EAR.—From Phenyl Mercuric Nitrate in the Treatment of Otitis Externa and of the Dermatophytoses by Frederick C. Greaves, United States Naval Medical Bulletin, October, 1936.

Fungus diseases of the skin and otitis externa are two relatively minor disease entities, but they tax the ingenuity of the medical officer. The results obtained by the author from treating these conditions with phenyl mercuric nitrate were 'prompt', 'effective' and 'spectacular'. It was used in 75 cases of otitis externa and in 100 cases of dermatophytoses comprising 1 case of ringworm of the scalp, 1 of ringworm of the face, 3 of tinea versicolor, 4 of tinea cruris, and 91 of epidermophytosis of the feet.

For the treatment of both otitis media and dermatophytosis a solution containing phenyl mercuric nitrate in a strength of 1—1,250 in 95 per cent. alcohol was used. One per cent. castor oil may be added to this solution to prevent excessive dehydration of the tissues.

In acute otitis externa cases, the canal is gently swabbed with the solution or if the amount of swelling will allow, a small cotton tampon, soaked in the solution, is inserted in the canal and left in place for 30 minutes. This treatment is repeated at daily intervals for 3 or 4 days, or until the process begins to subside. When this occurs, discharge usually appears and treatment at this stage consists of gently blotting up the discharge with cotton applicators and the blowing into the canal of a dusting powder containing powdered phenyl mercuric nitrate of 1—1,500 strength in a base of four parts of powdered boric acid to one each of zinc oxide and zinc stearate. Those cases presenting themselves after the acute symptoms have subsided, or in which there is a purulent discharge with little or no swelling, are treated by applying the solution once or twice, subsequent treatment consisting of blotting out the discharge and use of the dusting powder.

The treatment of the cases of simple epidermophytosis without secondaries and the treatment of the ringworms, the cases of tinea cruris, and tinea versicolor consisted of the application of the solution to the lesions twice daily.

The phenyl mercuric nitrate used in these cases is manufactured by the Eastman Kodak Co., and occurs as a silky crystalline substance that is sparingly soluble in water, alcohol and glycerine and apparently insoluble in all other solvents. One part of the compound dissolves in approximately 1,250 parts of each of the solvents mentioned. At room temperature, however, solution takes several days for completion but the addition of heat speeds up the process. The solution described above is made as follows: 0.08 grams of phenyl mercuric nitrate are added to 100 cc. of 95 per cent. ethyl alcohol in an Erlenmeyer flask and slowly heated and agitated until the compound dissolves. It is not necessary to boil the alcohol. After the compound has dissolved, 1 cc. of castor oil is dissolved in the solution and enough methylene blue is added to give it a distinct blue tint, after which it is filtered and is ready for use.

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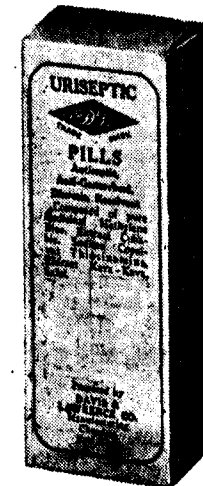
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THE B. D. H. GUIDE TO ADDENDUM 1936 TO B.P. 1932.

When the British Pharmacopoeia for 1932 was issued, The British Drug Houses, Ltd., published a guide directing attention to many important innovations. The response accorded this guide by members of the medical profession has led them (manufacturers) to assume that a guide to the recently-published Addendum 1936 to the B.P. 1932 will be welcomed.

We are asked to announce that a copy is available to any members of the medical profession who care to make application to them.

HANOVIA WARD MODEL.

For the first time an actinotherapy lamp, now available for use in hospitals, infirmaries, and nursing homes, fulfils the requirements of experts, according to Messrs. Hanovia Ltd., London.

Preceding operations, and during all stages of convalescence, patients are well advised to get out into the sunshine whenever they can. With the Ward Model it is much simpler to bring the sun to the patients whilst they are being nursed in bed. A brief exposure to its tonic ultra-violet rays gives all the benefits of a sunbath—re-invigoration, tan, improved appetite and deeper sleep. The exposure, regulated with the aid of the Timing Clock, can be made just right for tonic benefit. From three to five patients per hour can be treated. The trolley is so compact and mobile that the Ward Model can be taken along any corridor, through any doorway, in any lift, and into the smallest room. The lamp, which operates from any electric socket or light pendant, swings right over the cot, so that the patient need not be moved.

AID TO THE ARTHRITIC.

While the systemic treatment of arthritis demands some knowledge of the cause, at the same time local palliative treatment is usually an essential. The causes of arthritis fall into three major categories: infectious, metabolic and traumatic. Probably most cases are in varying degrees combinations of these three major causes. Treatment, then, involves the elimination of all possible foci of infection and the identification and correction of metabolic and postural abnormalities and the systemic treatment of the established inflammatory changes in the articulations. For the local treatment, many physicians find the application of a hot Antiphlogistine dressing a very distinct aid, both in relieving the pain and discomfort and in stimulating healthy reaction of cells and capillaries. If applied only at the site of the disturbance, the results are quite noticeable. However, if the dressing is extended well above or mesial to the involved joint, the effect may be very marked. If the dressings are changed at eight to twelve hour intervals, the beneficial effects are distinctly augmented.

MARMITE.

The efficacy of Marmite, as a hæmopoietic agent has been demonstrated in the anemia of sprue, coeliac disease and pernicious anemia. It is indicated in all disorders associated with avitaminosis B. and is thus prescribed in beri-beri and pellagra and for the prevention and cure of numerous conditions of ill health which are attributed to lack of sufficient vitamin B. In malnutrition, anorexia, and as a tonic in general debility and convalescence, it is especially beneficial. For all infants the recommendations made in the Medical Council's Report is 'Marmite—for Vitamin B complex—a small quantity—daily'. Samples and literature can be had on application to the local agents, John Little & Co., Ltd., Singapore, Penang and Kuala Lumpur.

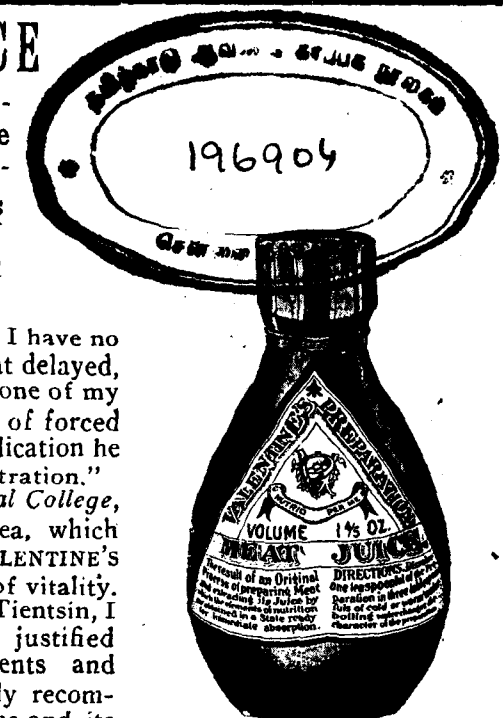
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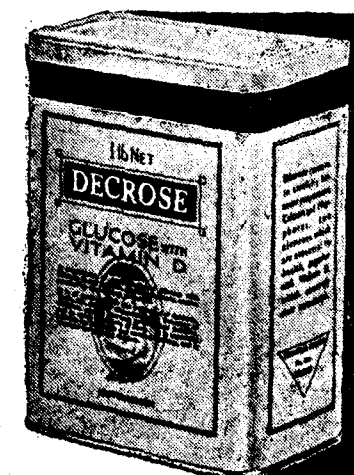
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