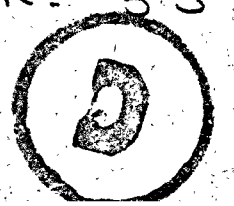

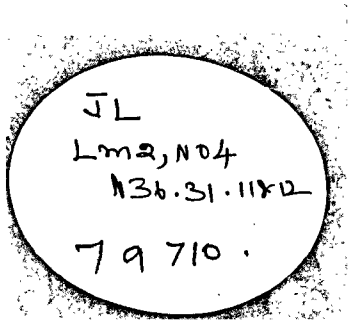

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A Monthly Medical Journal

Edited by

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ORIGINAL ARTICLES.

The Endocrines and Blood-Pressure*

By
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Glendale, California.

THE maintenance of normal blood-pressure and the factors that may cause it to become abnormal are phenomena which we understand very imperfectly, but it is apparent that a complex neuro-endocrine system is the regulating mechanism. Stimuli that originate in the endocrine glands certainly may cause marked variations in arterial as well as venous tension. It is also true that variations in the blood-pressure can arise from a lack of stimuli from certain of these glands. The dependence of cellular detoxication upon hormone influences suggested a relationship between defective detoxication and hypertension, and many cases of this nature are now clinically recognizable and amenable to treatment

The endocrine substance most commonly associated in our minds with blood-pressure control is epinephrine, the medullary hormone; yet, strangely enough, the importance of the adrenal medulla in relation to circulatory disturbances has been seriously discounted in recent years. The marked pressor effects of epinephrine injections have led many workers to ascribe the condition of essential hypertension to medullary overactivity, but it has been demonstrated repeatedly that there is no increase in the blood epinephrine content in cases of this kind. Moreover, the

* Specially contributed to 'The Antiseptic'.

hypotension frequently seen in Addison's disease is now believed to be due to cortical, not medullary, insufficiency. Probably an almost continuous supply of epinephrine secretion has to do with the maintenance of blood-pressure under ordinary conditions, but it is not an important, certainly not a vital, factor. The only clinical condition that we can safely attribute to hyperfunction of the adrenal medulla is what Belt and Powell have termed the "adrenal sympathetic syndrome." The outstanding symptoms are paroxysmal hypertension, evidences of instability of the sympathetic nervous system, glycosuria, periodic tachycardia, gastro-intestinal disturbances, etc., and the syndrome is associated with tumours of the chromaphil tissue.

There is considerable evidence to support the view that the function of the medullary hormone is to act synergistically with the cortical hormone. There is little doubt that both medullary and cortical secretions are closely linked functionally, and there is no doubt whatever that the cortex is the only indispensable part of the adrenals, and that the symptoms of hypoadrenia are almost wholly due to cortical inadequacy.

The adrenal cortical hormone is responsible for the maintenance of normal blood tissue chemistry, particularly water metabolism and the electrolytic balance. It also facilitates the destruction of fatigue poisons and toxic substances, and consequently has to do with muscular tonicity. Disturbance of any or all of these functions may become the basis for hypotension. Abnormal composition of the blood (particularly alteration of the normal potassium-calcium ionic ratio) affects the rhythmicity and nutrition of the heart, leading to myocardial inefficiency. Decrease in blood volume dislocates the hemodynamic relationships which permit normal circulatory activity. Imperfect cellular detoxication brings on the characteristic asthenia, and this is reflected in an asthenic myocardium and reduced tonicity of the vascular system.

One of the commonest symptoms of simple, or functional, hypoadrenia is "that tired feeling," and one of the most uniform changes in the physiology involves a reduction in the blood-pressure. It is reasonable to say that conditions liable to impose upon the adrenal glands may lead to serious defects in the muscular chemistry, with resulting low blood-pressure. It is equally reasonable to add that any measure that is likely to assist the adrenal glands to re-establish their endocrine activities, or which is capable of substituting for these glands or of supplementing their production of hormones will be likely to have a salutary presso[r]

effect. This is the basis for that form of organotherapy known as "adrenal support." Patients who are depleted as a result of febrile diseases, toxaemias, and emotional strain, are good subjects for adrenal therapy, and the formula, Adreno-Spermin, developed as a means of correcting the common endocrine shortcomings that follow acute infectious diseases such as influenza, is an effective means of raising a physiologically depleted pressor mechanism.

The thyroid gland is also a factor in the blood-pressure problem. Hypothyroidism spells reduced metabolism, and reduced cardiovascular activity leads to lowered blood-pressure. Moreover, as the intracellular activities are slowed, the accumulation of partially metabolized waste products soon leads to cellular infiltration, or "water-logging." This is due to the fact that the accumulated wastes in the cells increase the specific gravity of the cellular fluid to a point where the osmotic tension draws additional fluid from the blood and elsewhere, thereby puffing up, or infiltrating, the cells—a condition seen most graphically in myxoedema. This cellular infiltration not only interferes seriously with the nutrition of various tissues, but actually interferes in a mechanical way with the circulation. Not infrequently an increase in the blood-pressure is attributable to this infiltration in the precapillary areas. This is believed to be the principal cause of menopausal hypertension, for at this time of life the tendency to hypothyroidism is greatest. (Ninety per cent. of all cases of myxoedema occur in women, and 25 per cent. of these women are between forty and fifty.)

The liver is not yet conceded to be a true endocrine organ, but it is believed that it produces two internal secretions—a detoxicating hormone and a haemopoietic hormone. Whether it is a gland of internal secretion or not, the liver is a very vital factor in maintaining the endocrine balance because among several important functions is that of "aminization" or the fitting together of the precursors of urea. Now, it happens that these protein breakdown substances, as, for example, guanidine, are highly pressor in nature; and, when the liver fails to detoxicate properly, there is an accumulation of such protein wastes, many of which are pressor in nature. The result is that the blood-pressure mechanism is overstimulated and the foundation is laid for hypertension.

Hepatic detoxicative control is a desirable means of interfering in a number of common endocrine conditions, for, if the liver is failing to dispose of these waste substances, their presence quickly places an imposition upon the rest of the detoxicating

mechanism, which includes the majority of the important endocrine glands. It may be stated definitely that defective hepatic detoxication is one of the commonest sources of functional endocrine depletion.* Therefore, when the physician is confronted with a played-out, run down patient with hypoadrenia, or a woman with a well-defined hypothyroidism, it is both logical and necessary to supplement the indicated organotherapy with measures calculated to improve the liver functions and lessen the aforesaid imposition.

More than ten years ago, an active principle called Anabolin was separated from the liver by fractional solvent methods. At first it was believed to be a depressor substance like histamine, but it was proved to be a definite hormone with a decided effect upon the capacity of the liver to perform its detoxicative office, or its essentially anabolic functions. Anabolin, then, should serve to lessen some of this imposition upon the liver and at the same time lower the blood-pressure. This it does—sometimes in a most spectacular fashion. As a matter of fact, Anabolin is a means of fundamentally controlling the basic causes of hypertension. Its limitations confirm its nature and importance, for the principal limitations to the success of this therapy in hypertensive cases are structural sclerotic developments such as arteriosclerosis and nephrosclerosis. Anabolin has no effect whatever upon an impermeable kidney, nor will it directly lessen the increased pressure due to mechanical causes. Its sole effect is upon the circulation and the detoxicative function of the liver, and its value is correspondingly limited.

Remarkably enough, it has been found that the stimulation of hepatic detoxication, as with Anabolin, may be of advantage in certain cases of low blood-pressure. The misunderstandings caused by these apparently paradoxical effects can be cleared up very easily. It is well known that not all the waste products of the body are pressor in nature. Therefore, if the liver fails to destroy a series of toxic substances, it is conceivable that those that are pressor in nature will tend to raise the blood-pressure, whereas others will serve as an imposition upon the thyroid, adrenals, and other detoxicative endocrines, as has already been mentioned. It is easy to see that shortcomings in this hepatic service can add to a toxic burden that the adrenals may already be carrying and thus deplete them still further. This will then accentuate the tendency to low blood-pressure, due to lack of the

* The other chief impositions upon the endocrines are infective (bacterial and protozoal) toxaemias and emotional stress.

endocrine stimuli that normally maintain the muscle tone and circulatory tension.

There are a number of other related matters that cannot be discussed here. There seems to be no doubt that the anterior lobe of the pituitary gland produces what is known as an adrenotropic hormone, which increases or decreases the muscle detoxicating powers of the adrenal principle, depending upon the degree of stimulation. It is also true that the parathyroid glands, through their well-known capacity to regulate or ionize the calcium of the body, may have a salutary influence on some of these toxic conditions. Many of these pressor waste products—such as guanidine—are acid in nature, hence they impose upon the calcium-regulating mechanism, since the liver is one of the body's best protectors against acidosis. Hypoparathyroidism leads to a condition of toxaemia which is particularly obvious in the muscles—tetany, for example. Thus there may be a parathyroid phase to the general toxic irregularities underlying hypertension. Also, where there is a serious calcium starvation with nutritional and toxic manifestations resulting therefrom, the parathyroid shortcomings place a nutritional burden upon other organs capable of assisting the liver. Certain French investigators have claimed that the parathyroid and liver functions are as closely related as those of any other endocrine structures.

From all this it will be seen that there are very definite endocrine aspects to both types of blood-pressure changes; and, when the physician is confronted with a patient who has low blood-pressure, one of his first thoughts should be how to improve the endocrine factors capable of modifying this difficulty. This can be accomplished very effectively by means of adrenal support—with the adrenal cortex hormone, adrenal substance, or preferably Adreno-Spermin, a pluriglandular formula designed to attack the difficulty from the three related fronts.

When hypothyroidism complicates any complex clinical problem, whether hypertension, neurasthenia, arthritis, diabetes, etc., the best treatment will fall short if this thyroid deficiency is ignored. In other words, the control of the thyroid difficulty will make the rest of the treatment much more effective. To put it another way, if the physician overlooks thyroid therapy, the best of treatment will not be likely to modify the hypothyroidism.

Finally, the consideration of clinical changes in the blood-pressure—whether up or down—from the standpoint of the hepatic detoxicative capacity and the artificial interference by means of the detoxicative liver hormone (Anabolin) is one of the most salutary developments in organotherapy.

Medical Treatment of Appendicitis*

BY

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Bombay.

IN the treatment of Appendicitis, the first essential consideration is correct diagnosis. The symptoms and physical signs may vary from mild to severe, the latter evident to the most inexperienced except to the careless and dull in nature.

Another reason of failure in diagnosis is that some think that the swelling and pain in appendicitis are always located at McBurney's point.

For these I must say it is not so. The pain and tenderness and swelling may be located above, below, to the right or left of McBurney's point, or it can be diagnosed when the appendix is situated posteriorly by examination per rectum, when a tender and painful swelling can be made out. Pain of appendicitis has to be very often diagnosed from renal pain by examination of urine and from pyosalpinx by examination per vaginum. The symptoms may be perplexing in the extreme; there may be high fever with little tenderness and pain, or there may be pain, tenderness and swelling with a temperature of 99 to 100°F.

In some cases with pain and tenderness and little swelling there may be frequency of micturition, hæmaturia and diarrhoea or dysenteric symptoms.

In early stages there is vomiting, rise of temperature, some tympanites, and pain is located at the umbilicus; sometimes pressure to the right of the umbilicus may cause indefinite pain, but pressure on the abdomen to the left of the umbilicus may give rise to definite pain at McBurney's point; in some cases of appendicitis pain on pressure may be located in the epigastric region and thus that may be mistaken for ulcer of the stomach.

A rising temperature, a rising leucocytic count and a quickening pulse indicate the progress of the disease. A marked toxaemia, an acute rise in temperature and a very quick pulse, indicate surgical interference within 24 to 48 hours. But barring these very acute cases, if one is not sure of the surgeon, medical treatment is very hopeful, as statistics have shown in England and elsewhere. Besides, there may be no facilities for operation in places, far away from good hospitals in the cities; also the cases may be very often seen after 48 hours and the mortality

* Specially contributed to the Antiseptic.

after that time from even skilled operators is comparatively higher. In gangrenous and perforating appendicitis, surgery is the only resource. Now in sub-acute, and acute cases medical treatment is highly successful, provided ordinary care is taken at home or in the medical wards of small hospitals. On the slightest suspicion of appendicitis however mild, purgatives by mouth should never be given, as peristalsis will be the cause of changing, no perforation into perforation, and a mild attack into a very severe one, due to increased congestion. In any sort of pain in the abdomen, with rise of temperature and even where simple distension due to flatus is suspected it is always wise to give gently an enema and never castor oil or Magnesium Sulph by mouth, till the diagnosis of simple distension is settled.

Secondly, the patient must have absolute rest in bed in Fowler's position or if that is inconvenient raising the head of the bed. Enemas must be given gently in the form of soap and water, or glycerine and olive oil half an ounce of each by means of glycerine syringe of one ounce capacity. It must be borne in mind that enemas rapidly or roughly given cause peristalsis, and on least sign of pain the enema should be stopped. Thirdly, no food be given by mouth, except some ice to suck or small sips of water, for 12 to 18 hours and then fruit juice and weak tea, then malted milk and later on half milk and half tea.

Fourthly application of cold by means of ice bag over a piece of gauze on the appendical region.

Application of heat by means of hot water bag or even poultice has been suggested by high authorities, but both on clinical results, and pathological reasons I condemn it, except, later in the disease, when the swelling remains stationary and shows no signs of further absorption, application of antiphlogistine further reduces the swelling. On clinical grounds, I recommend cold application by means of an ice bag, and I have obtained successful results by such an application, while, I have seen bad results occurring in cases where heat application was advocated. On pathological grounds, heat increases congestion and swelling by dilating the blood vessels, and it is possible for the infection to spread through such capillary dilatation; further, hot poultices is a well-known agent for hastening suppuration. In appendicitis, we want the inflammation to subside and not lead on to suppuration by hot applications.

In some cases, patients dislike this application of ice or are made uncomfortable; in those cases after one or two days it may not be persisted in or it may be left off even earlier.

In such cases I apply a pigment consisting of Ichthyol 3 drams, Ext. Belladonna 2 drams and glycerine 2 drams. This may be applied when the ice-bag is taken off at any time during the day or night.

Now as to medical treatment, I prescribe the following mixture and capsules.

℞

Sodii Bicarb	...	i dram.
Potassi Citratis	...	1½ dram.
Sodii Bromidi	...	40 grs.
Tinct Hyoscyami	...	2½ drams.
Glycerini	...	3 drams.
Aquae ad,	...	3 ozs.

1/6 part every 4 hours.

Though the dose of Tincture Hyoscyami is small, in some cases of idiosyncrasy, dryness of throat and redness of face may appear, when the dose may be lessened still. With the above mixture the following capsules are given morning and evening.

℞

Quinine Bihydrochlor	...	20 grs.
Salol	...	15 grs.

M. ft capsules six.

One to be given morning and evening. In mild cases the above treatment alone may gradually bring on the subsidence of the ailment, and though it may not be believed, some fortunate people on the above lines of treatment have gone on doing their duty, disregarding the advice of complete rest in bed given to them. They have gone on working (clerical), with a distinct lump in the right iliac region and in whom it was feared an operation would be required.

In cases of appendicitis with high fever 102° to 103° F. from the onset of the ailment, I inject Collosol Argentum 2 c.c. intramuscularly. This causes gradual subsidence of the fever within three to 4 days, sometimes more. Three to six injections may be given, one every day or every alternate day. The above line of treatment succeeded in a case where four surgeons advised operation, although it was the fourth day, and one agreed to postpone the operation to be done in the quiescent stage. In another case under the care of a practitioner for about twelve days, the temperature ranging upto 103°F. with swelling, pain and tenderness continuing in the right iliac region and with no amelioration of symptoms, operation was advised. The relatives were against

operation. I was called in to see the case, when I had also my doubts whether the patient would get well without operation; however I advised the practitioner to try the above line of treatment, mixture and capsules by mouth, and injections of Collosol Argentum (Crooke's). After two days the temperature came down and the patient recovered.

In the first case I have mentioned, ice was applied in the early stages, but after the fever had subsided, the swelling though diminished in size, persisted, and antiphlogistine was applied at the suggestion of late Dr. Gilroy with good results.

As for after-treatment, patient should be advised not to eat hard and indigestible food, constipation should be avoided by giving liquid paraffin or its combination with agar, and with even slight pain in right iliac region and constipation, no purgatives should be given but be relieved by enemata.

Very often with these precautions there may be no recurrence of the disease. In the quiescent period operation should be advised. Other cases in the series thus treated, were less or equally severe, but the results were as good.

Blood Transfusion*

BY

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BLOOD transfusion has become so common a practice, at least in the Western countries, that a few words about it would not be out of place for a Practitioner in the East, where it is not practised so widely as it should be. At times it is a life saving method of treatment and at other times it enables the patient to undergo operations which were considered impossible in his case on account of anaemia etc. Blood pressure can more certainly be raised by transfusion than by saline infusion and that it is maintained for a longer period as the blood does not pass out of the vessels so rapidly as the fluid in case of infused saline fluid (Crile).

Every text book contains something about it, but a simple method and a few practical hints which will be useful to a Practitioner in a Mofussil Dispensary will be described here, so that he may not feel handicapped.

* Specially contributed to the 'Antitseptic'.

It is essential that the Red Blood Cells of the donor should neither be haemolyzed nor be agglutinated by the serum of the patient, nor the cells of the patient by the serum of the donor. In actual practice it has been found that if the cells are not agglutinated they would not be haemolyzed, so it is necessary to test for agglutination alone. Further, the serum of the donor is so highly diluted when it enters the blood serum of the patient that it has no action on the patient's corpuscles. So in actual practice one has to see only if the cells of the donor are not agglutinated by the serum of the recipient. This may be done in two ways :—

(1) By matching the cells of the donor against the serum of the recipient and observing if any agglutination occurs.

(2) By grouping the bloods of both the donor and the recipient and determining if the groups would harmonize.

Matching is easy and sure and requires no stocking of known Sera and so would be described in detail. The things required are corpuscles of the donor and serum of the patient. The corpuscles are obtained by collecting just two drops of blood from a perfectly clean finger of the donor in 1 c.c. of 2.0% sodium citrate solution in normal saline, placed in a sterilized watch glass. Little shaking would make the blood drops and citrate solution come together intimately and prevent coagulation. If necessary, stir gently with a sterilized glass rod. The serum is got by collecting the blood in a Wright's Blood Capsule from a clean finger or ear lobe of the recipient and allowing the clot to separate. One drop of this serum is mixed with one drop of cell emulsion on a cover glass and this mixture is examined as hanging drop preparation on a hanging drop slide under a microscope or the serum and emulsion may be mixed on an ordinary slide and this covered with a cover glass. Agglutination would occur within ten minutes if the bloods are incompatible, but to be on the safe side it is advisable to wait for an hour. In case of agglutination the cells become arranged in regiments : "there are long masses with irregular spike-like projections which roll over the field with life-like activity, rapidly collecting the isolated corpuscles into their mass as they go." (Fraser). They come to rest finally as large, irregular, closely packed masses with very few isolated cells between them.

Macroscopic method may be employed. The serum and cell emulsion are mixed together on a slide. The rapid appearance

of a brick red granular dust-like deposit would indicate the occurrence of agglutination. Homogeneous appearance means no agglutination.

If agglutination does not occur then it is a safe case for transfusion and this particular recipient would stand this particular donor's blood. It is important to use some cover slip, as the process of drying may simulate agglutination reaction.

Grouping method.—As regards blood, all human beings may be divided into four groups depending upon the presence of iso-haemagglutinins. Some of these groups will not agglutinate others, some will. Members of group IV are called Universal Donors as their red blood cells are not agglutinated by the serum of any other group. Members of group I can receive blood from members of any group because their serum agglutinates cells of no group, hence they are called Universal Recipients. Grouping method is not so safe and requires stock known Sera of Groups II and III. This is generally done where blood transfusion is resorted to often and where professional donors of known groups are always available. In that case all that is needed is to decide about the group of the patient. Certain precautions are necessary in carrying out this :—

(1) If the same donor is to be used after an interval of time for a second transfusion, even though the two bloods belong to suitable groups and are compatible they should be matched again, otherwise alarming haemolysis may occur owing to the development in the Recipient's blood of agglutinins against the Donor's red cells, which were originally absent.

(2) It may not be safe for a Universal Recipient, who has previously received blood from a member of group II, to receive another from a member of group III for this patient is no longer a pure group I, but a combined group I and II.

(3) Recent research works indicate that there may be greater complexity in the Blood Groups and that there may be sub-groups within the main groups, which may cause slight reaction. This also explains slight reactions which occasionally occur even when the grouping is perfectly satisfactory.

(4) Generally grouping by Moss is adopted but other grouping like that of Jansky may be adopted in which grouping is exactly apposite. So when a donor states

that he is in such and such group, it should always be ascertained from him the classification used in his case. If this precaution be not taken, fatal mistake may occur.

If we have known Sera of Groups II and III and match them with red cells of a person whose group is to be ascertained, the result can be :—

(1) agglutination with both sera ; then this would be of group I.

(2) Negative with Serum II and positive with Serum III ; then this would be of group II.

(3) Positive with Serum II and negative with serum III ; then this would be of group III.

(4) Negative with both ; then this would be of group IV.

Corpuscles.	SERA			
	I	II	III	IV
I	−	+	+	+
II	−	−	+	+
III	−	+	−	+
IV	−	−	−	−

+ =agglutination —=no agglutination.

This table makes the above statement clear.

Dangers to be avoided in transfusion :—

(1) Incompatibility of blood administered.

(2) Transmission of disease from the donor to the recipient through the transfused blood *e.g.* syphilis, malaria.

(3) Cardiac embarrassment from increase in blood volume as shown by irregularity or increasing rapidity of heart beats or laboured breathing.

All these can be avoided by selecting proper donor of suitable group, free from disease and injecting *very slowly*.

Clinical signs of incompatibility :—

(1) Patient becomes restless.

(2) Patient complains of fullness in the head, choking feeling in throat and chest, and excruciating lumbar pain from irritation of kidney, with haemoglobin set free.

(3) His face at first becomes suffused and later ghostly livid coloured.

(4) Respiration becomes rapid and laboured; Dyspnoea develops.

(5) Nausea, retching or vomiting may follow.

(6) Consciousness is impaired or entirely lost.

(7) He may get rigor, rapid rise of temperature to 103° or 104° F, may show jaundice, haemoglobinurea, collapse and die.

Indications for transfusion :—

(1) *Haemorrhage*—Transfusion is needed only in worst cases, where gum saline would not be sufficient and means are advisable to ensure efficient oxygenation of sub-oxidised tissues especially the Central Nervous System.

(2) *Shock*—If systolic blood pressure remains below 80 mm. of mercury, especially if it shows a tendency to fall progressively then transfusion is advisable for volume, corpuscular element for oxygenation and raising the blood pressure for certainty. Sometimes as prophylaxis of shock, transfusion is given as a preliminary to surgical interference in certain forms of splenic anaemia, splenectomy, big surgical operation in anaemic persons or patients liable to bleeding as those suffering from gall bladder diseases, bleeders, bloodless persons as a result of haemorrhage from gastric or duodenal ulcers.

(3) *Severe septic infection for serological reinforcement.*—Transfusion is usually preceded by venesection unless arterial pressure is already low. Quantity of blood transfused and the rate at which it is given must be carefully controlled by the condition of heart whose musculature is already weakened from toxaemia.

(4) *Nephritis.*—In acute or chronic cases when suppression of urine has supervened from fall in arterial blood pressure, transfusion may save the patient by elevating the blood pressure and then re-establishing the renal function.

(5) *Dehydration.* — Sometimes in very severe cases of gastro-enteritis associated with continuous diarrhoea and vomiting, the resulting collapse is treated with transfusion which raises blood pressure.

(6) *Haemorrhagic diseases.* — *e. g.* haemophilia, purpura haemorrhagica.

(7) *Toxaemia—e.g.* in burns, coal gas poisoning, nitrobenzol poisoning etc. The toxic blood is at first removed by venesection and this is replaced by transfusion.

(8) *Anæmia—e.g.* Pernicious anaemia, acute haemolytic anaemia.

(9) *Apoplexy.*

(10) *Marasmus, Kala-azar, osteomyelitis complicating sinusitis, typhoid especially in intestinal haemorrhage.*

(11) *Pellagra,* to supply the deficiency.

How transfusion acts :—

(1) Restores quantity and raises blood pressure.

(2) Restores colloidal concentration.

(3) Increases oxygen carrying capacity. The transfused red cells can live for 30 days.

(4) Increases coagulation power.

(5) Gives serum property of immune donor.

Quantity to be transfused depends upon age and condition of patient. Average quantity for adult is 500 c.c.—about a pint. Transfusion should be stopped immediately at the first sign of the patient showing signs of respiratory embarrassment.

Coagulation is accelerated by :—

(1) Rough handling and damage to the formed element of blood especially plate-lets.

(2) Mixture of tissue 'juices' with the blood.

(3) Passage of blood over rough surfaces.

(4) Presence of any shred of fibrin.

(5) Undue delay.

Therefore manipulation must be gentle, should not occupy more than 15 minutes and apparatus used should be smooth and perfectly clean—free from dust and fibrin.

Following methods of transfusion are available :—

(*a*) Use of 'whole' or unmodified blood by direct or indirect transfusion.

(*b*) Use of modified or citrated blood.

(*c*) Preserved blood cells in isotonic citrate and dextrose solution. This was found useful in war times.

None of the 'whole' blood methods has been shown to possess any advantage over those in which anti-coagulent is

employed but their technical and clinical disadvantages are many and important. So their employment is not recommended.

Modified blood method can be carried single-handed with a minimum of special apparatus and with certainty of technical success. The whole operation can be done deliberately and without undue haste.

Most suitable anti-coagulent substance is Sodium Citrate, which when mixed with blood in the proportion of 0.17% prevents coagulation. When this is transfused, it is at once so much diluted in the patient's circulation that it does not prevent clotting in him. It is non-toxic in doses upto 5 grammes—a dose much in excess of that required for any transfusion. The solution of 3.8% in distilled water is isotonic with blood and it is mixed in the proportion of 1 part of this to 9 parts of blood.

APPARATUS REQUIRED :—

(1) Rodger's cholera apparatus filler or a glass funnel.

(2) Rubber tube fitting above.

(3) Glass dropper apart from an eye dropper.

(4) Small calibre drainage tube of a cycle.

(5) Needles—new and most sharp ones.

(6) Glass jugs or big sized ounce measures—capacity atleast one pint.

(7) Enamelled iron mug of two pint size or enamelled iron bowl.

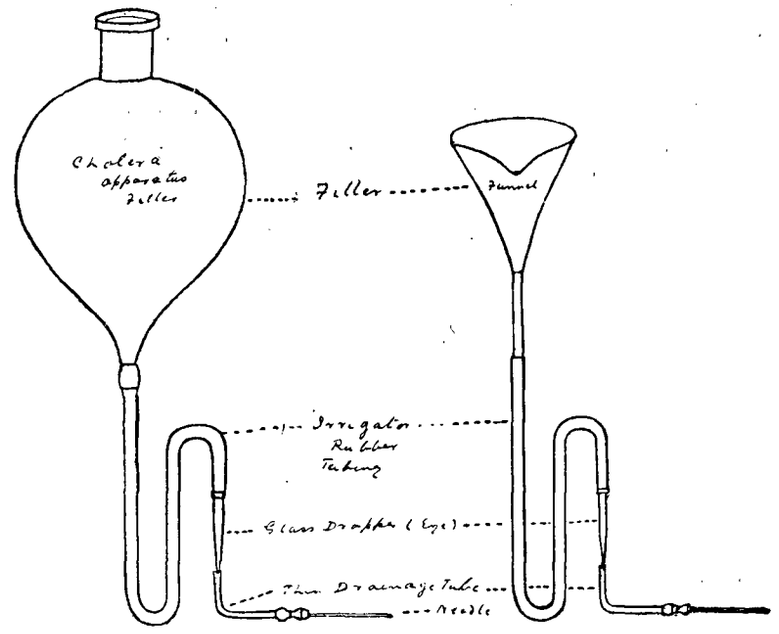
(8) Glass stirer.

(9) Blood pressure taking apparatus-Sphygmomanometer or thick rubber tubing and an artery forceps.

Everything used especially that which comes in contact with the patient should be perfectly smooth and clean without even a a trace of dirt or dust and properly sterilized.

Collection of Blood.—Examine both arms of the donor and select the largest vein visible. If the vein be obscure, hang the arm in dependent position for 5 minutes in hot water, making the donor close and shut his fist. In addition put the blood pressure apparatus bag round his arm and pump up to 50 mm. mercury pressure, when there shall possibly be no difficulty in finding a vein. Before use rinse everything *e.g.* needle etc. with sterilized citrate solution. Needle selected should be large sized and the sharpest available. Donor should be placed in a comfortable reclining position with his arm on an arm-rest if available. Now make the veins prominent by the above method and insert the needle into the vein selected as one does for an ordinary intra-

venous injection. When the blood flows out, receive it directly into a glass jar containing 2 ounces of 3.8 % sodium citrate solution. Make the donor take a rolled bandage in the hand of the arm that is being used and make him squeeze it slowly but firmly 10 to 20 times a minute. This helps in the expulsion of blood, and as the blood is being collected it should be gently but continuously stirred with a sterilized glass rod in the jar or by simply agitating the jar gently during collection. When required quantity of blood (say one pint) has been collected, the pressure apparatus is released and the puncture wound dressed with Tincture Iodine. The jar containing blood is covered with a piece of sterilized gauze



and put in an enamelled iron jug or a bowl containing water at 110°F.

If blood pressure apparatus be not available, then the veins can be made prominent by putting a piece of strong rubber tubing round the middle of upper arm tightly and securing it with an artery forceps. It should be adjusted so tightly as to abstract the veins only and not the arteries.

Injection of citrated blood.—The selected apparatus is sterilized. The cholera apparatus filler and failing that, an ordinary big sized glass funnel is fitted to the irrigator rubber tubing, to the lower end of which is fitted the thick end of a glass dropper.

The pointed end of that glass dropper goes into a small piece of thin drainage tube (or valve tube of a cycle), to the other end of which is fixed a suitable hypodermic needle, which should be short-bevelled and very sharp. This glass dropper acts as an eye. Ordinary irrigator tubing is too big for a hypodermic needle. To the fine drainage tube or valve tube a hypodermic needle can easily be fitted and its grip would be so tight as to prevent dislocation of the needle. Further the fine drainage tube or valve tube is easy to handle while inserting the needle into a vein. It can easily be doubled up to prevent the flow of fluid from the filler.

When every fitting has been made, sterilized citrate solution is run through the apparatus and one ounce of sterilized normal saline is poured into the filler or funnel and allowed to run down to drive out all air-bubbles and then the rubber tubing is pinched. Now the patient is put in a comfortable reclining position, and the arm vein of the patient is selected as in the case of the donor and his veins made prominent by at first making him hang down his arm in warm water and then making him open and shut his fist and lastly fitting the blood pressure bag round the middle of his upper arm and pumping to a pressure of 50 mm. of mercury or by a piece of thick rubber tubing secured by a pressure forceps round the middle of his upper arm. When proper vein is visible, the needle is pushed into it as is done in an intravenous injection. If it is in place, blood would rush into it, pass up the drainage tube or valve tube and appear in the eye (glass dropper). Then the pressure on the arm is released and the normal saline allowed to run in. Before it disappears from the filler or funnel, the citrated blood is poured into the filler or funnel gently and then the filler or funnel is raised to about two feet above the level of the arm, and the blood is allowed to flow slowly—first two ounces in 10 minutes and then one ounce every two minutes.

Failure to enter the vein calls for exposure by cutting. The skin may be anaesthetised by injecting a few drops of 2 % novocain solution without Liq. adrenalin. Incision is made in the direction of median basilic vein. The exposed vein is tied at its distal end. Another ligature is passed round the proximal end of the vein and first Surgeon's knot tied loosely. The vein is opened by pinching it with a forceps and making a snick with scissors.

Needle rather a cannula can now be slipped into the opening in the vein for a sufficient distance. Now tighten that ligature. At first the saline and then the citrated blood as above is allowed to flow in, taking care to exclude air bubbles.

It is common experience that in case of haemorrhage and shock the blood either refuses to flow or flows extremely slowly at first. This is due to venospasm incidental to shock, haemorrhage etc. The obstruction can easily be over-come by 'milking' the blood down the tubing, for then the vein at once responds to the flow of warm blood by relaxing and the blood then continues to flow freely.

When the transfusion has been completed, the cannula is slipped out and the Surgeon's knot drawn tight upon the empty vein and completed by a second twist. The skin wound is closed by sutures and dressed in the usual way.

In case of children, select the superior Longitudinal Sinus if the fontanelle are open or internal saphenous vein as it passes anterior to the internal malleolus.

After the transfusion, the patient is allowed to rest and encouraged to sleep.

The donor is given suitable diet and plenty of fluid and assured that he would not be any way worse by that much of loss of blood and that diet would prevent weakness, if any.

A New Operation for "Entropion" of the Upper Lid*

BY

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AN entropion can be described in short as a distortion of the lid with faulty position of the cilia. This is produced by the cicatricial contraction of the conjunctiva and the tarsus as a result of chronic trachoma. The tarsus increases in size and on eversion appears thicker, wider and less pliable. The inner margin of the lid, which is normally quite sharp becomes rounded and unrecognizable. The contracting conjunctiva turns the free border of the lid inwards; thus the cilia which, in the healthy state, look forwards change their direction, and have a tendency to touch the surface of the cornea. When this distortion of the lid progresses, the entire margin of the lid turns backwards, thus producing a condition known as the 'entropion'. It causes a constant contact

* Specially contributed to 'The Antiseptic'.

of the cilia with the cornea, thereby producing various diseases of the cornea.

So many different methods of operation have been devised for the relief of the entropion of the upper lid. The method, I am following at present, is, so far as I know, very rarely tried by ophthalmic surgeons in this country; and hence I take this opportunity to describe it in detail.

The method has been invented by Dr. Webster. He has performed this operation in a large number of cases without a single untoward result.

The operation is usually performed under local anaesthesia (2 per cent Novocain), but in some cases a general anaesthetic is certainly to be preferred. The eyelids, and the face are cleaned with 1 in 3000 hydrarg, perchlor. solution, while the conjunctival sac is washed out by the same solution, the strength being 1 in 6000.

The usual Snellen's entropion forceps is used in the reverse way, the right sided being used for the left eye and vice-versa. The lid is everted, the arm with the complete metal plate is used against the skin and the other arm which is partly open is applied to the conjunctival surface. Before fixing the clamp tight, one has to see that the function is seen in that portion of the lid enclosed by the forceps.

An incision 2.5 m.m. to 3 m.m. from the margin of the lid is made on the conjunctival surface parallel to it from the outer to the inner end of the lid. The tarsal plate must be cut with the incision. All the same the incision should not be so deep as to cut through the skin; this mishap even if it occurs does not cause great harm. Any fine narrow and a sharp scalpel can be used conveniently. On completion of the incision the conjunctiva should be retracted on the lower side of the everted lid, till a narrow strip of the underlying tarsus about 1 m.m. in breadth is exposed. Now a second incision is made exactly parallel to the first at a distance of about 1 m.m. from the first incision. This narrow part of the tarsus should be removed along its whole length. The Snellen's forceps is now removed. This is followed by profuse bleeding but it immediately stops by a large moist pad which should be pressed on it after carefully replacing the lid.

The lower lid is cleaned and held everted by an assistant, thus exposing its inner surface. A fine strip of the mucous membrane about 4 to 4.5 m m. in breadth and a little longer than the lid incision in length is removed from the lip. The wound should

be immediately sutured up by the assistant ; a continuous suture serves best for this purpose.

The flap of the mucous membrane cut from the lip should now be placed with the raw surface exposed, on the dorsal part of the skin covering the first metacarpal bone. It should be kept moist by dropping on it a little normal saline solution from time to time. With the help of a flat and curved iris scissors, the sub mucous tissue from the flap should be carefully removed. This is the most trying part of the operation. The thinning of the graft should be as complete as possible, because the thinner the graft the better is the apposition. But care must be taken to see that no button hole is made in the flap; or else a new flap from the lip will have to be taken. When the flap is sufficiently thin, the sides should be cut a little and the ends should be made pointed. The graft which is now ready should be kept on the finger with the raw surface uppermost.

The lid should again be exposed after removing the pad gently. The gap made by the two incisions will be filled in by blood clot which should be carefully removed by a pair of fine toothed forceps. Most probably there is no bleeding now. Even if it occurs it matters very little. The graft should be removed from the finger and placed in the wound with its raw surface downwards. If the flap is a little longer or wider it should be cut and made to fit in correctly. In case it overlaps a little it matters very little; on the contrary a little overlapping helps the apposition and should always be attempted. The bleeding that may have started after removal of the blood clot, immediately stops after the reposition of the flap.

The everted lid is turned back very carefully so as not to disturb the graft. It there is the slightest suspicion about the flap not being in the proper place, it should be smoothed back by an iris repositer *without everting the lid.* Both the eyes should be bandaged for twenty four hours, after which period the unoperated eye may be kept open. The patient must be kept indoors. The eye is dressed daily with mercurochrome one per cent and atropine half per cent to prevent any corneal complications.

If the technique of the operation is rigidly followed and the subsequent dressings are carefully done by the surgeon himself the graft must 'take,' and remain in position. The bandage should be removed on the sixth day and the patient may leave the hospital on the eighth. After another week it is quite safe to evert the lid. The greatest advantage of this operation is that as the lid margin is not interfered with, and no suture has been

taken, there is no disfigurement at all. The operation is always successful. Recently I had performed a little more than thirty operations and had no cause to repent from the results, both from the functional as well as the cosmetic points of view.

Even if the graft from the mucous membrane of the lip does not 'take', no harm is done. On the contrary, the patient is temporarily cured of the existing trouble. How often do we see a notched and a distorted lid generally as a result of a badly performed operation. In some cases the skin is so much removed that the lid is no longer able to cover the eye properly. This leaves the cornea exposed which may ultimately lead to keratitis et lag-ophthalmos. Such sights would be much less common if the above operation is performed more frequently.

There are two other operations which resemble the Webster's operation just described. In Burrow's operation the incision is made from the conjunctival surface of the lid cutting the tarsus from one end to the other. This sometimes gives good results, but is generally followed by a recurrence after the wound heals.

A similar operation known as William's operation consists in removing a thin slice of the tarsus : but in none of these operations a graft is replaced in the wound.

I should certainly like to hear from those ophthalmic surgeons, who are performing this operation as regards the results obtained or difference in the technique if any.

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Whooping Cough*

BY

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Synonym :—Pertussis.

Definition :—It is an acute specific infectious disease, characterised clinically by catarrh of the upper respiratory passage and a series of paroxysmal cough of a spasmodic and convulsive nature, followed by a long drawn inspiration, during which the whoop is produced and usually terminated by vomiting.

Aetiology :—

1. It is mainly a disease of temperate climates, being rarer and less severe in hot countries.

2. It is more prevalent in cities and industrial centres than in the rural areas.

3. Generally it appears in epidemic form, though sporadic cases are not rare.

4. Children before the age of three years commonly contract the disease; after the age of six the frequency diminishes till after twelve, when an attack is unusual. A baby at breast and an adult in youth are not exempt.

5. Girls are more subject to the disease than boys.

6. It usually occurs in winter and spring, while it may also occur in summer. It is most infectious in catarrhal and early paroxysmal stages.

7. It is highly contagious and also infectious but to a lesser degree. The virus is chiefly disseminated from person to person by mucous droplet. Since the virus can resist drying for several weeks, the disease may also be conveyed by vomitus. So the houses, school rooms and other localities used by the patient may be infected.

8. Unrecognised Pertussis in an elderly person may be a serious source of infection for children, but on rare occasions convalescents are said to have acted as carriers of the disease.

9. It may appear as a precedent to Measles, Pneumonia or even Phthisis.

10. It may follow an attack of Measles or may co-exist or have a conjoint 'Go' with another epidemic as Influenza.

Course of the disease :—This varies in severity and

* Specially contributed to the Antiseptic.

duration. A single sporadic case may suffer from two weeks to two months; generally, four weeks is the duration for mild cases and six weeks for severe cases. An epidemic may linger for three or four months. Whooping cough is more prolonged in winter than in summer and its duration is increased if complications ensue.

Incubation period and immunity :—The incubation period is unknown; generally it is 7 to 14 days. The germ, the predominating influence, in the most contagious period, "the catarrhal stage" gets fewer and fewer and more attenuated till a fortnight after the whoop appeared, it almost disappeares from the system because of the immunity developed in the blood in the shape of agglutinating power. Hence an immediate recurrence or reattack is not seen and one attack, with a few exceptions almost invariably confers life-long immunity. The date at which the patient becomes free from infection is difficult to fix as the characteristic manifestation of the disease, the whoop, sometimes persists irregularly for months, but it is generally considered that not less than six weeks from the commencement of the illness should be allowed for the infection to die out.

Causative organism .—Of the various organisms which have been alleged to be the causal agents, the bacillus of Bordet and Gengou (Haemophilus pertussis) has the strongest claim for acceptance. This is a minute slender rod—like bacillus closely allied to the bacilli of Influenza group. It is gram-negative, and only flourishes on artificial media which contain blood or serum. It grows best at blood heat. Cultures are more easily obtained from the small pellets of viscid mucus which are expectorated at the end of a paroxysm of coughing. The blood of convalescents agglutinates the bacilli. It afterwards co-exists with Influenza, Strepto and Pneumo-bacillus. It is found in the early stage of the disease and not later than two weeks after the appearance of whoop. Its infectivity is greatest in the early stages of the disease, long before the onset of whoop.

Pathology :—Whooping cough itself has no pathological changes. A pure and simple case (uncomplicated) presents very little pathological changes *viz.* catarrhal inflammation of the upper respiratory passages and the trachea and bronchi with the sympathetic reactionary swelling of the tracheal and bronchial glands. The glottis is congested and more or less oedematous. The ulcer under the tongue has been described. There is a constant lesion at the trachea by the presence of the bacilli between the columnar cells. In severe cases, pulmonary complications

particularly broncho-pneumonia, and congestion of air passages are the most common and are accompanied by general acute vesicular emphysema. The tracheo-bronchial lymph glands are usually soft and swollen.

Symptoms :—Course of the disease may be divided into four stages :—

1. Incubation period.
2. Catarrhal, Bronchial or Influenzeal stage.
5. Paroxysmal stage or stage of fit or whoop.
4. Convalescent stage or stage of immunity or decline.

(1) *Incubation period* :—The period of incubation during which there is no manifestation.

(2) *Catarrhal stage* :—This stage lasts from 7 to 14 days. The onset is either insiduos or well marked. The symptoms are those of a common cold, which may begin with catarrh of upper respiratory passages, slight irregular fever, sneezing, running at the nose and eyes, congestion of eyes and dry bronchial cough. This cough is incessant in character and after a week or ten days *i.e.* towards the end of the period, instead of subsiding becomes worse and assumes paroxysmal character with greater severity at night and occasional termination in vomiting even though the other symptoms may subside.

(3) *Paroxysmal stage* :—The paroxysm consists of a series of (from 12 to 20) short coughs of increasing intensity with no intervening inspiration followed by a deep inspiration producing the characteristic 'whoop.' This whoop is due to partial closure of the glottis. This closure is considered by some to be reflex spasm in nature. Others say it is mere approximation of the glottis. This paroxysmal cough is attributed to the action of virus in producing hyperaesthesia at the respiratory mucous membrane and to heightened excitability of the vagus nerve; the toxic influence on the nerve centres is probably widespread. A second bout of short coughs succeeds with another whoop and after 3 or 4 sequences a little plug of tenacious mucos is expelled Vomiting often takes place at the end of the paroxysm. The vomiting is purely mechanical, is not accompanied by nausea and does not affect the appetite; indeed, the child may ask for more food to take the place of the lost. The child is apparently well until next paroxysm. Several paroxysms may occur in a day with longer or shorter duration. In a mild case there may be only 4 or 5 attacks in a day but in very severe cases there may even be 20 to 50 attacks daily. The fits appear even during sleep. Each fit of coughing generally lasts for 2 or 3 minutes. Any kind of mental emotion or

mechanical irritation in the respiratory tract is provocative to an attack. The patient knows for a moment before the attack comes in and tries to check it,but on failing to do so runs to the nurse or mother for help or clutches at the nearest thing ; if in bed the child will sit up. A brief, deep inspiration is followed by a paroxysm and during the paroxysm the thorax is strongly compressed and signs of defective aeration of blood appear. The child gets blue in the face, swollen and congested, the superficial veins are prominent and engorged, the eye balls protrude and the conjuntiva becomes deeply engorged and the skin is bathed in sweat. Suffocation seems imminent, when with a deep crowing inspiration, air enters the lungs and the colour is quickly restored. After a severe paroxysm the child is confused and exhausted but quickly regains normal stage and returns to his play.

In some cases the true 'whoop' is never heard but the periodic attacks of apparently causeless coughing, leading to breathlessness, blueness and vomiting, will render the diagnosis clear.

If the child be examined at this stage the resonance is defective, in the expiratory stage; full and clear during the deep, crowing inspiration. Bronchial rales are occasionally heard.

When paroxysm is very severe we may get (1) Haemorrhages from the nose, fraenum of tongue, under the conjunctiva or even in the brain. Petechia appears in the skin at the eyelids and other parts. (2) Ulceration of the fraenum of tongue. (3) Collapse of the lungs. (4) Convulsion in infants. (5) Sphincter may be opened. (6) Fatal asphyxia (rare) (7) Rarely the tympanic membrane is ruptured and blood escapes from the ear.

This stage lasts for three to ten weeks, then the attacks become lighter and finally cease. From the time the first whoop is heard, or the first paroxysmal attack takes place, aggravation may be expected for about a week, after which the disease may continue in varying severity from 3 to 4 weeks, when the stage of decline begins.

(4) *Convalescent stage* :—This stage presents no sharp line of demarcation between it and the 3rd stage. It is generally marked by gradual decrease in the number and severity of paroxysms. The whoop or the distinct cough comes to subside. In this stage there is commonly some degree of bronchitis. The patient though becomes vitally weak partly from interrupted sleep with nerve exhaustion and partly owing to the interference of adequate nourishment by repeated vomiting, yet gains a natural immunity against the specific disease.

Blood :—Marked leucocytosis (15000-25000) appears early.

Both polymorpho-neuclear cells and lymphocytes being chiefly involved, myolocytes may be found, but the lymphocytes are increased out of proportion to the other cells and may constitute 66 per cent of the total count. There is lymphocytosis with an absolute or relative retardation of the sedimentation rate of the red corpuscles. Leucocytes begins to increase during the incipient stages, and is said to increase after each paroxysm of coughing and the highest count is to be found during convulsion. About 3 to 4 days after the infection and in quite a typical manner, that is in various stages it increases first to 14 thousands, then to 18, 20, 30 and sometimes even to 40 or 50 thousands. In the spasmodic stage the leucocytes reaches its maximum, sometimes with 100 thousands. Then it decreases gradually returning to normal within about 8 to 10 weeks. The leucocytosis is associated with a marked increase of lymphocytes.

Complications and sequelae :—There is no doubt that it makes the soil vulnerable to many diseases—chiefly respiratory.

(1) Bronchitis, Broncho-Pneumonia, Lobar-pneumonia, compensatory emphysema.

(2) Pneumo-thorax, Pleurisy, Interstitial emphysema, rare.

(3) Asthma or tubercle is apt to develop.

(4) Enlargement of Bronchial and tracheal glands,common.

(5) Convulsion sometimes occurs and is due to extreme engorgement of cerebral cortex during paroxysm.

(6) Haemorrhages are very apt to occur in the form of petechae particularly about the forehead, ecchymosis of the conjunctiva and even tears of blood from rupture of the vessels, bleeding from the nose, ear and occasionally haemoptysis. These are mechanical and are caused by the strain of coughing.

(7) Cardiac strain ending in valvular diseases. Koplik regards the swelling about the face and eyes as an important sign of heart strain.

(8) In infants there is a tendency to convulsion ; in old children, to broncho-pneumonia causing collapse of the lungs, deformity of the chest (Pigeon shape).

(9) Blindness is an exceedingly rare complication and is seldom permanent. It occurs between the 1st week and 4th month of the disease and may last from a few minutes to nine months.

(10) Aural complications are common in the form of atalgia otorrhoea and otitis media and give rise to intense pain fever, malaise and even alarming symptoms such as extreme restlessness, meningeal reactions and convulsions.

(11) Diarrhoea and ileo-colitis may occur, mainly in younger children and during the summer months.

Diagnosis :—An early diagnosis of whooping cough on a clinical basis is rarely possible, because the disease has already reached its climax when clinical symptoms, such as whooping, vomiting, extreme redness of the face during the attack and normal face after the paroxysm of cough etc. appear. A persistent paroxysmal cough without sufficient sign to explain it, should excite suspicion ; when ' whoop ' occurs the diagnosis is easy.

NUMYER says :—"If a child has a violent prolonged cough attended with vomiting suspect and treat it as if it a were whooping cough".

B. LABORATORY'S Method :—"Bordet's bacillus Pertussis is always found in the mucous droplet and sputum in the 1st few days of the disease".

HILLENBERGH observed : —"Leucocytosis with relative lymphocytosis occurs in the 1st stage *i.e.*, the catarrhal stage of whooping cough.

FONTON EDWARD'S method of early diagnosis.—A sudden fall of leucocytes occurs in a patient affected with incipient whooping cough 30 minutes after the injection of Pertussis vaccine.

LIETNER AND PHILIPP say :—The leucocyte count is very dependable support of early diagnosis. If more than 12000 leucocytes are counted in the blood of a child without fever or with only subfebrile temperature and without catarrhal symptoms (except the cough) and without suppuration (otitis, furunculosis, pyelitis etc.) malaria or leukaemia, the child may be declared suspicious of whooping cough. An increase of the leucocyte count during the following days confirms the diagnosis.

M. DENES AND L. LACTOS:—The blood in whooping cough shows a moderate lymphocytosis coupled with a decrease of sedimentation rate, absolute in case of infants and relative in the case of children of more advanced age. According to them a suspicious cough may be safely diagnosed as Pertussis if the number of lymphocytes exceeds 10,000 and sedimentation rate is normal or subnormal ; complications accompanying whooping

cough cause a slight increase in the granulated elements and an increased sedimentation rate in the blood.

Differential diagnosis.—(1) In tuberculosis of the peribronchial glands, the leucocyte count is 6, 8 or 10 thousand, that is normal, at times, perhaps somewhat decreased, but is never increased.

(2) In neuropathic or spasmophilic children, who are able to simulate whooping cough, the leucocytes are also never increased. Besides the attack never appears during sleep.

Prognosis.—It depends upon age and severity of the attack; the younger the infant the worse is the out-look. Infants and children under 3 years of age suffer a considerable mortality which for the 1st 12 months of life is estimated at 25 per cent. The mortality decreases rapidly after the 3rd year and after 10 years of age it is insignificant. The disease itself is not dangerous but when it is complicated it is very fatal. Of the complications broncho-pneumonia causes most of the deaths, occurring chiefly in winter months. In summer ileo-colitis comes into prominence. It is also a fatal disease among the poor owing to the liability of bronchitis, broncho-pneumonia, tuberculosis of the bronchial glands and lungs etc. If a child of chronic suffering, from such diseases as Ricket, T. B., Asthma or heart-disease unfortunately develops whooping-cough it is more prone to prove fatal.

Treatment.—The methods of treatment are of two kinds:

(*a*) Treatment by prevention of an attack, in an effort to immunise the child in infancy only during an epidemic—Prophylactic.

(*b*) Treatment during an attack, in an effort to alleviate the symptoms and shorten the course of the disease.—Curative.

(*a*) *Prophylactic.*—The children exposed to infection should be isolated for at least three weeks as the disease cannot be diagnosed in catarrhal stage. Sputum of the patient should be isolated, collected and if possible disinfected. Fresh air is essential. The injection of the serum of a convalescent, on the same lines as in measles and in similar doses has been advocated as prophylactic. The prophylactic vaccine for this purpose may either consist of simple H. pertussis or may be mixed with commonest secondary invaders *e.g.* H. Influenza and Pneumococci have been used with success. Three to four injections may be given every third day. The disease takes an abortive course if injected in the incipient

stage. The following scheme of dosage as recommended by Fleming and Ptric (1934) is a very useful guide.

	1st dose.	2nd dose.	3rd dose in millions of H. pertussis.
Under 1 year.	400	800	1600
1 to 2 years.	800	1600	3200
3 to 5 years.	1200	2400	4000
5 to 10 years.	1600	3200	4000
Over 10 years.	2000	4000	4000

(*b*) *Curative.*—Unless there is fever, exhaustion or some complication, the child need not be kept in bed and after the catarrhal stage, should take gentle exercise in the open air, provided weather conditions permit. Abundant fresh air is all important, not only during the acute stage but also during the stage of decline and convalescence. Light and fresh air day and night is necessary even for those who are confined to bed. Do not send the child to school or expose him in the public in any way.

Many forms of treatment have been tried, but so far nothing has been discovered which will definitely cut short the attack. It remains, therefore, for us to alleviate as far as possible the distress of the paroxysm and avert complication. Symptomatic treatment may relieve urgent symptoms but does not shorten the course of the disease.

During the 1st stage (stage of catarrhal invasion) simple expectorant mixtures are sufficient. A careful watch must be kept over the condition of the lungs and if there is a tendency to bronchitis this must be treated energetically. Opportunity should be taken to build up the system during the time when nutrition may be impaired by vomiting. The abdomen should be supported by a tight binder and the clothing should be loose and not too heavy. The diet should be light and digestible, excess of starchy and saccharine food being avoided.

During the paroxysmal stage, efforts are made to reduce the condition of nervous instability by which the attacks are exaggerated. Undue excitements, over fatigue and heavy meals are studiously avoided. Various kinds of sedative drugs such as peregoric, codein, heroine, antipyrin, chloral hydras, bromide, bromoform etc. are administered with the object of moderating the attack, of lessening the tendency to vomiting and of securing adequate hours of sleep. Perhaps belladonna in increasing doses

with antipyrin is the drug mainly used. Jacobie advised belladonna in full doses until the flush appears on the cheeks; children tolerate this drug well. Benzyyl Benzoate has lately been highly recommended—From 5 to 40 drops of 20 per cent alcoholic solution being given 3 or 4 times a day according to age and severity of the disease. Syrup of garlic is also advocated. It is claimed that intramuscular injections of ether in doses of 1 or 2 c.c. given every 2 days to reduce the number of paroxysm. This method is painful. Rectal injection of ether (1 to 2 c.c. in 15 c.c. olive oil) was tried with good result. It can safely be used in nursing infants.

Recently luminal combined with papaverine and eventually with bromide has been recommended. Ephidrine Hydrochlor was tried in some cases with good result. It gives considerable relief especially when associated with belladonna and expectorants (Elixir Ephidrine compound). Pertussin 1 to 2 dr. doses may be tried.

Some advise the use of quinine and emitics. Quinine $\frac{1}{6}$ gr. T.D.S. for each month of age and $1\frac{1}{2}$ gr. for each year in children under 5. Several authors saw favourable results with the Quartz lamp treatment, others with Roentgen treatment.

J. Epsteins says—If watery solution of gold tri-bromide is given by mouth in doses varying with the age of the child and the severity of the attack from $\frac{1}{20}$ to $\frac{1}{10}$ gr. three times a day after meals and once at night, in all cases after 3 or 4 days the cough becomes less frequent and distressing and the attacks shorter and milder, the vomiting ceases and sleep becomes more restful.

DR. STEPHENS says:—If we syringe both ears with warm solution of boric acid and afterwards painting with a 5 to 10% solution of cocaine (or better still procaine) hydrochloride in a mixture of glycerine 1 part water 4 parts. The rationale of this method is that these drugs anaesthetize the ending of the nerve coming from the upper part of the vagus for the supply of the auditory meatus, which in cases of whooping cough is so often irritable and painful. When the irritating focus has been bent out of action the vagus is in a better position to control all its other branches and in this way cough is relieved.

Antiseptic Treatment.—Benzoin eucalyptus inhalation. Paint the throat with 2% solution of silver nitrate or resorsin. Liquid iodine can be liberally sprayed on the faeces.

As a curative treatment of whooping cough the vaccine treatment is decidedly a great advance. The treatment must be instituted as early as possible. The injection must be given subcutaneously or intramuscularly at the interval of from 1 to 2 days. The average initial dose is 500 million for a child over one year. Rather large doses must be employed. If the desired effect fails to appear after the 1st 4 injections, more injections up to 8 are given. In the advanced stages of infection the vaccine combined with other remedies have only a palliative effect, the duration is, of course, not shortened. The children treated with the vaccine remain in an excellent general condition probably owing to the arrest of vomiting and to the relatively shorter duration of the illness.

During convalescence the child should be watched with greatest care to guard against the development of broncho-pneumonia and of tuberculosis. The chest is rubbed daily with mustard oil or liniment of camphor or turpentine. This measure should not be omitted as it has an undoubted effect in controlling bronchitis. In order to improve the already suffered vitality a change of air to sea-side or to dry hill climate should be tried. Patient should be fed with care and tonic and cod liver oil should be given. Quinine and Nux vomica are useful tonics.

Treatment of Complications.—Complications should be treated on general line.—If eyes become deep red, drop liq. adrenalin Hydrochlor ℥ p in ℨ p of water 3 times a day. Obstinate vomiting needs careful management as regards feeding *i.e.* food in small amount after the paroxysm and hydrochloride of cocaine in quarter grain doses 3 times a day has been recommended. Asphyxial attack may be treated by pushing forwards the lower jaw and applying artificial respiration.

Some useful prescriptions: Whooping-cough *mixtures*:—

1st Stage:—When fever not marked.

1. ℞ Ammon Bromide ... gr. xxxii
   Tr. Lobeliac Etheris ... ♏ xxxii
   Tr. Belladonna ♏ xxxii
   Syr Tolu ... ℨp
   Syr Pruni Virg ℨp
   Aquae Chloroform ... ad ℨ iii

   dose ℥ i t.d.s. upto 5 years.

When fever more marked.

2. ℞ Antipyrin ... gr. viii
   Sodi Benzoas ℥ p
   Quinine bihydrochlor ... gr. vi
   Tr. Belladonna ♏ xvi
   Vin Ipecac ... ♏ xx
   Syr Tolu ... ℥ ii
   Aquae Chloroform ... ad ℨ iii

   Put 12 marks.

2nd Stage:—When frequency of fits is greatest and cough outstanding :—

3. ℞ Codeine ... gr. i
Acid Phos dil 3p
solve and add
Acid Hydro-
cyanic dil ... ♏ viii
Syr Tolu ... ʒ i
Aquae ... ad ʒ iv
Dose 3 i.

4. ℞ Syr CodeinPhos ♏ xv
Syr vergin
Purne ... ♏ xv
Glyco-hearin ♏ x
Vin Ipecac ... ♏ iv
Elixir Ephidrin Co ♏ xv
Aquae anisi ... ad ʒ i
Dose according to age.

5. ℞ Bromoform ... ♏ xvi
Spt. Vim Rect 3 ii
Tr. Card Co ... 3 ii
Glycerine ... ʒ ip
Dose 1 dr. 1 to 3 years.

6. ℞ Antipyrin ... gr. ½
or
Tr. Belladonna ♏ ii
Sodi Bromide gr. ii
Aquae Anethi 3 i
Upto one year.

3rd Stage:—**7.** ℞ Syr. Ferri Iodide ... ♏ x
Malt extract with cod
liver oil ... ♏ x
Ferri et Am Cit. ... gr. iii
Mucilage ... q. s.
Liquor Calcis ... ad ʒ i
Dose according to age.

Whooping-cough *syrups* :—

8. ℞ Acid Sulphurosi ʒ i
Vin Ipecac ... 3 p
Tr. Belladonna 3 ii
Syr Pepaveris ʒ i
Syr Scillae ... ʒ iv
Aquae ... ad ʒ xii
Dose ½ to 1 dr. according to age.

9. ℞ Ammon Bromide
Acid N. M. Dil 3p
Glycerine ... ʒ ii
Oxymel scillae ʒ ii
Syr Tolu ... ʒ ii
Ext. Glycerrina liq. ʒ ip
Spt Chloroform ʒ p
Aquae ... ad ʒ xx
Dose ½—1 dr. according to age.

Whooping-cough *powder* :—

10. ℞ Pulv. Antimonialis ... scruple iv
Pulv. Aluminis ... scruple v
Pulv. Ipecac ... gr. x
Pulv. Glycyrrh. decort ... 3 iii gr. x
M. ft. Pulv. Dose 1 to 4 years 3 grs.
5 to 10 years 6 grs.
Above 10 years 12 grs.

Whooping-cough *embrocation.*

11. ℞ Oil olive ... ʒ iii
Oil succini ... ʒ iv
Oil caryophylli... ʒ p

12. ℞ Oil caryophylli... ʒ iv
Oil succini ... 3 iv
Oil Camphorae... ʒ iii

Whooping-cough *liniment.*

13. ℞ Oil caryophylli ... ʒ p
Oil Eucalyptus ... ʒ p
Oil succini Rect ... ʒ i
Liniment Camphor ... ad. ʒ vi

Whooping-cough *inhalation.*

14. ℞ Acidi carbolic ... 3 x
Tr. iodine ... 3 ii
Oil Eucalyptus ... 3 ii
Tr. Benzoin co ... 3 ii

Whooping-cough *Linctus.*

15. ℞ Fluid extract of
thyme ... 3 x
Sodium Bromide 3 i
Glycerine ... 3 i
Syrup ... ʒ iv
All by weight.

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INCIPIENT CATARACT

The sub-conjunctival injection of a 1.5 per cent solution of sodium iodide, once or twice a week, over a long period, will often cause absorption and arrest the progress of a cataract which has not already progressed too far. The injection causes quite a marked, painful reaction, which, however, soon subsides, especially under the influence of a cold compress.—*The Eye, Ear, Nose and Throat Monthly.*

CASES AND COMMENTS

Clinical Notes of two Cases of Intussusception in Female Children

Treated in Palamcottah

BY

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1ST CASE:—A female child, aged 8 years and poorly nourished, supposed to be and diagnosed as dysentery, was admitted in the Government Women and Children Hospital, Vannarpet, on 29-1-1936 at 5 P.M.

History:—Passing stools—mucus and blood without faecal matter, 10 or 12 times a day, accompanied by severe griping pain for the past three days.

Previous History:—Pain in the lower abdomen for 10 days before any dysenteric motion appeared. No history of constipation or vomiting.

Condition on Admission:—General: Temperature 100 ° Pulse 116. Tongue coated and red but fairly moist. The child groaning with pain.

Abdominal Examination:—There was a hard, tender, oblique rather cylindrical mass in the left side of the abdomen, constricted about its middle like an hour glass extending from above the symphysis pubis upwards and outwards to the illiac crest 6"x4". It was not a proper " sausage shaped " tumour.

The child was simply grasping that part while she got pain and was groaning. On enquiry, there was a history of the mother having noticed the mass to disappear now and then. Seen by the Superintendent on 31—1—36. Diagnosed to be Intussusception—made ready for operation. On emptying the bladder the tumour was found extending from the right side of the abdomen in the cresentic manner.

Rectal Examination under General Anaesthesia.—The apex of the mass was visible and palpable through the gaping anus.

Operation Notes:—31—1—36. Laparotomy was done under general anaesthesia. Reduction of the intussusception could be done only up to the middle of the transverse colon (from the

rectum) owing to strong adhesions of the apex—no further could it be reduced. After some trial of reduction intestinal anastomosis was attempted after cutting away the intussuscepted portion, but the abdomen was closed as the patient was dying.

Remarks.—The patient was a female child aged 8 years. Here complete examination including rectal and study of the symptoms made immediate diagnosis possible as a case of surgical emergency. But the obstruction was over one week old, according to the history, but may be much longer as the adhesions of the apex of the intussusception were so strong as to make reduction impossible. The ready and easy diagnosis of Dysentery is a fatal trap to be guarded against.

2ND CASE.—A female baby 5 months old, was admitted in the Government Head Quarters Hospital, Palamcottah, on 16—7—1936, having been sent by the Medical Officer, Kayalpatnam, for " Suspected Intussusception".

" There was constipation of 7 days' duration with apathy for suckling of anything as diet for the last four days". Baby looked fairly well nourished. There was vomiting of curdled milk. Tongue was slightly furred. Abdomen *tumid*, movements of coils of intestines in distended condition could be well seen occasionally in epigastric and umbilical regions Urine was scanty or its passage not noticed much. Bowels had not moved since admission; but the child strained now and then, and passed just a little blood-stained mucus. There was excoriation of anus and vulva. No amoebae or bacilli could be seen in the rectal discharge.

Turpentine stupes to abdomen, 10 drops of turpentine in 2 oz. of water as enema, Boric enema half a pint, did not relieve the distension much; patient was prepared for operation and was operated at 4 P.M. on 16—7—1936. Before the operation a rectal examination was made, a palpable tumour high up in the rectum typical of intussusception was found by the Superintendent.

Operation Notes:—General Anaesthesia.—There was congestion of lower portion of ileum with the telescoping of the ileum and caecum into the colon. The distal $2\frac{1}{2}$ inches of Appendix was dark blue while the proximal 1 inch was narrow and congested though to a less extent. The intussuception which reached the rectum was gently reduced. Hot saline and gentle stroking brought better color to the bowels. The caecum was found thickened and indurated and there appeared to be a tumour at its blind end. Distension was relieved a little, but not much though rectal tube was put in for a quarter of an hour. The Abdominal

wound was closed. Twice during the operation there was suspension of breathing, and pulse became feeble. Strychnine and artificial respiration brought it round. Anastomosis of ileum with transverse colon appeared to be out of question. Later, the baby appeared to improve. Pituitrin 2 m. dose hypodermically was administered twice. Warmth with a hot water bottle by the side was applied. There was slow improvement. But, at about 3 A.M. on 17–7–1936 it took a bad turn, and died.

A postmortem was done at 10 A.M. on 17–7–1936. The abdominal organs were in position and were nearly normal. The distal $2\frac{1}{2}$" of appendix was less congested and was nearly collapsed, and the proximal portion was patent and nearly normal.

Section of the Caecum.—There was a pinkish yellowish coloured pyramidal hard irregular tumour attached to the blind end, size $\frac{1}{2}$ inch, and protruding about $\frac{1}{4}$ inch into the lumen of the caecum.

Remarks.—The Intusssuception was most probably the result of the irregular and spasmodic contractions of the caecal walls caused by the presence of the tumour. And yet, when the baby was examined at about 12 noon she was speaking very happily just like any healthy baby—no emaciation, no diarrhoea, no vomiting, no colic. The only abnormal feature was there was some resistance in the hypogastric region and some distension. The Medical Officer said he did a rectal examination at about 10 A.M., but could not feel any tumour there.

Death was probably the result of obstruction, and exhaustion due to starvation, the baby having been brought to the Hospital about one week after the Intussusception had occurred.

Great care is needed in dealing with children suffering from Dysentery. Intussusception has always to be remembered. The cæcal region must always be palpated A rectal examination must always be done, and every attempt, repeated if necessary, must be made to exclude Intussusception. This enables Doctors to give timely warning and advice to the parents of children as regards the surgical emergency. Otherwise 'Dysentery' is the common death trap of some of these children.

A Case of Mammary Abscess

BY

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Coimbatore.

HAVING read the very interesting and instructive article on "Surgical Problems" by Dr. K. S. Appu Mudaliar, M.B.B.S., in the August number of "The Antiseptic", I take this opportunity of recording a case of mammary abscess in a puerperal woman, which, after operation left a persistent milk-discharging sinus that tantalised both, the patient and her medical attendant, for a long time.

Mrs. X., a II-para, aged about 22, with a perfectly natural and normal first labour, but for a tear in the perineum, gave a history of a painful lump in her right breast during the time of her first lactation, which, however yielded to such palliative measures as stoppage of suckling the child, hot fomentations, and belladonna applications.

She got into labour at or near full term and was naturally delivered of a boy on 14-1-36. The old tear in the perineum gave way and had to be repaired with 2 sutures.

The lump in the right breast which was noticed during her first suckling period had been persisting, and this, as on the previous occasion began to be painful about a month after the present confinement. On the 20th February, 1936 (labour, on 14-1-36) an examination of the part revealed the presence of a typical mammary abscess. There was a hard, painful, and tender lump; the skin was reddish and inflamed, the nipple was retracted The abscess was not pointing. She had been running a temperature between 100° & 102° for two or three days. The nursing was now stopped and the baby hand-fed from now on. Palliative measures such as hot boric fomentations followed by application of gly: belladonna and tight bandage were adopted, in addition to sleeping draughts, pyramidon to control high fever and headache, were adopted. She was also given a brisk saline purge for 2 days in succession and intake of fluids restricted. By the 23rd Feb. the temperature was persisting, and the part was very painful and tender. The abscess was pointing, or rather, an acutely red and inflamed and fluctuating portion was noticed immediately above the nipple, and extending up far beyond the areola. It was decided to open up the abscess, and this was done under chloroform anaesthesia on the 23rd February. A counter-incision was also

made on the outer and lower aspect of the right breast. The whole of the abscess cavity was explored by the gloved finger and all loculi broken down. A gauze-drain was inserted through the counter-incision. An injection of gr ¼ of morphia together with gr $\frac{1}{100}$ of atropine was also given so that the patient might have a little rest which she had been lacking for many days.

The dressings were changed next day and the abscess cavity packed with gauze soaked in aqueous picric solution. From the third day, as there was still discharge of pus, gauze soaked in iodoform-in-glycerine was adopted as the dressing. This routine was continued till the 4th of March (9 days after the operation) when the wound was showing signs of healing, but the nature of the discharge was thin and looked like milk. She was given another large dose of Mag. Sulph, and also Tinct belladonna and Sod. Sulph repeated every 3 hours in a mixture. From the 6th March, as the milk discharge was still persisting, gly: belladonna applications to the breast after hot formentations were started. Even though this routine was carried on for another four days, the milk discharge was still there, the counter-incision had healed completely, and the main incision almost healed but for the sinus which was discharging milk. The abscess-cavity was now irrigated with warm boric lotion and in this process the wall of the fistula was made raw. The cavity was plugged tightly with gauze soaked in iodine-in-glycerine. This routine was tried for another 4 days without any appreciable diminution in the discharge of milk through the sinus, which led to a further trial with belladonna dressings from the 16th of March. Belladonna and Sod. Sulph. in divided doses by mouth were continued all the time, and the intake of fluids restricted as possible. This sort of thing went on merrily for about a fortnight more, much to the disgust of the patient as the wound had healed, the part was painless, but the sinus was still there and the discharge necessitating numerous changes of dressings and linen.

She was now (4th April) put on Pot. iodide by mouth in addition to the Sod. Sulph and Tinct. belladonna with this mixture and with tight bandaging of the breast, the quantity of milk was gradually going down, though it was still there. With a view to destroy the secreting surface, the sinus and whatever portion of the cavity was accessible through the sinus were cauterised with silver nitrate stick. This did the trick. Black slough was cast out for a day or two and within a week the wound had healed by granulating from the bottom, and the sinus also closed in this process.

Now, there is still a small lump where the abscess was, and it remains to be seen how it is going to behave when the patient gets her next baby. A suggestion of removal of the lump during the non-functioning period has so far been rejected.

Another unfortunate thing about this case is that the baby which had to be taken off the breast, was evidently not being attended to properly, and developed a severe type of diarrhoea and died on the 6th April aged about 3 months.

This case was exasperating both to the patient and her attendants; and I should very much like to know through the columns of "The Antiseptic" from other readers, their experiences on similar cases. This patient was very corpulent and flabby, and her constitution suggests a thyroid deficiency. I wonder if this had anything to do with the milk persisting to flow almost endlessly in spite of various measures to put it down.

A Case of Multiple Fracture of the Skull

Treated Successfully in the Town General Hospital, Pudukkottah

BY

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MUHAMMAD Ismail, a Muhamadan boy native of Miruttunilai of Pudukkottai State, aged 10 years, was admitted in the wards of the Town General Hospital on the forenoon of 11-7-1936 with several injuries all over the body and fracture of the middle third of the Right radius said to have been caused through a motor accident on the previous day. He was taken to the nearest dispensary by his parents at Keelanilai where first aid was rendered by the Sub Assistant Surgeon to the injured and was sent to the head-quarters hospital by him with a note.

On admission, the following injuries were noted and the patient was unconscious, temperature 101 degrees, pulse 118, respiration 28 per minute.

Injuries :—

(1) Multiple punctured wounds on the right forehead and small punctured wound on the right frontal area of the scalp.

(2) A lacerated superficial injury measuring 3" x 1"x¼" situated on the medial side of the middle third of the right leg.

(3) A contused wound 4" in length situated in the middle third of the right back.

(4) A lacerated wound measuring 4"x3/4"x¼" in depth situated just close to the angle of the right jaw.

(5) A contused wound 3/4" in diameter on the bridge of the nose.

(6) A punctured wound with a sinus 1" in length running from above downwards over the anterior aspect of the upper side of the right leg.

(7) Fracture of the lower third of the right Radius at the junction of the middle third.

(8) There was swelling and haemotoma present both on the right temporal and Parietal eminence and oozing of blood was noted both from the ears and the nose. On palpation a small bony piece was seen detached. A clinical diagnosis of fracture of the base of the skull was made.

The patient was sent to the Radiological Department for a Skiagram of the skull and the Radiologist reported the following:—

(1) Multiple fissured fractures on both sides of the skull running anterio-posterior with a small depressed fracture on the right parietal eminence.

(2) Fracture of the middle third of the right Radius.

Thus our diagnosis was confirmed.

Treatment. 11—7—36. Minor injuries were all attended to. The fracture on the right side of the Radius was reduced. Splint was applied. The patient was unconscious. Ice was applied continuously on his head. He passed that day a fair quantity of urine, but bowels did not move. The following mixture was prescribed :

Pot. Bromide	...	gr. 25
Calcium Chloride	...	gr. 15
Hexamine	...	gr. 7
Yeast	...	gr. 5
Syrup simplex	...	ʒ 11
Glucose D	...	ʒ 1
Aqua Chloroform	...	2 ozs.

Ft. Sign. Half an ounce to be taken four times a day.
Prophylactic anti-tetanus and Gas-gangrene serums injected.

12–7–36 to 19–7–36. During this week the patient was rolling his head from side to side. Pupils were contracted and did not react to light. Patient remained unconscious throughout this week. A course of 6 intra-muscular 1 c.c. Iodine injections was given. Glycerine enema was given on almost alternate days to move the bowels. The patient was fed with gruel water, barley water and a little Liquid Peptonoids every 4th hour by mouth. On 18–7–36 the patient developed a little cough and had a slight rise of temperature to 100 degrees, Pulse 98, Respiration 26, and the following drugs were added to the original mixture.

Syrup Chloral	...	ʒ ss
Vin. Ipecac	...	♏ 15
Tinct. Senega	...	♏ 10
Soda Sulph	....	ʒ 1

Patient developed paralysis of both left hand and left leg.

20-7-36 to 2-8-1936. During this week temperature continued to be normal. Corneal Reflexes were present. The patient slowly gained consciousnees and was able to open his mouth and attempted to speak. *Haemotoma* of the head began to subside now. Application of ice was stopped and antiphlogestine was applied over that area.

Hypnotic drugs (Pot. Bromide and Syrup Chloral) were reduced to half the dose. Patient could identify things, speeches were incoherent and not clear. Bowels continued to move freely. Patient slept well at night. Cough was better. The patient slowly attempted to sit up.

On 10-8-36, the following mixture was given

℞.

Pot. Iodide	...	grs. 2
Soda Sulp.	...	ʒ 1
Hexamine	...	grs. 7
Yeast	...	grs. 5
Syrup Simplex	...	ʒ 2
Tinct. Senega	...	♏ 10
Aqua Chloroform	...	1½ ounces.

Sign. Ft. Half an ounce three times a day.

12-8-36 to 16-8-36. By this time the progress of the patient was slow and steady movements of the toe of the left leg were only

possible but the patient could not raise his left leg. Same mixture and olive oil massage was continued to the paralysed limb.

16-8-36. There was slight improvement as the patient was able to raise his left paralysed leg and move his ankle freely. He attempted to talk a few words.

16-8-36 to 24-8-36. Patient was given general tonics. Hepatax was prescribed in addition to the usual mixture. The patient took regular meals. Nourishing foods were given and the patient gained his normal health by this week. He was able to stand without anyone's support but unable to walk. Now he was able to identify things clearly like biscuits, glasses, matches etc. and attempted to call the names of the articles. He could raise his left hand slowly and was able to salute the Chief Medical and Sanitary Officer, when he went round the wards.

24-8-36 to 2-9-36. During the week under report patient attempted to walk slowly to the verandahs of the wards without support. He continued to take another bottle of Hepatax in addition to the routine mixture and his health recovered to a remarkable degree and he expressed his wish to go home. On 6-9-36 he was able to move about the wards freely and play with his mates. He was discharged as cured and left for home on the morning of 7th September 1936.

The important points to be noted in the case are:

(1) Though the case looked hopeless at the outset, the remarkable way in which it progressed and got well shows how nature responded to the careful and sensible treatment given to the lad.

(2) The enormous resistance possessed by the lad.

(3) Any other meddlesome treatment in the way of trephening surely would have killed the patient.

UVEITIS

Uveitis often yields nicely to intra-muscular injections of calcium gluconate. There is cessation of pain, rapid absorption of exudates, and improvement in the general health. Recurrent corneal ulcers, and herpes, have been favorably influenced by similar treatment.—*The Eye, Ear, Nose and Throat Monthly.*

A case of Multiple Hydatid Cysts

in the Right Ventricle of the Heart and Right Kidney

BY

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A DEAD BODY of a Mohammedan female of Daikhra Nizamat Kuanpur, Kotah State, named Chanda aged about 17 years, was brought by the Police for Postmortem on the 8th September 1936, with the version of her having been murdered by smothering and throttling. In the course of the routine examination for the above purpose and during the search for the individual viscera, it was discovered that there were a lot of Hydatid cysts in the Right Ventricle of the Heart, measuring from the small pea to pigeon's egg; both single and duplicated (viz. daughter cyst within parent one). Two small pea sized cysts were also found in the Right Kidney. There were no such cysts in the Liver (where they are generally found) or in other organs of the body.

It was heard that during the life-time of the deceased, she used to suffer for sometime past from fainting fits as well as syncopial attacks of greater or less severity so much so on one occasion the relatives of the woman even dug a grave for her, but she then survived to meet her end by cruel hands of her assailants.

Discussion:—Taenia Echinococcal Infection of man is rather rare in a predominantly lacto-vagetarian country as India is, because the general habit of her people is not to associate too much with dogs or to take sheepmeat generally. Even if it (infection of Taenia Echinococcal) occurs, the embryos from Taenia Echinococcal Ova generally take direct route from intestine via portal-veins to Liver and there get well rooted and it is therefore a well known fact that Liver is the first and the foremost organ to get primarily involved and Hydatid of the Liver is popularly known.

It is a matter of very rare occurrence that the embryos, not having taken root in the Liver, pass further via Hapatic veins to Inf. Venacava, to Right Auricle and thence to Right Ventricle. Here setting and developing in H. Cysts from off the endocardium to project into the cavity proper (Right Ventricle)

getting gradually enlarged from a small pea to even pigeon's egg, being single or multiplied filling almost the whole cavity of the Right Ventricle as were found in the above noted case. From here they (embryos) pass even in general circulation out of which two small pea-sized H. Cysts were found formed in the Right Kidney.

The symptoms during the life time of the deceased seemed to have been too much neglected or as the woman was of 17, these might have been thought to be due to Hysteria or such like neurosis which is common to such age.

Even if she had consulted, it would have been very difficult to arrive at the correct diagnosis in a Moffusil dispensary where no Laboratory and Microscope are available or are provided with. In these cases symptoms are too vague to help us to reach the correct conclusion even in big hospitals during life. Even if diagnosed, treatment would have been far from satisfactory.

The rarity of occurrence of such cases is the only plea to publish these notes.

My thanks are due to Rao Sahib Doctor Vidya Shanker, L.M.S., Chief Medical Officer, State Kotah, Rajputana for his kind permission to publish and to forward the specimen, which was duly preserved, to the Agra Medical School Museum.

ADRENALIN IN GLAUCOMA

Gradle has shown that when four minims of ordinary 1-1000 solution of adrenalin are placed on a cotton pledget in the upper fold of the fornix for four or five minutes, enough absorption occurs to produce an effect similar to that of sub-conjunctival injection. Adrenalin must be used with caution, however, and is contraindicated in glaucoma attended with inflammation.—*The Eye, Ear, Nose and Throat Monthly.*

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EDITORIAL

Chemical Warfare

THE subject of Chemical Warfare has more than an academic interest. It is a distinct possibility in any war of the future and recent happenings have amply proved that the use of poison gas, though forbidden by the Geneva Gas Protocol of 1925, is a possibility which cannot be disregarded. Governments in Europe recognise that war is possible and we in India should realise that an air raid and attack with poison gas is within the realms of practical politics. It has also been recognised that the safeguarding of the civil population against the effects of air attack is a necessary part of the defensive organisation of any country. This recognition does not arise from any belief that war is imminent. It arises from the fact that preparations to minimise consequences of air attack cannot be improvised on the spur of the moment but must be made, if they are to be effective, in time of peace.

By the term 'gas' in warfare is meant any chemical substance, whether solid, liquid, or gaseous, which can produce poisonous or irritant effects on the human body. Gases are of two types: (1) 'Non-persistent' gases, when liberated in the air, form clouds of smoke or gas which drift along with the wind, gradually getting mixed with air and becoming less dangerous. (2) 'Persistent gases' which are usually liquids and evaporate slowly. The effects of these persist until the liquid has evaporated, or until steps have been taken to render it ineffective.

The number of effective gases which can be produced in

quantity is small. They may be classified according to their effect on the body.

(1) *Choking gas.*—These are lung irritants such as chlorine or phosgene.

(2) *Nose gas.*—Irritant smokes produced from certain arsenical compounds are in this group.

(3) *Tear gas.*—An eye irritant which even in very small amounts causes intense smarting and copious flow of tears making it difficult to see.

(4) *Blister gases.*—These cause severe irritation of eyes and skin. In some cases deep and extensive blisters may be caused.

The important gases used in warfare are the following :—

(1) *Chlorine.*—This is a powerful irritant of the respiratory organs. Exposure causes burning sensation in eyes, nose and throat. Pneumonia and Bronchitis follow. This is a non-persistent gas.

(2) *Phosgene.*—($COCL_2$) This is a colourless gas at ordinary temperatures, though when liberated as a cloud it has a whitish appearance. It has the smell of damp straw and is liable to cause coughing. It attacks the air cells of the lungs which, in severe cases, becomes filled with inflammatory fluid, resulting in interference with the passage of oxygen into the blood. It is not persistent and was the gas that caused the greatest number of deaths in the Great War.

(3) *Diphenylchloroarsine and similar arsenical substances* are the nose gases. These really are very small and minute particles rather than actual gas or vapour. There are really six of these substances, but all of these do not have the same odour. They are very strong in the sense that one part in ten million for some and 20 millions for others will produce sneezing. They produce tooth-ache, dizziness, dopiness and a burning sensation in the chest. No permanent injury however results.

(4) *Chloracetophenone. (Non-persistent), Ethyl Iodoacetate (persistent) and Bromobenzyl cyanide (persistent)* are the tear gases. The first is a solid vaporising on heating and the other two are liquids. Nearly all the tear gases have a sweet fruity smell resembling sweet wine and pineapple. A very minute quantity of these causes profuse watering of the eyes, so that it is difficult to see things or sight rifles. There is no permanent injury however and the eye as a rule completely recovers in a day or two.

(5) *Mustard Gas or Dichloro-diethyl Sulphide (Persistent).* This is an oily liquid with a faint but characteristic smell. It is called mustard gas because its odour to some noses resembles ordinary mustard. Others describe the smell as like that of garlic or horse radish. It has a high boiling point that the liquid persists. It evaporates very slowly at ordinary temperatures. It is a very heavy gas and keeps close to the ground. It is readily absorbed by the skin and the tarred surface of the roads. Subsequent traffic on the road will liberate the gas with very little diminution of its efficiency. Paint and woodwork will temporarily absorb it. The vapour may be absorbed by the clothing and gradually penetrates the skin causing burns even after the wearer has moved out of the dangerous area. A person who is contaminated with the gas is a source of danger to everyone with whom he comes into contact.

The symptoms resulting from mustard gas do not become apparent until two to eight hours afterwards, by which time it is too late to prevent injury. The eyes are most easily affected by mustard gas. Bronchitis may also be produced. A reddening and scalding of exposed part occurs after long exposure and blisters are produced with high concentrations of the vapour.

The treatment of casualties is a very important thing. Casualties from lung irritants such as Phosgene and chlorine are most likely to be fatal. In all these cases the essentials of first aid are rest and warmth. Tight clothing should be removed or loosened and the patient should rest in warm blankets. Hot water bottles should be applied if the patient is cold. In severe cases oxygen should be administered continuously and for long periods. In the case of the nose irritants little can be done beyond removing him from the poisonous atmosphere. He will recover without many after—effects. The treatment of injury by mustard gas is more difficult than other types of war gases because the gas attacks every portion of the body with which it comes

into contact. In the treatment, the first essential is to decontaminate. The problem of decontaminating areas is too big and can only be undertaken by governments. The patients' clothes can be cleaned by boiling or using chlorine if the clothes are not dyed. A hot shower and plenty of soap will decontaminate the skin. The eyes should be bathed in warm salt water. A drop or two of liquid paraffin or castor oil should be used into eye. The treatment of developed burns follows that adopted for thermal burns. Two things however should be remembered. In mustard gas burns there is greater liability to sepsis and marked delay in healing.

Taking into considerations the possibility of gas attacks in the wars of the future, the government is teaching various Ambulance and other Civil Associations, the value and methods of protection in gas attacks. It will therefore be not out of place to shortly mention the defences at the command of the civilian population. Outflanking the heavy, slowly drifting gas is a very useful method. Respirators are very useful and readily available. But by themselves they are useless unless the people are well trained to use them. Gas-resisting rooms are a necessity for hospitals and organizations which have duties in a gas attack. Perhaps it will be possible to have such rooms in private houses. Civilian organisations will have to be started. An efficient system of alarms relying on sounds co-ordinated to cover danger zones and the provision of the above mentioned safety devices will go a great deal in minimising the risk and danger of gas-attacks. Gas is always an effective harassing agent but its power to cause casualties is, as Alam Brooksbank says in the General Practitioner of Australia, inversely proportionate to the amount of organization and the knowledge and skill of the experts.

OPHTHALMIC DRUGS

Gifford recommends acid buffer solutions for butyn, phenacaine, zinc salts, apinephrine, and cocaine. Alkaline buffer solutions are to be used for atropine, homatropine physostigmine, pilocarpine, and as an eye-wash. The solutions range from pH 4.8 to pH 9 for the drugs commonly used in eye practice.— *The Eye, Ear, Nose, and Throat Monthly.*

GLEANINGS FROM MEDICAL PRESS

Medicine and Therapeutics

Summary of Gastro-Intestinal Hormone Therapy.— Although the gastro-intestinal hormones are of great physiological interest, none of them have been definitely demonstrated to possess therapeutic value.

Administration of Pepsin.—Pepsin as a therapeutic agent has passed through several periods of popularity since its discovery in 1835. In spite of this, practically no scientific evidence has been submitted showing that it is of real therapeutic value.

Theoretically, pepsin with adequate hydrochloric acid is indicated in achylia gastrica, particularly in those patients who complain of flatulent dyspepsia and diarrhœa. Although such therapy is not infrequently employed in achylia gastrica, clinical reports are at variance in regard to the importance of the pepsin. Most of the recent reports indicate that hydrochloric acid alone is sufficient: however, others report that some patients do better after pepsin is added to the acid.

In the presence of gastric anacidity there is some evidence indicating that after the adequate administration of acid, a normal amount of pepsin may be secreted by the gastric glands. In such patients the addition of pepsin to the acid is superfluous. Whether the stomach of a patient manifesting anacidity will secrete adequate pepsin on the administration of acid can be determined only by fractional gastric analysis.

Recently several brief clinical reports have appeared, indicating that the administration of desiccated hog's stomach (ventriculin) may be as effective as hydrochloric acid in relieving the dyspeptic symptoms and diarrhœa in patients having achylia gastrica and anacidity.

Pepsin has been administered subcutaneously to patients having a "peptic" ulcer; the claim has been made that pepsin plays a specific role. Both favourable and unfavourable reports on this therapy have heen made. The rationale on which such therapy is based and the clinical reports now available are not sufficiently impressive to warrant a statement concerning the details of the therapy.

The Oral Administration of Raw Pancreas and Pancreatin.—

Experimentally it is established that the absolute exclusion of pancreatic juice from the intestine in the dog results in polyphagia, the passage of large bulky stools, and a considerable disturbance of

the digestion and absorption of fat and protein, and to a lesser extent of that of carbohydrate. It is also true that some dogs are much more affected than others and that the same dog may manifest considerable fluctuation from time to time in the capacity to utilise food fat. More than half of the dogs manifest progressive inanition and die unless large quantities of easily digested foods are supplied with a liberal supply of vitamins. Even this fails not infrequently after from six to ten months.

Many laboratory workers who have experimented in this field have added raw ground pancreas in relatively large amounts (from 50 to 200 gm. daily) to the diet of depancreatised dogs controlled with insulin and to the diet of dogs with absolute exclusion of the pancreatic juice from the intestine. With raw pancreas in the diet, such dogs have remained in excellent condition for several years; this is not otherwise the case, except in rare instances.

The mechanism of the effect of such therapy is not simple. Raw ground pancreas was originally administered with the hope that some of the contained enzymes would pass through the stomach without being inactivated by the acid of the gastric juice. However, this has never been demonstrated by direct experiment on dogs with duodenal or jejunal fistulæ. There is evidence, though meagre, indicating that the administration of raw pancreas, pancreatin (from 10 to 20 gm.), or pancreatic juice to depancreatised dogs, or dogs deprived of pancreatic juice, decreases the fat lost in the fæces, as well as the nitrogen. Whether this is due to improved digestion or absorption has not been settled, though the latter appears chiefly to be concerned. Further, in interpreting the changes in fæcal fat loss, one has to consider also the possibility of changes in the excretion of fat by the intestinal mucosa. The problem is rendered more complex, yet more important, by the more recent reports that the lecithin and choline content of the raw pancreas, rather than the enzymic content, is chiefly responsible for the better nutrition and greater longevity of insulin-controlled depancreatised dogs. The administration of raw pancreas, lecithin or choline prevents the marked fatty infiltration of the liver and hepatic insufficiency.

The clinical literature prior to 1912 contains reports on a few well-studied patients with pancreatic deficiency in whom the administration of raw pancreas or pancreatin decreased the fæcal loss of fat and nitrogen Since then very little clinical investi gation has been reported. The survey of Bastedo in 1925 indi cated that pancreatin was not being widely used except in tropical sprue and pancreatitis. Pancreatin and raw pancreas are still being used in sprue, although their value has not been definitely demonstrated by a thorough study. It has been reported that in sprue the concentration of enzymes in duodenal contents is normal, but this does not mean that the total output is normal. Pancreatin therapy has been recently reported to be of value in the treatment of arthritis deformans and scleroderma.

Summary.—The administration of adequate amounts of raw pancreas or active pancreatic extracts orally in the presence of a deficiency of the external pancreatic secretion has a firm theoretical basis. The value of raw pancreas given orally to depancreatised dogs is established, the chief value of the therapy being to prevent fatty degeneration of the liver. There is some evidence indicating that administration of raw pancreas and pancreatin to animals and patients having a definite deficiency of pancreatic secretion decreases the loss of fat and nitrogen in the fæces. Such therapy has been used in sprue and other conditions, but its value in these has not been definitely established.—*J. A. M. A.—Thr' Medical World.*

Infectivity of Spinal Fluid in Lymphogranuloma Inguinale.—On the basis of their own clinical and experimental observations and of data available in the literature, Emmerich von Haam and Rigney D'Aunoy, New Orleans (*Journal A. M. A.*, May 9, 1936), conclude that there is much evidence at least suggestive of frequent generalized dissemination of the virus during the early stages of the disease. Coutts takes a similar point of view and even goes so far as to divide the disease into three distinct periods or stages similar to those noted during the evolution of syphilis. According to him, the time elapsing between infection and the appearance of the primary lesion must be regarded as the primary incubation period and may extend up to three weeks. This is followed by a secondary period characterized by the appearance of constitutional symptoms, inguinal buboes and occasionally generalized lymphadenitis, skin lesions, conjunctival lesions and anemia. Lesions of the tertiary period are elephantiasis of the genital organs, ulceration of the vulva (esthiomene) and rectal stricture. Although the authors are inclined to consider the conclusions of Coutts premature on the basis of the available clinical observations on the various manifestations of the disease, they cannot deny that such a concept may yet prove correct. Their successful demonstration of the virus in the spinal fluid of infected patients certainly proves that dissemination of the virus in the human body actually occurs. Study of the spinal fluid in a large number of cases alone will prove whether this

reported observation must be regarded as the rule or as an exception during the course of the disease. Even should the latter prove true, the observations give a firmer basis to the incriminations occurring during the course of inguinal lymphogranuloma, as described in increasing frequency by continental workers.—*Illinois Medical Journal.*

The Mirror Test in Pulmonary Tuberculosis.—R. C. Cohen and W. Burton Wood describe a test which permits the immediate examination of secretion obtained directly from the air passages, and which is more accurate than the ordinary sputum test. Many years ago Sir J. Dundas-Grant showed that pulmonary secretion may be provoked by sudden inhalation of mustard oil and thus obtained in apparently "unproductive" cases. He also suggested that a laryngeal mirror might be used to obtain samples: but his methods have been neglected, and when sputum cannot be obtained the less reliable test of bacteriological examination of the faeces is usually recommended. This method is practicable only in institutions, and requires special skill. Cohen and Wood have found the following simple test satisfactory. When possible it should be carried out in early morning. The patient and examiner sit as for ordinary indirect laryngoscopy. A large mirror is held horizontal above the larynx. The patient is told to give several short barking coughs and the mirror is sprayed with bronchial secretion. It is withdrawn without brushing against the tongue. Yellowish flecks of pin-head size are characteristic though not typical of tuberculous expectoration. Mucoid or watery secretion usually yields a negative result. The flat of the mirror is now applied to one end of a slide and drawn along it, leaving a thin film which is dried and stained in the usual manner.

Two hundred tests were performed on 75 women suffering from the early or early intermediate type of pulmonary tuberculosis. In 61 tests material containing puss-cells and sometimes elastic fibres were found on the mirror from patients unable to raise sputum. In 16 of these cases tubercle bacilli were demonstrated; they were also demonstrated in 10 mirror tests from patients who at the time had "negative" sputum. This represents an increase in accuracy of 12 per cent. as the result of using the mirror test. On the other hand, no material was obtained on the mirror in 11 tests, and in 3 cases material collected yielded a negative result although tubercle bacilli were demonstrable in the sputum—that is, in 7 per cent. the mirror failed to show tubercle bacilli in "sputum-positive" cases.

In all cases sputum tests were made for comparison when sputum was available. While the mirror test was positive in 52 cases the sputum test was positive only in 40, despite the fact that in the former tests the ejected matter was the result of only two or three coughs, while the latter test implied expectoration collected during about 24 hours. Thus examination of secretion ejected directly from the lungs and collected by a mirror held over the larynx is a quick and convenient method of demonstrating tubercle bacilli.

This test frequently enables the confirmation of a diagnosis of pulmonary tuberculosis suggested clinically to be made without the delay when the patient is given the use of a sputum outfit. Difficulties in securing the return of sputum flasks by post are obviated. This advantage in work in country districts or among uncivilized communities is obvious. Malingering may be circumvented, and the patient who consciously or unconsciously swallows his sputum can supply a sample of pulmonary expectoration. —*The Clinical Journal.*

The Holmes-Adie Syndrome.—At a meeting of the Medico-Chirurgical Society of Edinburgh, Prof. Edwin Bramwell called attention to a benign condition which is important because it is easily mistaken for syphilis of the nervous system. In the present state of knowledge an aetiological or pathological terminology is impossible, and so he proposed "the Holmes-Adie syndrome", because these neurologists were chiefly responible for its isolation in 1931. A typical case was that of a woman, seen in 1924, of whom it had been noted at the Eye Department of the Edinburgh Royal Infirmary that she had "Argyll-Robertson pupils", but it was found that the blood Wassermann was negative and the cerebrospinal fluid normal. Prof. Bramwell then made the following note: "The condition of the pupils is particularly interesting. They are both large and immobile to light but contract on convergence. The left eye on convergence slowly, in the course of 10 to 15 seconds, came down almost to pinhole size and then slowly dilated, reaching its ordinary size in a minute to a minute-and-a-half. He had never seen anything like this before. The right pupil reacted normally on convergence and did not become nearly so small as the left. Ankle-and knee-jerks were absent. The immobility of the pupils to light and the absent knee-jerks suggested syphilis, but three things were against this diagnosis: (1) the absence of other symptoms of tabes, (2) the negative Wassermann, (3) the large pupils with the slow contrac-

tion of the left pupil on convergence and its still slower dilatation. Prof. Bramwell indexed the case, "Pupil abnormality with absent tendon-jerks", and did not commit himself to a diagnosis, but the probability of syphilis must, he says, have occurred to him, for he prescribed mercury and iodide.

Stasburger and saenger first described the peculiar pupillary reaction independently in 1902. Markus in 1906 recorded a case in which the knee-jerks were absent, and Foster Moore in 1924 reported seven personal observations in which the pupillary phenomenon occurred as an isolated sign. Gordon Holmes applied the term, "the tonic pupil" to the pupillary reaction in 1931, when he read a paper at the Ophthalmological Society, entitled "Partial Iridoplegia with Symptoms of Other Diseases of the Nervous System". Among 54 cases of partial paralysis of the pupil of unknown ætiology, which he had personally observed, some of the tendon-jerks were diminished or lost in 19. In all, one or both pupils were quite immobile to light. He concluded that "in the present state of our knowledge a separation of those cases in which the tendon-jerks are absent from those in which they persist is unjustifiable". Adie analysed 13 cases which had come under his personal notice and 9 previously recorded in which the tonic pupil was associated with absent tendon-jerks. He expressed the view that the tonic pupil when found all alone was a milder form of the same condition. He was the first to apply "benign" to the syndrome, because no further developments ever occurred. Prof. Bramwell thinks that the syndrome is often mistaken for syphilis by those unacquainted with it, and that in former years he must have repeatedly done so. Unlike nervous syphilis, it is much more common in females than in males. It is unknwn to most clinicians because it has not received a name. Hence Prof. Bramwell's suggestion. The syndrome does not appear to be very uncommon. The abnormal pupil may be unilateral. Incomplete forms are met with in which tonic pupils, iridoplegia, ophthalmoplegia interna or absent knee-jerks occur as isolated phenomena.—*Clinical Journal.*

The Anemias of Infancy and Childhood.—LEONARD G. PARSONS AND W. CAREY SMALLWOOD, *Practitioner* 134:298 (March) 1935.

In presenting this interesting subject the authors begin by discussing the difference in the blood-forming mechanism of the infant and the child and that of the adult. A brief review of the status of the erythron at the time of birth is given. The factors

that operate to produce the so-called physiological anemia of the new-born are clearly described.

As to signs and symptoms of anemia, it is thought that symptoms referable to anemia are rarely observed in early life unless the hemoglobin falls below 40 per cent. The color of the skin varies in different types of anemia. The writers state: "In nutritional anaemia the skin typically has the whiteness of a sheet, whereas the patient with haemolytic anaemia usually has a cafe-au-lait appearance, and when haemolysis is severe the skin and conjunctivae may even be icteric." Again, in leukemia the skin may have a dirty-white waxen appearance. In the severe anemias soft systolic heart murmurs are common and may be associated with tachycardia. Marked irritability and restlessness and, occasionally, air hunger and œdema of the extremities may be found in advanced cases. When anemia is associated with a reduced platelet count, purpuric eruptions of the skin and hemorrhages from mucous membranes may be present. An enlarged liver or spleen may also be a finding.

The authors classify the anemias of infancy and childhood (excluding the leukemias) by dividing them into two main groups. The first consists of the hypoplastic, anhemopoietic or deficiency anemias. Under this grouping the following five types are discussed in detail: (*a*) nutritional anemia, or the so-called milk anemia of infancy; (*b*) the anemia of celiac disease: (*c*) iron deficiency anemia; (*d*) the anemia of scurvy, and (*e*) other rare deficiency anemias, including those of hypothyroidism and infection caused by Dibothriocephalus latus. Particular attention is given to nutritional anemia of infancy, as it is the most widely spread and important of the anemias of early life.

The second main group of anemias is that of the hemolytic type. This group is characterized by destruction of the circulating blood cells and may or may not be associated with damage to their precursors in the bone marow. The importance of the conception of the blood as a living tissue including not only the circulatory adult elements but also the important predecessors in the bone marrow is noted. The term erythron as suggested by Boycott for this whole red blood cell mechanism is mentioned, and the authors suggest the word "erythronoclastic" to represent the effect on the marrow cells of those agents responsible for hemolysis of circulating cells. Under the second main grouping the following subgroups of the hemolytic anemia of the new-born and allied conditions are given: (*a*) icterus gravis neonatorum, (*b*) hemolytic anemia of the new-born without icterus gravis and (*c*) hemolytic

anemia with congenital hydrops foetalis. The etiology, general characteristics and treatment are given careful consideration. The second main division under hemolytic anemias is that of hemolytic anemia of later infancy and childhood. In this group the following are discussed: the acute hemolytic anemia of Lederer, the chronic form of hemolytic anemia represented in the von Jaksch's syndrome, the even more chronic familial hemolytic icterus or acholuric family jaundice and the condition called sickle cell anemia. The etiology, as well as the treatment and the use of transfusion, is given special consideration.—(*A. J. D. C.*)

Ophthalmology

Some Diseases of the Eye Commcn in Children. G. G. PENMAN, *Practitioner*, 134: 538, 855.

These are blepharitis. conjunctivitis, corneal ulceration and interstitial keratitis. Blepharitis is an inflammation of the lids, and is of two kinds, squamous and ulcerative. Squamous blepharitis is not usually severe, and is seen as a slight redness of the lid margins, with a good deal of crust formation along the lashes. Ulcerative blepharitis may start as squamous, or be ulcerative from the beginning. The lids are red and covered with crusts, beneath which they are quite raw; frequently there are little cracks at the outer canthus. The lashes often fall out, and may not grow again, or grow in a distorted way, so that they turn in and irritate the cornea. Treatment must be directed first to dealing with the causative factors. The head must be cleaned and sources of infection, irritation and ill-health removed. Glasses must be worn if required and bad conditions of work corrected. Cod-liver oil and malt often help to benefit the health, and general ultra-violet irradiation may be given in addition to local application to the lids. Locally, some of the milder cases will respond to washing of the lids with warm sodium bicarbonate solution 2 per cent. followod by the application of ung. hyd, ammon. dil. two or three times a day, rubbed well into the lid margins. In more resistant cases the lids, especially the edges, should be painted with silver nitrate, 1 or 2 per cent., followed by daily swabbing with protargol, 5 per cent. Sequelæ—(1) Chronic blepharitis, (2) Corneal ulceration.

Conjunctivitis is the condition known as "blight" or pink eye. The eye becomes inflamed and watery, and in many cases there is photophobia. Both the ocular and palpebral conjunctivæ are injected. There is discharge. consisting mainly of tears in

slight cases, but usually there is some muco-pus, and in the severer cases pus. The lids should be painted with silver nitrate, 2 per cent., special attention being paid to the upper fornices: this may be repeated if necessary. The silver treatment may also be kept up by the instillation of protargol 5 per cent. twice daily for a short time. The eye should be irrigated with hydrarg perchlor. 1 in 12,000 or hydrarg oxycyanide, 1 in 8,000, and ung. hyd. flav, dil. applied inside the lower lids. If the pneumococcus is present optochin, 1 per cent. should be used as drops: in Morax-Axenfeld infections, zinc sulph., gr. i (or gr. ii), if the patient will tolerate it to the ounce of boracic lotion should be used instead of the mercury salts as an irrigation.

Types of conjunctivitis are:—

1. Membraneous conjunctivitis. 2. Ophthalmia neonatorum. and 3. Phlyctenular conjunctivitis.

In the formation of corneal ulcer there are three factors at work, and sometimes another is the chief cause. (1) Destruction of the surface epithelium. (2) Infection. (3) Lack of resistance.

The usual subjects are ill-nourished or sickly, often suffering from, or having just recovered from one of the exanthemas. The eye is red and watery; pain is of a scratching or burning type, and there is usually a good deal of photophobia.

The majority of corneal ulcers in children are of the phyctenular type, following a ruptured and infected phlyctenule on the cornea or limbus.

Treatment.—1. General. It is most important that the patient's resistance should be improved. A tonic should be given, and a sufficiency of good nourishing food ordered.

2. Local. Any lid condition such as blepharitis must be energetically treated. If there is much conjunctivitis the lids may be painted with silver nitrate 1 per cent. or 2 per cent. The pupil should be kept well dilated (ung. atrop. 1 per cent. c. flav. dil. b.d. is usually sufficient). The eye should be irrigated two or three times daily with an antiseptic lotion such as hydrarg. per chlor. 1 in 12,000 or in the more chronic cases, and those due to the Morax-Axenfeld bacillus, a zinc lotion may be used.

3. Scarring after corneal ulceration is often unsightly and the cause of much loss of vision. The greater part of the scar is bound to remain, but slight improvement may result from the instillation of guttæ dionin 1 per cent., working up to 5 per cent. Diathermy may also be tried.

Interstitial keratitis occurs in congenital syphilis and is one of the "Hutchinson triad" of signs of congenital syphilis, the

other two being the typical notched teeth and deafness. The condition is a gummatous infiltration of the deeper layers of the substantia propria with accumulation of the round cells are usually found in such conditions. The cornea becomes thickened, and there is usually some œdema of the epithelium.

Appearances.—The onset is marked by slight redness and watering of the eye, with some photophobia : on examination, besides the general ciliary glush, typically the injection is seen to be most marked close to one point on the corneo scleral junction, where the edge of the cornea is a little hazy.

The vessels at the edge, which are deep, very fine, and parallel to each other, often become so numerous as they grow into the cornea that they appear to form a solid red patch, the "salmon patch."

Treatment.—The disease runs its course and very little can be done to shorten it. Anti-syphilitic treatment should be given. Locally, atropine should be given in sufficient quantity to keep the pupil fully dilated, and the eye covered with a pad and bandage. Where there is much iridocyclitis, hot applications should be ordered, especially if the eye is painful.—*Indian Journal of Pediatrics.*

Local Quinine Therapy in Cases of Interstitial Keratitis and old Corneal Opacities—ELIAS SELINGER, *Arch Ophth.* 13: 829 (May) 1935.

Experiments on animals and clinical trials in cases of trachoma showed that 2 per cent or 4 per cent quinine bisulfate ointment or a 10 per cent aqueous solution can be applied locally daily for many months without any harmful effects on the conjunctiva or cornea. While the course of interstitial keratitis cannot be influenced by antisyphilitic or local therapy, both must be thoroughly employed. In three cases of bilateral active interstitial keratitis 2 per cent quinine bisulfate ointment was prescribed for use twice a day in addition to the local and general treatment. Rapid subjective improvement was noted in a few days, with lessening of the photophobia and blepharospasm. The appearance of the corneal opacities changed also.—*Westcott, Chicago.—A. J. D. C.*

Some Notes on the Treatment of Strabismus—S. R. GIFFORD, *Brit. J. Ophth.* 19 : 148 (March) 1935.

The object of the paper is to outline a routine of treatment which in the hands of Gifford and of the group working in his

clinic has proved very satisfactory. Some of the practical points to be culled from the article follow: In esotropia with less than 1 diopter of hyperopia bifocal lenses or grab fronts of 2 diopters plus may be of service when the eyes are straight for distance but show from 10 to 15 degrees of convergence for reading. In concomitant squint of all types and degrees, when refraction was done early, usually before the age of 6, with no other treatment than the use of atropine or occlusion, it was found that after six months the eyes were straight with glasses in 12.5 per cent of the cases, and after eighteen months, in 30 per cent. In divergent squint little is to be expected from correcting the refractive error, as a rule. Attempts should be made to improve amblyopia and fusion.

The results with amblyopia have been disappointing. With occlusion and the use of atropine the results have not been remarkable. Prolonged occlusion when vision is below 6/60 is, as a rule, impossible. The use of atropine and a system of reducing vision in the good eye are of value in overcoming suppression of the poorer eye and as an aid to orthoptic training, but actual improvement in vision has not been striking.

In accommodative squint fusion training seems to be of value in hastening a cure but is not always necessary.

Squints due to defective fusion include conditions in which vision is good and there is little or no refractive error, many divergent squints, especially those in which divergence is intermittent or latent, and alternating squints. In the latter group, while fusing ability is undeveloped, it cannot be said to be absent.

In squint with amblyopia, when vision is less than 6/60 or 6/24, fusion training is of little value. Attempts should be made to improve the amblyopia, and the effect of glasses is watched for from six months to one year. After this time surgical intervention is indicated. Squint with anisometropia is considered a variety of this group. Iseikonic glasses may bring about binocular vision if it does not exist with ordinary lenses.

In squint due to muscular abnormalities surgical operation is indicated without preliminary training.

Dividing all types of squint into those of high and those of low degree, Guibor found in forty-eight patients that when the angle of squint was 15 degrees or less the eyes of 84 per cent became straight after refraction and orthoptic training while when the angle was more than 15 degrees the eyes of only 16 per cent became straight.

The method of training is outlined. For overcoming

suppression the large synoptophore of Maddox is ideal. The types of fusion charts are discussed.

Gifford believes that when progress is at a standstill operation should be advised regardless of age. Simultaneous operation on both lateral rectus muscles is adopted in nearly all cases of concomitant squint higher than 20 degrees. The eye with the poorer vision is selected. With advancement and recession, squint of 35 degrees and sometimes 45 degrees may be corrected by one operation. In the treatment of slight squint and phorias the O'Connor operation seems to have a definite place.—*A. J. D. C.*

Xerosis in the Eye Clinic. A new local Treatment.—E. CORNET, *Ann. d'ocul.* 171 : 484, 1934.

Xerosis, or xerophthalmia, or keratomalacia, is due to absence of vitamin A or more exactly, to "avitasterinose A." It was not until 1902 and 1903 that Mackenzie and Koun noted the relation which exists between this disease and the state of nutrition.

Xerosis is found especially in the Orient. It often results in blindness. It may be cured by local treatment, but the prognosis remains serious because of the relation of the disease to the patient's general condition. The treatment suggested by Cornet is as follows: the subconjunctival injection of milk freshly sterilized at 115 F., in amounts of from 0.5 to 1 cc., into the eye every second, third, fourth and fifth day; the instillation of olive oil or cod liver oil; a prescription of milk, either human milk or that from fresh healthy cows or boiled milk, yolks of eggs, green vegetables, oranges and cod liver oil; the administration of the serum of Quinton and appropriate pulmonary and intestinal examination and treatment.

In case of a xerotic ulcer, the instillation of olive oil and cod liver oil should be omitted. Atropine or physostigmine, plus mild protein silver, may be used as indicated.—*Arch Ophth.*—*A.J.D.C.*

Surgery

Cysts of the Semilunar Cartilages.—G. E. BENNET and M. B. SHAW (*Arch. of Surg.*, July, 1936, p. 92 present four personal cases of cysts of the menisci of the knee-joint, and summarize 159 further cases which have been reported. The condition is seen most commonly in young adults, and the outstanding symptom is aching pain and fatigue in the affected limb. A mass may sometimes be felt in the region of the knee, but it is only seldom that there is a limp of limited motion of the knee-joint. In a small percentage of cases there is a history of trauma, but in the majority of instances this cause is not given. The onset of symptoms is insidious; the pain may be aching or sharp, and is a constant feature; the tumour usually reaches a maximum size with rapidity, and then remains stationary. This mass varies in size from 1 to 5 c.cm.; it is tense, rather firm and semi-fluctuant, and of rubbery consistency. Tenderness is felt only on deep pressure. The cyst appears along the attachment of the anterior third of the cartilage and presents over the antero-lateral or antero-medial aspect of the head of the tibia; it is usually firmly fixed to the underlying structures. The cyst was in the medial meniscus in twenty-three cases and in the lateral meniscus in 104 cases. No cause for the growth of cysts of the semilunar cartilages is known, although it is suggested that trauma may be an inciting factor: a blow over the attachment of the cartilage would account for the frequent occurrence of the cyst in the lateral meniscus. Treatment must consist of excision of the cyst with the cartilage; if the cyst alone is removed recurrence takes place in a high percentage of cases. Removal usually requires that the capsule of the joint be opened widely, and it is therefore four to eight weeks before full return to normal function is attended.—*B. M. J.*

Paget's Disease.—H. GRIZAUD (*Presse Med'*, June 20th 1936, p. 1018) describes a case of Paget's disease in which the patient died from an osteosarcoma of the femur, and points out that in thirty-nine similar cases reported in the literature many gave a history of trauma which preceded the appearance of the tumour. In the case described a man of 32 years complained of pain in the right thigh, which had not been relieved by medical treatment and was not noticed in the daytime, but only at night. There was no sign of any abnormality, and the patient left hospital to return three months later with more definite signs and symptoms. The pain was more severe and the thigh was swollen, congested, and tender. Radiological examination of the femur disclosed a tumour of considerable size, which was in the middle of the bone and showed evidence of condensation and rarefaction. This tumour increased rapidly in size and the pain became intensified. The right thigh was hot and swollen, and collateral vessels appeared on the skin. One night the patient felt two jerks in the leg, after which the pain became intolerable and movement of the limb was no longer possible. Radiography showed a fracture of the femur at the site of the tumour. The limb was put in plaster, but the symptoms became even more severe, with loss of weight, cachexia, and

sleeplessness due to pain. After thirty-five days of immobilization further x-ray examination of the fracture was made, and showed the lesion was of a malignant nature. It was confirmed that the first symptom had followed a fall from a horse. The patient died two months later, and it was established that the tumour was an osteosarcoma. It is emphasized that there is a definite risk of malignant degeneration taking place in bones affected with Paget's disease, and this liability is increased in individuals exposed to injury. It is advised that persons suffering from this condition should take up a sedentary occupation.—*B. M. J.*

Perineal Testicle.—In his two operative cases of perineal testicle Meredith F. Campbell, New York (*Journal A.M.A.*, June 27, 1936), anchored the gubernaculam with a transfixation ligature of unabsorbable suture, which was then passed out through the bottom of the scrotum. This suture was tied to a small rubber band, to which in turn was tied a suture passed through the skin of the lower inner thigh. These sutures were tied to the interposed rubber band under sufficient tension to cause mild traction to be exerted on the testicle, a maneuver adopted from Cabot's technic in the correction of undescended testicle. In from three to six days the traction suture pulls out, but during this time the testis has become well adherent to the bottom of the scrotum and the cord has been kept at full length. Should hernia coexist, hernitomy also is performed. Unless the ectopic organ is placed in a newly made pocket in the scrotum, it is abnormally subjected to trauma ; atrophy and isolateral sterility are almost certain. Endocrine therapy is ineffectual in correcting this variety of maldescent. There should be neither surgical morbidity nor surgical mortality.—*Northwest Medicine.*

The Treatment of Insect Stings.—The specific poisons are probably not of an albuminoid nature, but are more or less strongly bound up with albumin.

They have the character of the sapononins and are related to the bile acids and stearin derivatives.

The local effect stands in the foreground. They damage all cells, especially the endothelium of the lymph and blood vessels, thereby giving rise to inflammation, œdema, and bleeding.

Insect stings produce subjective disorders such as burning, itching, prickling, a feeling of fullness, severe pain, and also well known objective signs, such as redness, wheal formation, swelling, etc. In certain circumstances a general effect on the blood vessels

and nervous system is exhibited. Mechanical removal of the poisons as part of the local treatment is not an essential. For bee stings the sting should be removed and oil of benzin, petroleum, or covering with "Leukoplast" employed. The poison can be made insoluble by ammonia. Hypertonic glucose or salt solution is able to influence the permeability of the capillaries.

The poison may be attacked chemically by tincture of iodine, chlorine water, hypochlorite, etc. The local inflammation may be reduced by cold, moisture, astringents, dilute acids, and also through measures to favour osmosis, sugar, honey, figs, etc. Pain demands local anaesthesia by means of phenol and aethereal oils. The stings of wasps and hornets require disinfection. The majority of the deaths after insect stings are not the result of the poison but of the subsequent infection. Where severe general symptoms follow stings in blood vessels "analeptics," narcotics, sudorifics, and in certain circumstances, leeches, are indicated. From a casual therapy little is to be expected, for the poison soaking in deeply in a few seconds cannot be reached or rendered innocuous. —*Flury, Med. Klinik, No. 35, 1935.—Medical World.*

The Results of Mild Concussions of Brain.—Reuter admits that mild concussions of the brain are occasionally tolerated without requiring treatment. This is proved particularly by numerous sport injuries, in which concussion of the brain with short loss of consciousness and vomiting passes off without treatment. The same can be said about slight brain traumas during childhood. On the other hand, it cannot be denied that after mild, apparently negligible head injuries, symptoms may persist for several weeks and even for months. The author illustrates this with cases in which the patients themselves did not regard the brain trauma as serious. The usual complaints in these cases are headaches with vertigo, nervous irritability, depression, fatigue, the feeling that the mental faculties are declining, excitation and distraction. Then there are sympathetic manifestations, such as sweating, cold, damp hands and feet and other vasomotor phenomena. The vertigo is probably the result of a central vasomotor disturbance. The blood pressure is frequently below 100 mm. of mercury. All these symptoms must be ascribed to an impairment of the central nervous system, whether there are histologically demostrable changes or not, for not every functional disturbance of the central nervous system causes anatomic changes. The impairment is reversible, for it appears within several weeks or months. In some cases there seems to exist a cerebral swelling accompanied by

symptoms of increased intracerebral pressure. In addition to headaches and vomiting there is slowing of the pulse, rigidity of the neck, Kernig's sign and venous stasis in the fundus of the eye. The swelling of the brain is often favourably influenced by intravenous infusion of hypertonic solutions. Moreover, the signs of intracranial pressure do not necessarily appear immediately after the trauma but may develop several days later, particularly if the patients take up their work again without regard to the cerebral concussion. The writer points out that several weeks of rest in bed is advisable, particularly in the cases in which the symptoms are rather severe, even if the trauma seemed only slight. On the other hand, the patient should not refrain from work too long, and it should be realised that, when work is taken up again, there may at first be a recurrence of the headaches, vertigo and fatigue, even though these had already disappeared during the period of rest.—*Munch Med. Woch.—Medical World.*

PROCEEDINGS OF ASSOCIATIONS, SOCIETIES, ETC.

The Tinnevelly District Medical Association, Palamcottah

Affiliated to the Indian Medical Association

The Tinnevelly District Medical Association, held its monthly meeting on Saturday, the 31st October, 1936, at Srivaikuntam, a holy place of the District. Members numbering 30 gathered from all parts of the District.

After Tea Party and high class Gottuvadyam music, the meeting began under the presidentship of Lieut. Col. T. S. Shastry, I.M.S. The Secretary read the minutes of the monthly meeting held at Sankarankoil on Sunday, the 27th September, 1936, which were passed.

Dr. P. S. Srinivasan, L.M.P., Sub-Assistant Surgeon, Government Head Quarters Hospital, read notes on the following clinical cases:—(1) A case of Abscess back; (2) A case of Kala-azar with parotitis as a complication and (3) A case of Kala-azar with sloughing of tonsil, a rare complication. The first two cases were also demonstrated.

Dr. P. S. Srinivasan gave also a brief survey of the diagnosis and treatment of Kala-azar. The Clinical cases demonstrated and Case-notes read were fully and keenly discussed by the members whereby it was revealed that Kayalpatnam is the home of Kala-azar in that District, the Muslim women and children suffer most from it and that the purdah system is largely responsible for its endemicity.

Lieut. Col. T. S. Shastry, I.M.S., summed up the salient and important features of all the cases and brought the meeting to a close after proposing a vote of thanks to Dr. P. Ramalinga Nayanar for the excellent arrangements.

Thereafter an excellent dinner brought the happy gathering to a close late at night.

The Tinnevelly District Medical Association, Palamcottah

Health Exhibition

Under the auspices of the Tinnevelly District Medical Association, in connection with its monthly meeting at Srivaikuntam, a Health Exhibition was arranged at the Coronation High School, Srivaikuntam, on Saturday the 31st October 1936, at 10 A. M. under the auspices of M. R. Ry. T. M. Kumarakuruparan Pillai, Avl., B.A., B.L., Vice-President, District Board, Tinnevelly.

Lieut. Col. T. S. Shastry, I.M.S., the president of the Association, welcomed the guests, explained the Cholera situation and requested Mr. Kumarakuruparan Pillai, to open the Exhibition.

M. R. Ry. Kumarakuruparan Pillai Avl., in declaring the Exhibition open, said that such Exhibitions are very useful, instructive and beneficial to the public and school children and promised to devote his best attention hereafter to encourage Health Propaganda.

The Local Health Inspector explained in Tamil, the exhibited posters on the prevention and causation of Cholera, Tuberculosis, and Flies, to the benefit of about 150 school children and the public. This was very much appreciated by the gathering.

BOOK REVIEWS

Diseases of the Eye—*By Henry Kirk Patrick*, M.B., 1936 2nd edition, Illustrated, pp. 164, London: Butterworth & Co., Price Rs. 7/- Can be had of Messrs Butterworth & Co., Avenue House Calcutta.

This is in its second edition, the first edition having appeared in 1925. This has been thoroughly revised and many alterations have been made to render this useful to medical students and practitioners. A few of the more important advances have been incorporated and the book has thus been brought up-to-date. To us this is not new for it has been so popular among

the students of Elliot's school, ever since its first appearance, and the second edition is sure to be welcome. Most of the methods and technique described in this book are those that are followed in the Government Ophthalmic Hospital, Madras up to this day. The book is well illustrated and many of them will be found useful and impressive. We have nothing but praise for this book and are sure that this second edition will be received with great enthusiasm by all the students of the Elliot's School, while to a practitioner in the mofussil it would be a God-send gift. At the end of the book good many of the solutions and ointments that have been found of immense use in treating eye conditions in the tropics are given. We wish this book continued success and popularity.

Practical Physiological Chemistry for Medical Students—*By G. M. Wishart, D. P. CatchBertson and J. W. Chambers*, 1936, pp. 127, John Smith & Son Ltd. 28, Gibson Street, Hillhead. Glasgow, Price 3/6 net.

The contents of this book were originally intended to meet the requirements of the Medical Students of the Glasgow University. The course of instruction covers about 40 hours of Practical work. The book contains all that is necessary for the training of the would-be doctor and covers the curriculum drawn up for the medical students. The book consists of IX sections and an useful appendix. After two brief introductory chapters, Chemistry of Proteins, Carbohydrates, Lipides are dealt with. Chapter VI deals with examination of Food Stuffs, Chapter VII treats on Digestion, VIII on Blood, and IX on Urine.

The book is highly practical and will be found very useful by all students studying bio-chemistry.

Another noteworthy feature of the book is the inclusion of blank paper, so as to enable the students to write out and record their own observations and notes. Useful appendix containing the formula of various reagents used in Bio-chemical work is given. We recommend it to all students of Bio-chemistry as a trustworthy guide.

Dispensary Label Book—The Merchants Press, 85, Nainiappa Naicken Street, P. T. Madras. Price Re. 1.

It is a very useful book for doctors and dispensing chemists, and the medicines are printed in alphabetical order with their doses and those which are poisonous are also indicated. The need for writing out labels can be dispensed with if only each Dispensary is furnished with a copy of this Label Book.

NOTICE

XV Concilium Ophthalmologicum, Egypt, December 1937

Dr. M. Tewfik Secretary General, XV Concilium Ophthalmologicum, Cairo, Egypt. has asked us to announce the following:—

According to the decision of the XIV International Congress held in Madrid in April, 1933, the next Congress will be held in Cairo, Egypt. The invitation was sent to all oculists of the world whose names are recorded in the Directory published by the XIII Congress of Amsterdam.

In conformity with the decision of the International Council of Ophthalmology, London, April 1935, the meetings will be held from 8 to 14 December, 1937.

The two official subjects of the Congress will be:—

(1) Arterial Hypertension of the Retina:
General Introducers: H. Wagener and Keith.
Reporters: Bailliart—Clinical and Physiological Aspects. Koyanagi—Pathological and Anatomical Aspects.

(2) Endocrinology and the Eye:
General Introducer: Snapper.
Reporters: Von Szily, Von Imre, Jeandelize, Lacarrere, Lo Cascio.

The papers should refer preferably to subjects related to the official themes. Only a certain number of papers may deal with independent subjects, provided that the International Council will pass them previously by reason of their originality and interest. The International Council has taken this decision in order to avoid the considerable accumulation of papers which in past Congresses has made efficacious debating extremely difficult. It has been thought preferable that the number of these should be reduced so that they can be discussed with the necessary fullness.

The Local Organising Committee requests the colleagues to kindly send three typewritten copies of the paper intended for reading together with a resume of not more than 500 words directly to Dr. Marx, Secretary of the International Council, Oostzeedijk, 316, Rotterdam. Hollend, not later than April 1st, 1937. All other correspondence should be forwarded to the Secretary General, XV Concilium Ophthalmologicum, P. O. Box No. 2001, Cairo, Egypt.

Number and size of lantern slides, if any, should be stated,

and whether an epidiascope or microscopes (and, if so, how many) are required for the lecture.

Directory

On the occasion of the fifteenth International Ophthalmological Congress a third edition of the Directory will appear. This Directory will contain data concerning the following subjects.—(1) Names (alphabetically arranged) and addresses of all oculists in the world; (2) Titles and volumes of all periodicals which deal with any branch of ophthalmology; (3) Statement of all ophthalmological associations; (4) Hospitals for eye patients; (5) Establishments for institutions for the blind, sight-saving classes, etc.; (6) Statistics regarding blindness.

The Secretary of the International Ophthalmological Council would be glad to learn from yon whether there are still other subjects of general interest for oculists which—in your opinion—might be included in the Directory.

Exhibitions

Two exhibitions will be arranged :—

(1) *A Scientific Exhibition*, comprising Anatomical and Pathological Specimens or Slides, Photographs, Radiographs, etc Members wishing to partake will please communicate with the Secretary General stating the object to be exhibited, its size, etc.

(2) *A Commercial Exhibition*, comprising Instruments, Apparatus. Drugs, Printed matters, etc.

Membership to the Congress

Inscription for membership to the Congress is open for every medical man, and those who desire, will please fill in the prescribed form and send it to the Secretary General, as early as possible together with the sum of 50 Swiss Francs, to cover the fees for subscription. The fees for ladies and other associate members of the congressists' families are 25 Swiss Francs per person—those can attend receptions, excursions, etc., but are not entitled to attend the Scientific Meetings, nor will they receive a report of the proceedings of the meetings.

Further details of the Congress meetings, banquets, trips, etc., will be sent in due time, as well as the abstracts of papers and the identification cards for the reduction of railway and other fares.

A housing committee will take charge, of facilitating the accommodation and lodgings of the members and their families during their stay in Egypt.

The work of the Organising Committee will be greatly facilitated if the members subsribe as early as possible.

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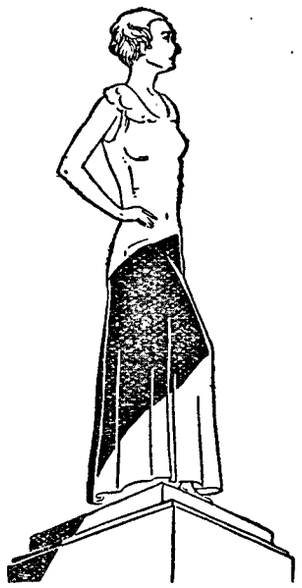

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ORIGINAL ARTICLES.

A Comparative Radiological Study of the Bony Changes*

In Achondroplasia, Acromegaly, Paget's Disease, Leontiasis Ossea, Cranio-Cleido-Dysostosis, Diaphyseal Acalasia, Perthe's Disease and Fragilitas Ossea

BY

DR. M. J. S. PILLAI, L. R. C. P. & S. etc., D. R., (UNIV. EDIN.)
Medical Supdt., The Barnard Institute of Radiology, Madras.

THE pathological lesions accompanying the conditions noted above vary widely depending as they do upon the causal factors concerned in the lesion. Though apparently there is this common factor that the bony skeleton is affected in varying degrees, and the changes are confined to particular regions, the deviation from the normal, as shown by signs and symptoms, vary enormously. The only reason why these apparently heterogeneous group of conditions are clubbed together here, is to bring out the respective bony changes for purposes of comparative study.

Achondroplasia :—In Achondroplasia, the bony skeleton assumes a proportionately diminutive size—the skull remains fairly normal in its dimensions, the membrane bones not being affected. The thorax and the abdomen are very often of normal proportions, the limbs in particular showing diminution in size.

* Specially contributed to 'The Antiseptic'

The calcium metabolism appears to be normal. It is believed that it is the cartilaginous portion of it—the pre-cursor of bones that appears to be responsible for the stature; in that the cartilage becomes ossified completely before the full lengths of the long bones are attained. It is noted that the fibrous layer of the periosteum of the long bones which is continued on from the end of the diaphysis to the articular surface of the epiphysis as contrasted with the serous layer of the periosteum which stops near the epiphyseal end, invades the metaphyseal junction and prevents the further growth of bone therein—unlike what obtains under normal conditions. If this be the cause, what is it that prevents the invasion of the fibrous layer at the metaphyseal junction under normal conditions and what is it that allows it to invade or attracts it to the metaphyseal region in Achondroplasia is a problem awaiting elucidation.

Or, is it possible that the separation of the fibrous and serous layers of the periosteum which is usually complete permitting the normal functioning of the two layers is so altered and interfered with, that at the metaphyseal junction the fibrous layer sends in a process along with the serous layer with the result that this abnormal tissue thrives and encroaches upon the metaphyseal junction and grows at the expense of the cartilaginous cells and producing the characteristic arrest of growth? The usual normal concentration of reticulo-endothelial cells at the metaphyseal junction in particular is so altered by the invasion of this aberrant tissue, that not only the growth of the long bones is interfered with locally but it is possible also, that this effect on the endothelial system could have bearing on the general metabolism of the body. It does not appear that the causal factor of this aberrant condition can be traced to any infective toxic or other usually known causes. Can this be classified then as a freak of nature?

Is it an insufficiency of cartilage and a small stock of it, inherited in the embryonic stage that appears to be responsible for the condition? Whether it is the pituitary, the chief of the presiding organs, over bone growths that is responsible for this condition; or whether other organs of the endocrine system also take part in limiting the supply of the cartilaginous matrix is a moot point awaiting further investigation. It is also interesting to note that the mental development, the physical powers—the physical conditions of these dwarfs remain fairly normal. They enjoy a normal length of life and produce very often children of normal heights. Whether the principle of atavism is noted in these individuals is a matter for observation

Blad Sutton, quotes cases of Achondroplasia producing normal children. Contrasting this condition with Gigantism wherein the anterior lobe of the pituitary is chiefly "involved" in maintaining the rapid and abnormal over-growths of the bones of the extremities in particular we are far from arriving at the final causative factor in these lesions.

If in dawrfism there is a restricted stock of cartilage, is there a plentiful supply of cartilaginous material in gigantism? What part do the parathyroids play in the field of calcium metabolism in these two cases? Are there any other hormones or factors concerned in these conditions is a question that should be answered by the future.

Acromegaly.—In Acromegaly which occurs after the adult age is reached we find that the overgrowth is confined to particular bones. Here we have to note that even though all the cartilaginous matrix has already been ossified, the osteoblasts are able to build up bones causing the super-imposition of calcification arising from the periosteum mostly.

As to why in adult age only certain bones are capable of being changed and as to why in early age there is a possibility for harmonious overgrowth or arrest of all the bones is again a matter for deep research into the domain of Endocrinology and other concomitant factors.

If in acromegaly, in the absence of the primordial cartilage there can be reconstruction of bone, what would be the condition in achondroplasia with subsequent development of Acromegaly? And we are aware of cases of Acromegaly being super-imposed over gigantism. In fact tendency to gigantism has been noted in earlier years when gigantism supervened subsequently. And again it is food for thought to question the effect of adrenalin activity upon the pituitary and the parathyriod functions. Has the percentage of calcium in blood any direct relationship to the functions of the endocrine glands? Can the endocrine glands alone mobilise the calcium in the system both exogenous and endogenous? Is the elaboration of the calcium salts the result of endocrine stimulation? Or is the presence of excessive blood calcium the cause of stimulation of the endocrine glands? In senility we note that there is disproportion between the percentage of calcium salts and the organic matrix of bone. Is it not possible that advancing age is responsible for the disturbance in the maintenance of equilibrium of the D vitaminosis?

Paget's Disease:—It is an admitted fact that these changes are produced by the exhaustion of the endocrine system. Again the

abnormality in the endocrine system may be either due to excessive activity or suppressed activity or altered activity. Applying this to the subject of our theme we now take into consideration the subject of Paget's disease. In this condition, also, we are chiefly taking into consideration the bony changes and compare them with the changes noted in the above lesions. The changes usually noted are, irregular thickenings with bending of the bone chiefly the long bones and at a point of great stress, *e.g.*, in the Tibia there is considerable reinforcement of the posterior aspect of the bone as compared with the anterior. Here again the question comes, whether it is due to dystrophy of the endocrine system or is it solely due to toxic effects produced by micro-organisms of low virulence. Is it a result of a vicious circle or a combination of both?

Leontiasis Ossea:—Now coming to the question of Leontiasis Ossea, a very rare condition, where the lesion is limited to the skull bones. The hypertrophy accompanying this condition is enormous. The thickness of the skull becomes three or four times as much as the normal thickness—one variety of which is distinguished by knobs of bone developing on the skull. The distinguishing feature of this lesion is that this membranous bone hypertrophies enormously to such an extent that the accessory sinuses, mastoids, the malar bones and the mandible remain solid. Whether this solidarity of the bones has been the result of the onset of the pathological lesion of these sinuses or whether they remain infantile from the very beginning is a moot point The clavicle in these cases is not affected.

Cranio-cliedo-disarthrosis:—In Cranio-cliedo-disarthrosis where there is absence of the bony clavicles the cranium is comparatively slightly affected. As to why in Leontiasis Ossea the cranial bones alone should be affected exclusively is for the research scholar to explore. If the endocrine disturbance is the causal factor it certainly requires further elucidation.

Diaphyseal aclasia:—In dealing with Dyaphyseal aclasia and the primordial cartilage of bones, we have again to ask ourselves the question whether it is a fact that, as the name denotes as to how it happens in this condition, the cartilage cells get displaced and migrate to places were they have no business to be and in places where they are not wanted. Are the Osteoblastic cells that are responsible for their migration or is it the result of their own inherent but aberrant activity? Again it is a matter of observation that these exostosis stop growing with the arrest of growth of other cartilaginous bones in the body. Perhaps it may be easy

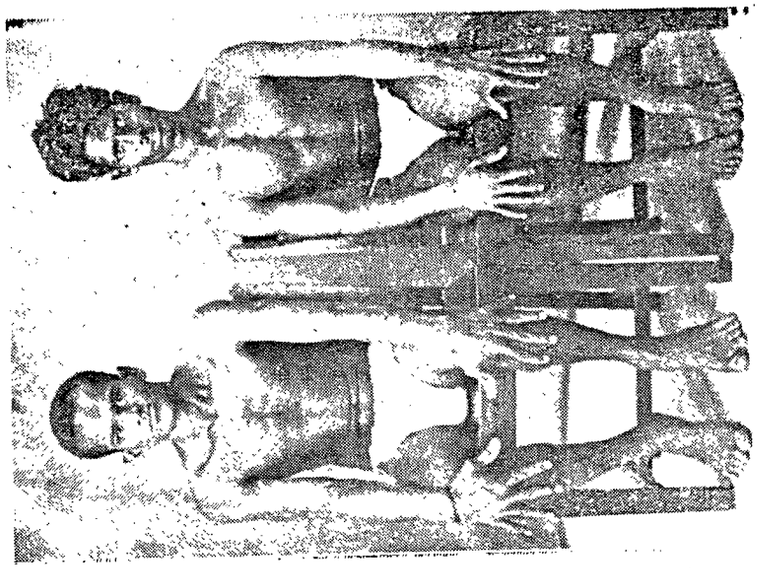
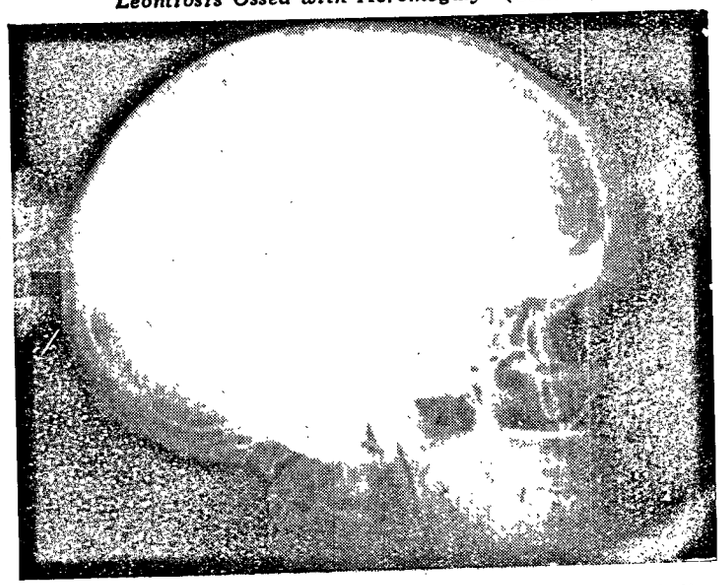


Fig. 2
These are clinical pictures of the patient and that of a normal individual for comparison—A. P. & lateral views respectively.

LEONTIOSIS OSSEA WITH ACROMEGALY

A

Fig. 1
These are clinical pictures of the patient and that of a normal individual for comparison—A. P. & lateral views respectively.



[Fig. 3.—Shows the density of the skull tablets and the base of skull. The pituitary fossa is large—Frontal sinuses and the mastoids ill-developed.

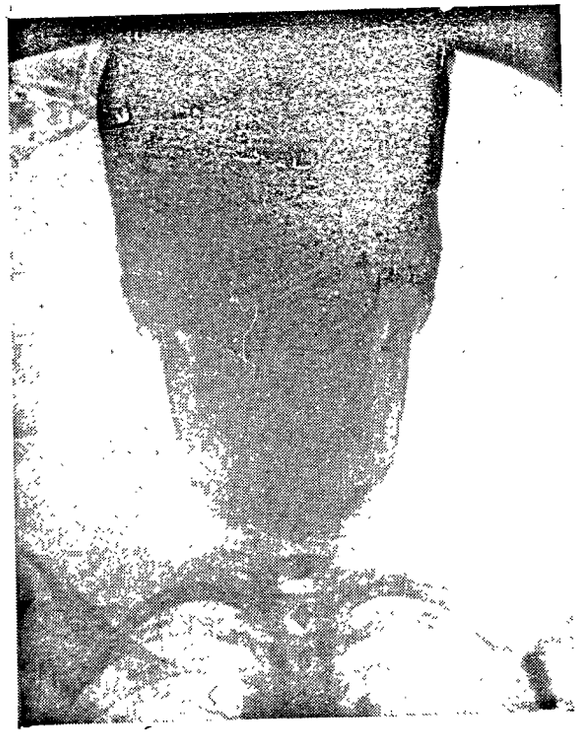


Fig. 4.—Shows lantern (lower) jaw of Acromegaly.

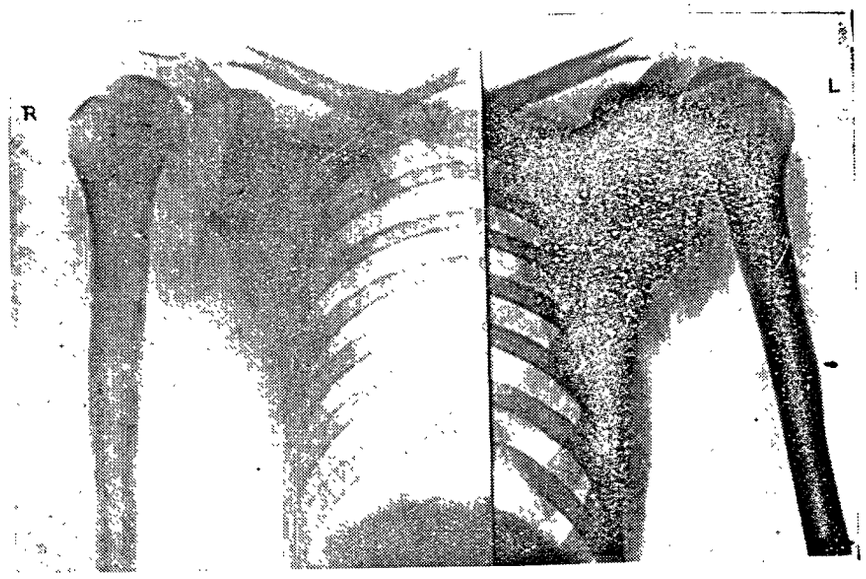


Fig. 5.—Shows enlarged ribs.

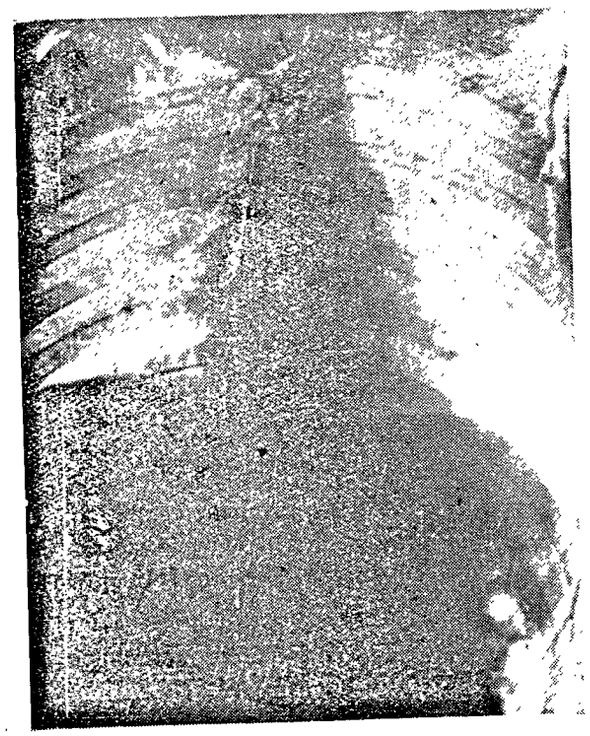


Fig. 6.—Shows large clavicles with obliteration of the normal curve.

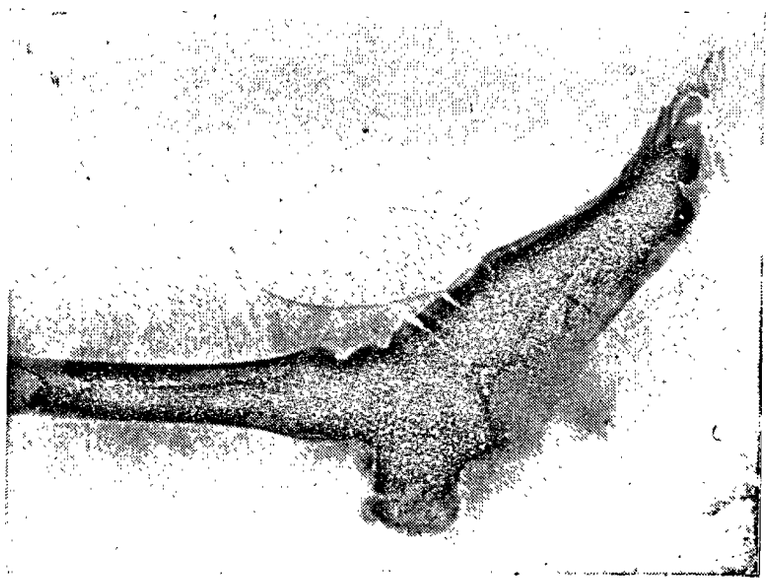


Fig. 11
Shows a large foot in keeping with the enlarged spade-like hand of acromegaly.

Fig. 7
Shows spade-like enlarged hands.

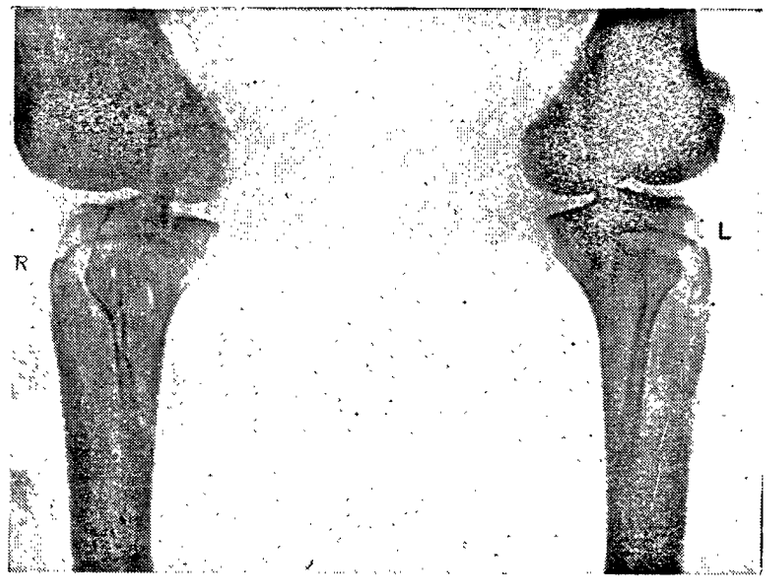


Fig. 8

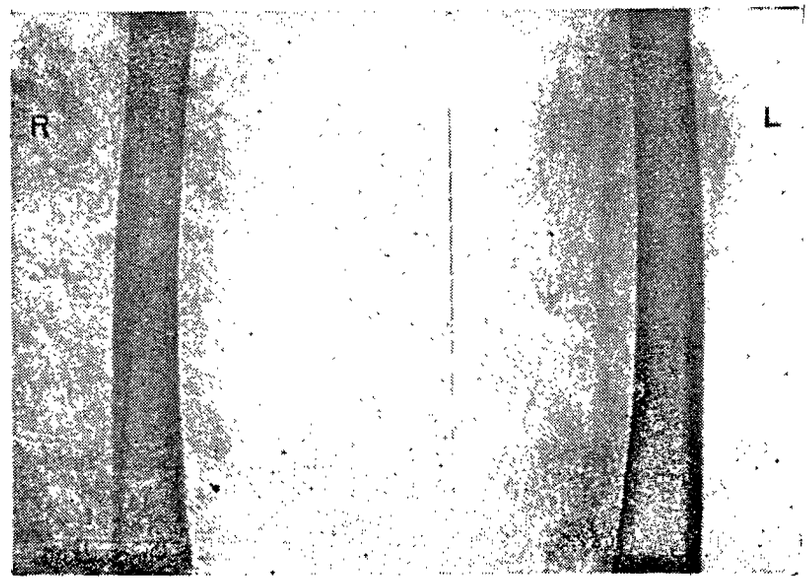


Fig. 9

Leontiosis Ossea with Acromegaly.—(Contd.)

Fig. 10

Fig. 8, 9, 10 Show the remaining portion of the skeletal system.

SKULL PRINT

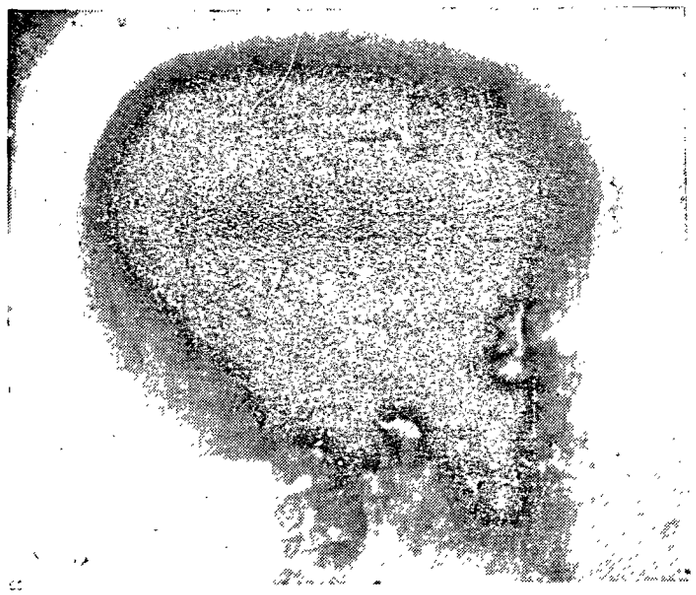


Fig. 1

Skull print of a case of Leontiosis Ossea with Acromegaly.

ACALASIA.

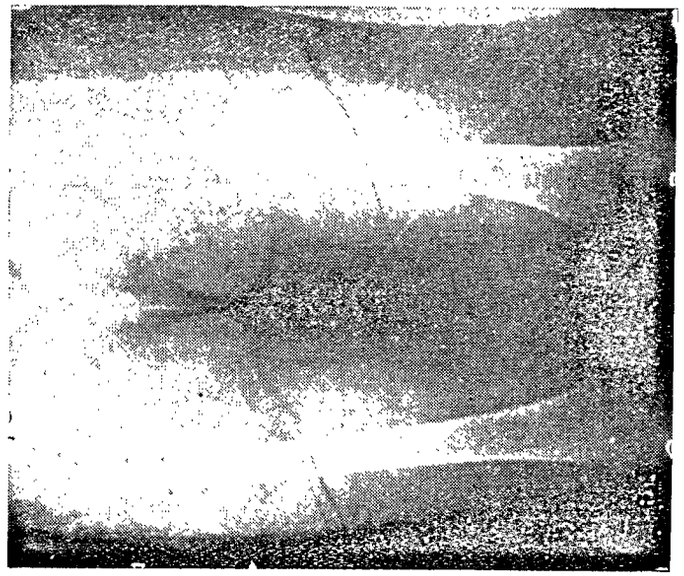


Fig. 2.—Involving Lower ends of Femora.

DIAPHYSEAL

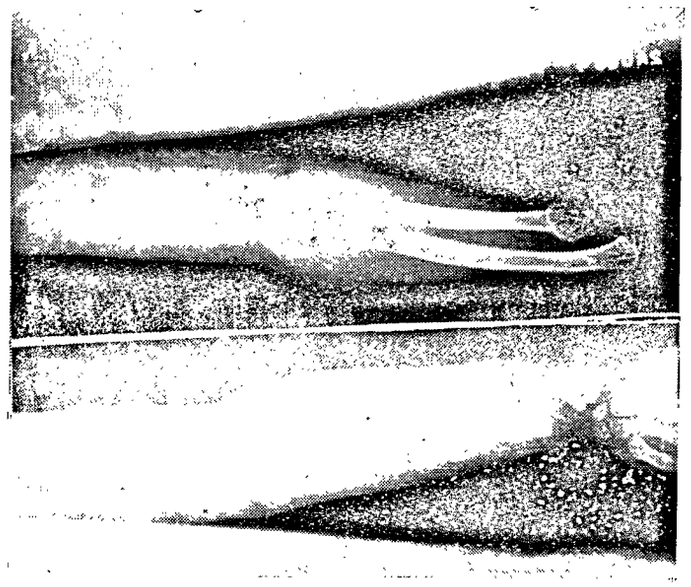
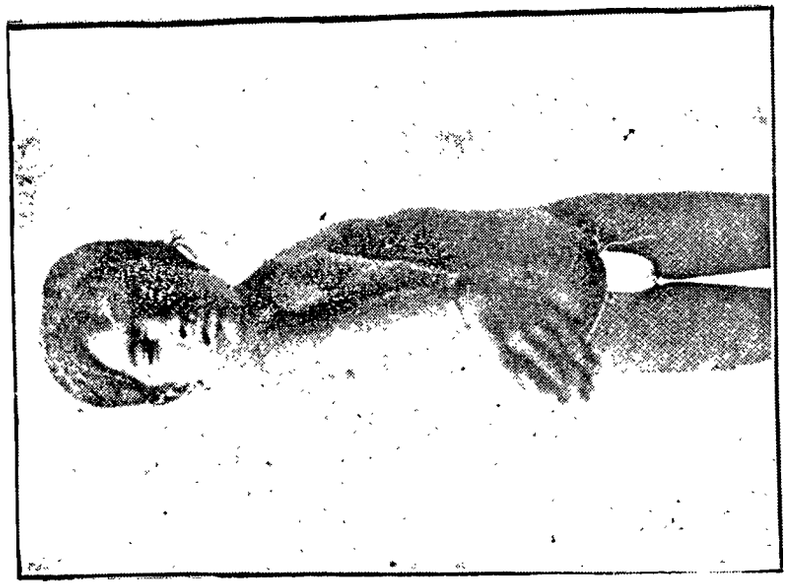


Fig. 1.—Involving Lower end of Ulna.

CRANIO—CLEIDO—DYSOSTOSIS



The picture is a clinical photograph of a girl of about 7 years of age showing the meeting of the two shoulders together owing to absence of clavicle and in the large ununited cleft in the skull in between the corresponding frontal and parietal halves.

Diaphyseal Acalasia—(Contd.)

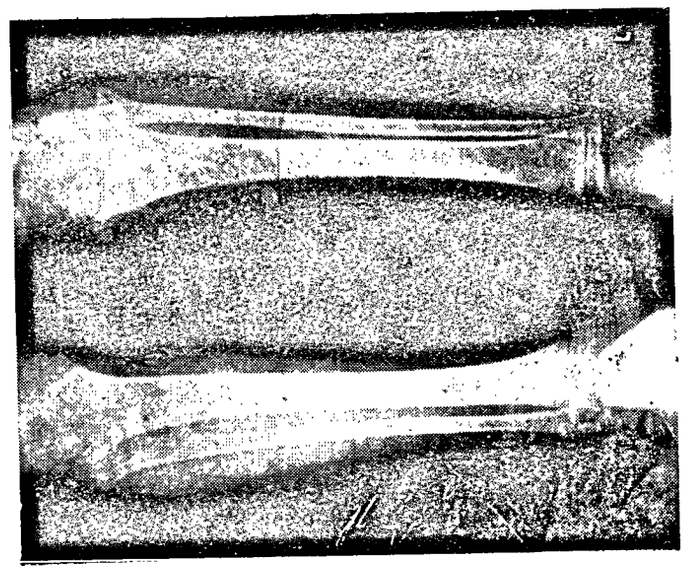


Fig. 3
Involving Upper ends of Tibia and Fibula.

ACHONDROPLASIA WITH LEONTIOSIS OSSEA

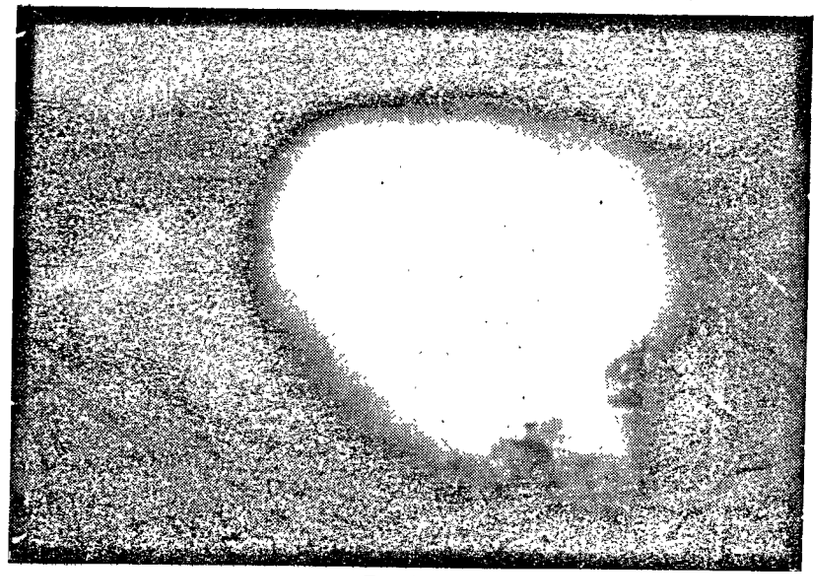


Fig. 1

SKULL :—Shows a large dense skull. Differentiation between the inner and outer tablet and the medullary portion is obliterated. The frontal sinus and the sphenoidal sinus and the mastoid cells are not developed. The cilliary ridges are dense. The lower jaw is not of the lantern type as in the case of Acromegaly.

Fig. 2

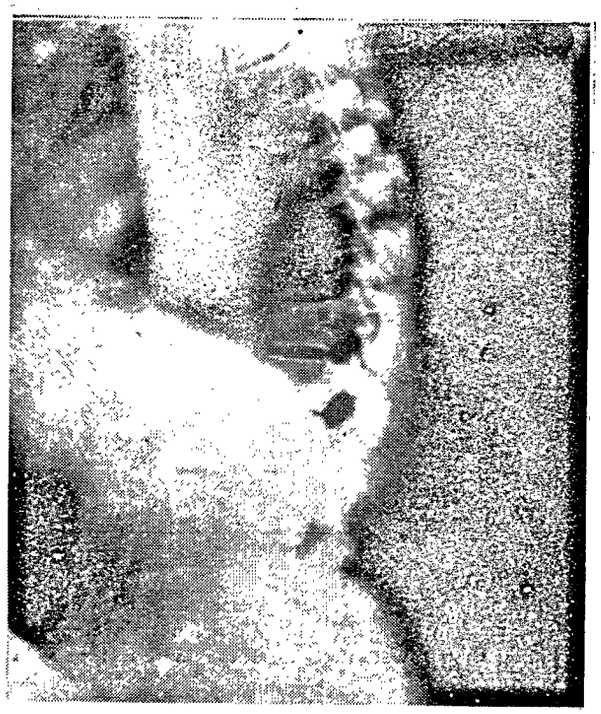
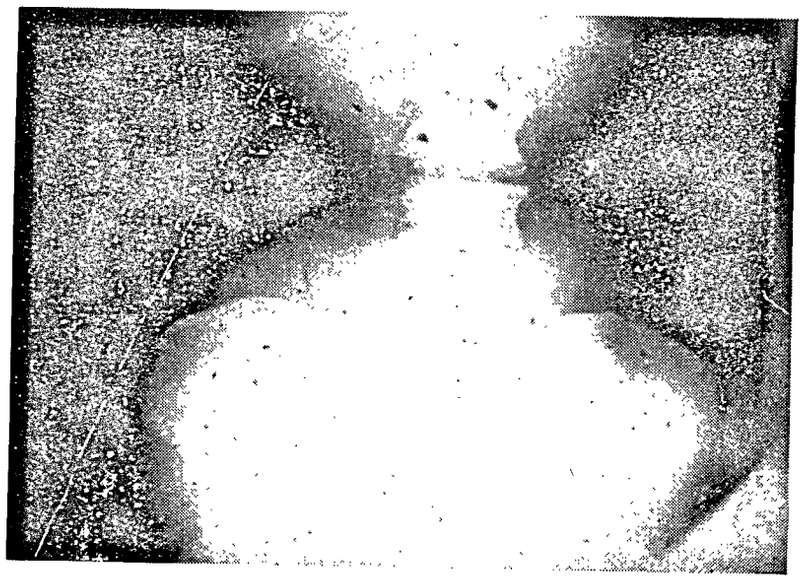


Fig. 3



Fig, 5

Fig. 2, 3 & 5 Show normal length of chest and abdomen with normal development of ribs and spine.

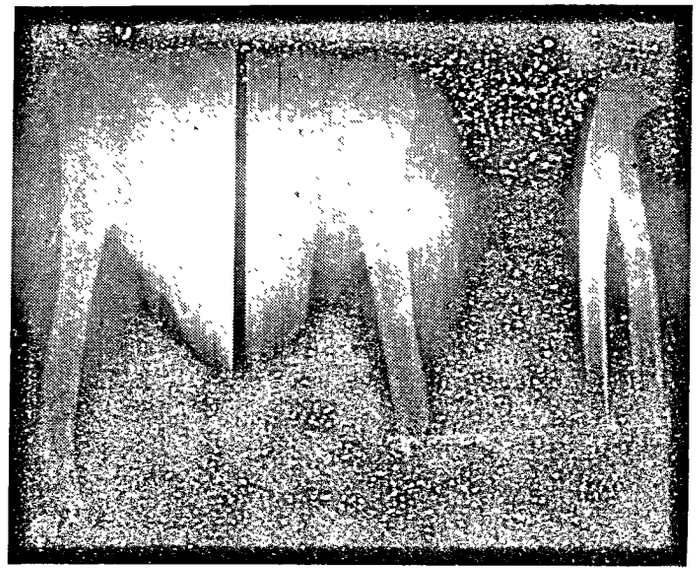


Fig. 4

Fig. 6

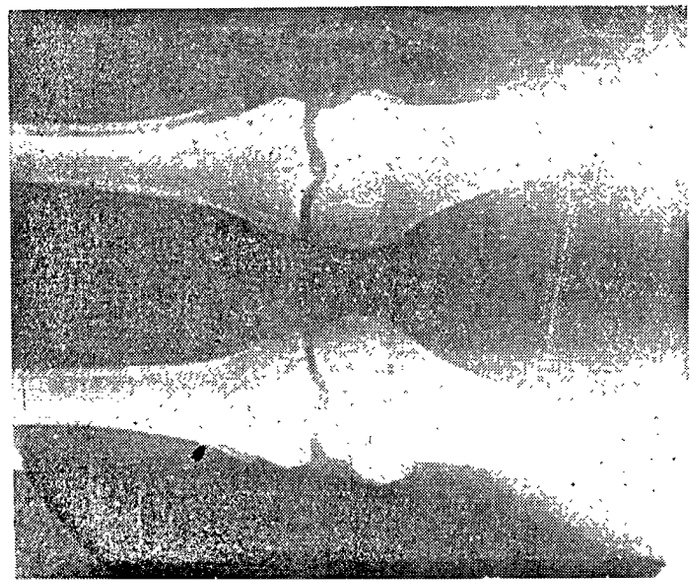


Fig. 7

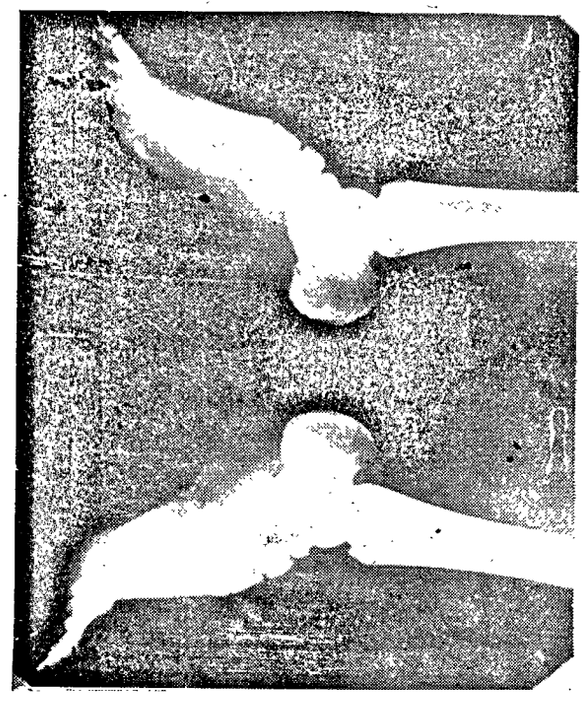


Fig. 8

Fig. 4, 6, 7 & 8 Show diminutive size of the extremities.

PAGET'S DISEASE

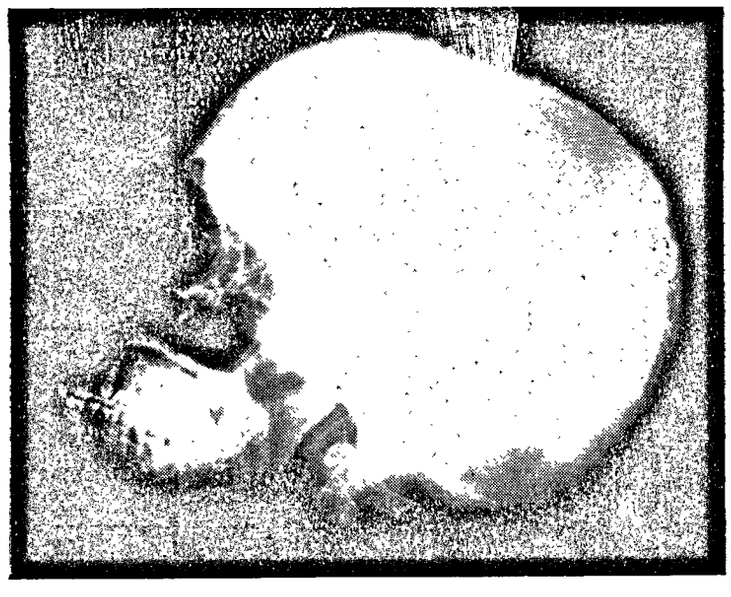


Fig. 1

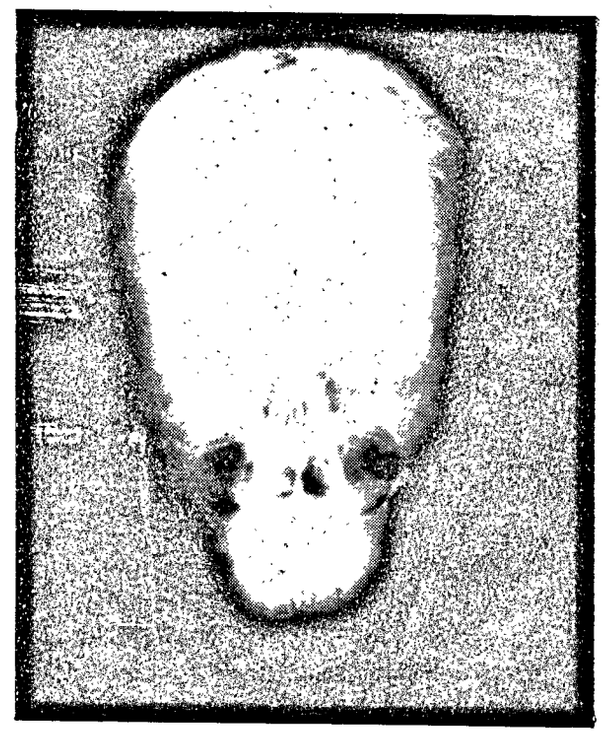


Fig. 2

A.P. & Lateral views of skull which is of the fibrocystic type—shows degeneration of the tablets of the skull with characteristic wooly appearance of the Paget's disease.

Paget's Disease—(Contd.)

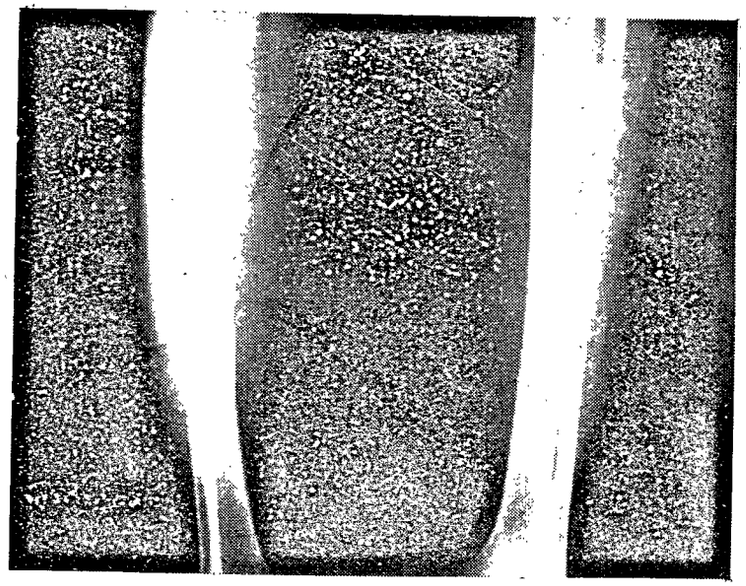


Fig. 3
Shows the bend of tibia with increased density on its posterior aspect, the region of stress and strain.

FRAGILITAS OSSEA

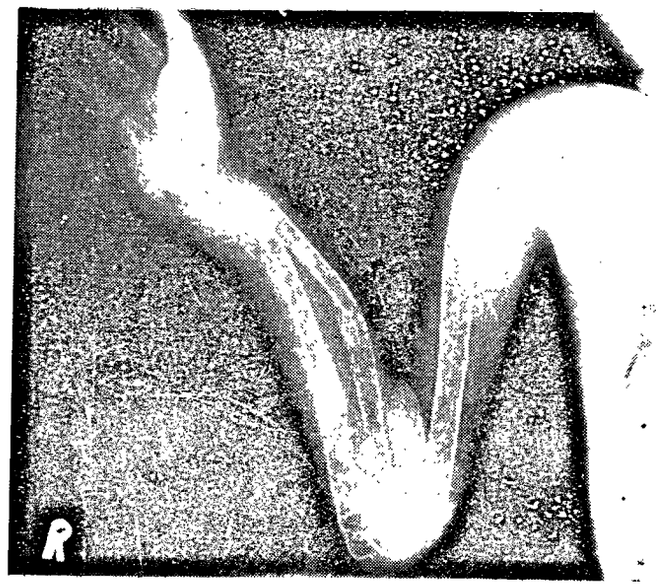


Fig. 1

Fragilitas Ossea—(Contd.)

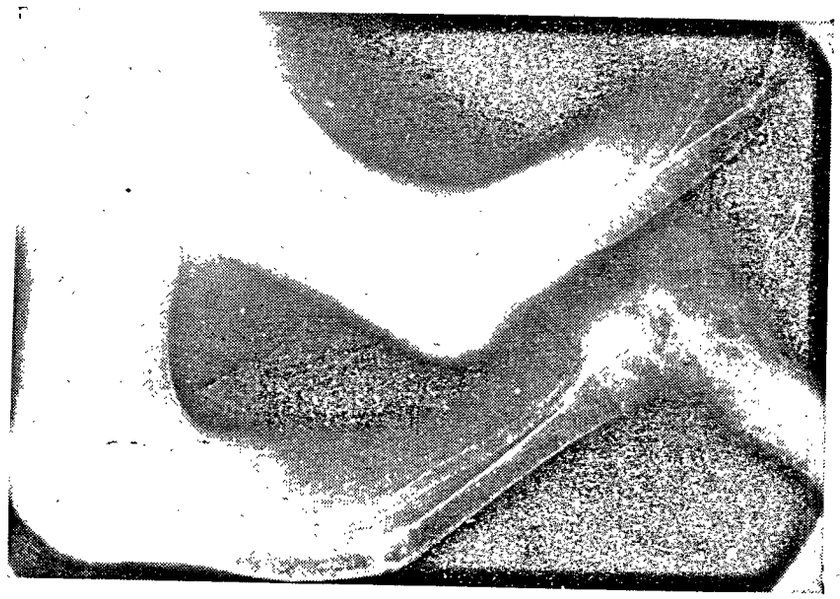


Fig. 3
the whole skeletal system resulting in a number of fractures.

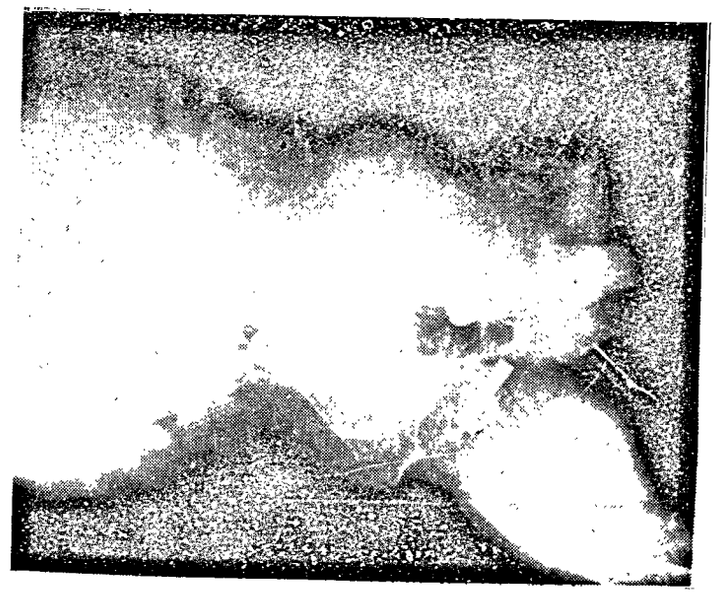


Fig. 2
Fig. 1, 2, 3, Show extreme examples of fibrocystic disease of

PERTHE'S DISEASE.

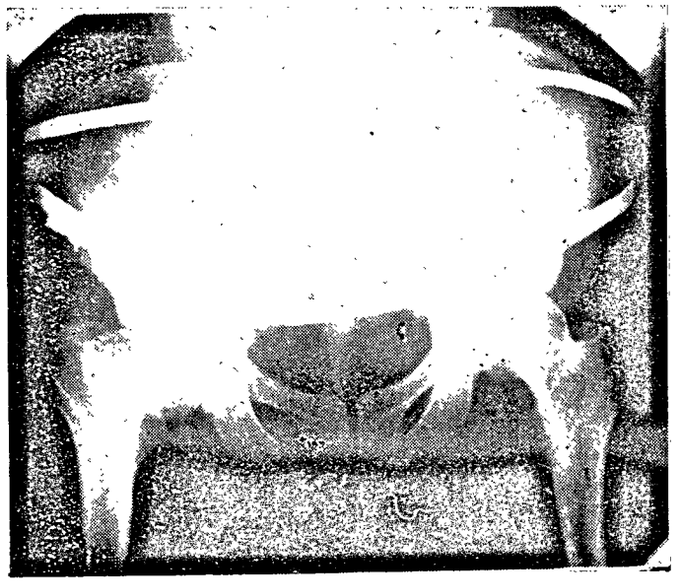


Fig. 1

Fig. 2

Fig. 1 & 2 show different cases of Perthe's Disease—Affection of right hip joint and mushroom appearance of the head of the femora in the *healed* condition is noted.

to explain that the onset of malignancy in these exostosis is due to the release of the control of growth exercised during normal conditions, which now arouse the few remaining cells of the embryonic type to multiply and grow to enormous proportions and at the expense of the normal cells culminating in what is termed a malignant growth.

Perthe's Disease:—The term Osteochondritis deformans, Juvinalis expresses fairly the underlying pathological lesion. In this condition the bones of the cartilaginous epiphysis undergo certain changes and this usually occurs before the epiphysis are calcified. The deformity consists of the changes in the moulding of the bones, the resultant of stress and reaction. The fragmentation of the nuclei, the enlargement of the epiphyseal end, the adaptation of the neck of femur and the softening and widening of the acetabular cavity, are changes which are usually noted in this condition. The age incidence so far noted has been from that of six years onwards to the attainment of the adult age.

It has been established that this is of a non-tubercular origin. Whether this softening of the epiphysis or the surrounding bone is the result of metabolic changes due to defective endocrine functions or to mild infective organisms or their toxins our present knowledge is not able to answer satisfactorily. The other co-related condition chiefly of the hip joint which goes under the name of Thomson-Smith's Disease has been traced to mild staphylococcal infection. A typical case of this condition which separation of the epiphysis of the head of the femur and its migration to the middle third of the thigh of a child is shown in the accompanying radiographic prints. In this case the infective organisms have been traced to a group of staphylococcus aureas.

In the group of diseases under the heading of "Perthe's should be quoted those of (1) Legge's Disease (2) Kohler's Disease (3) Schlater's (4) Kummel's (5) Kienbock's etc." The affection of the epiphysis has been found to be not confined to the particular bones with which the above mentioned names are associated but have been universally found in all epiphyseal regions.

It should also be mentioned in this connection that in Osteomalacia with the softening of bone and the resultant changes in the skeletal system the bones get fixed in shape in the altered alignment on recovery as in Perthe's Disease. The causal factors of this lesion also remain unexplored.

Similar softenings and laxity of ligaments of pelvis in particular, are noted in pregnancy—the pelvis regaining the normal rigidity within a few weeks after delivery. The endocrine system

shows hyper-activity during pregnancy. Which of these organs is responsible for the normal physiological softening of bones and ligaments together taking on a pathological aspect as in Osteomalcia? Does the foetal organism throw out certain specific substances in order to meet the great demand for its calcium metabolism, so that it takes on a parasitic growth instead of maintaining a simbiotic life?

Fragilitas Ossea:—Whereas in the lesions mentioned above the proportion between the organic and the inorganic contents of the bony tissues remain within fairly normal limits, in the condition known as "Fragilitas Ossea", we find that the bones are extra-ordinarily brittle so much so there have been cases where fractures in more than 50 places have been noted at the same time. Here again we have to question ourselves as to what are the probable factors which determine this altered composition of bone which leads to this fragility. Are there maternal or foetal factors of insufficiency or abundance or altered metabolic activity of the endocrine system?

If we can arrive at methods which can determine the presence and the amount of endocrine substances in the blood with any amount of accuracy and if we can always succeed in isolating organisms or their toxins in blood or know the exact amounts of different vitamins in the blood with as much accuracy as we can determine the inorganic composition of blood or if we can only determine the development and the function of the endocrine and other systems in the embryo we would have solved many of these abstruse problems about which we are at present in absolute ignorance. If we can only answer why the pharyngeal pituitary should become a cranial organ, why the pineal gland should die and become calcified, why the Thymus should go out of function at a particular age and many other such phenomena which obtrude themselves on our mental horizon, then, the many difficult problems confronting us, as quoted above, would have reached a fair amount of advance in medical science to warrant the discussion of the subject about which we know very little at present. Our appeal in this direction for the elucidation of these most abstruse phenomena is to those never tiring research workers who sacrifice their all at the altar of truth and science. We get to a certain height, we want to reach higher and higher—what next?

Some of the radiographic prints illustrative of the important bony lesions dealt with in this paper can be sent, if desired, for publication.

Here, I take the opportunity of thanking Captain T. W. Barnard, The Director of the Barnard Institute of Radiology, Madras, for his generous help, in giving me all facilities in my endeavours in this direction.

Acute Pancreatitis*

LT-COL. B. G. MALLYA, M.D., F.R.C.S.E., I.M.S.

Civil Surgeon, Howrah

ACUTE pancreatitis may be due to bacterial infection or the action of pancreatic enzymes. In the majority of cases there is a history of gall stones. It may set in as a complication of infectious diseases such as small-pox, mumps and enteric fever. Catarrh of the duodenum may spread to the pancreas through the ducts.

Pathologically the gland is swollen and oedematous. Haemorrhages are common. These are found in the parenchyma of the gland. In the later stages gangrene sets in. Areas of fat nercosis are found in the mesentery and omentum. They appear as white spots and their presence definitely establishes the diagnosis of acute pancreatitis.

Symptoms.—The onset is sudden. There is a severe pain in the epigastrium and vomiting. The pain is constant and mostly in the upper abdomen. It may be referred to the back. The vomiting is incessant but never stercoraceous. The severe pain and vomiting suggest an "acute abdomen". The pulse rate is not so high nor the temperature raised as in other abdominal catastrophes. As the condition progresses the pulse becomes weak and rapid but the temperature remains subnormal. The abdomen is distended and tender but the rigidity of acute peritonitis is rarely found. Constipation is the rule but flatus is passed. The patient is restless and this helps in diagnosing this condition from perforation of a peptic ulcer. Auscultation of the abdomen does not reveal any sounds of intestinal movements. Loewi's midriatic test is positive in some cases. It is carried out by instilling five minims of adrenalin (1 in 1000) in one conjunctival sac and repeating the same in three minutes. The pupil dilates in half an hour in cases where the pancreatic function is deranged. There is no change in the size of the pupil if the function is normal.

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* Specially contributed to 'The Antiseptic'.

Grey Turner's sign may be present. This is bruising in the loin. Cullen's sign is likely to be seen in a few cases. This is a bruising round the umbilicus. Cyanosis generalized or confined to the abdomen may be present in some cases. The urine contains a large quantity of diastase. The diastatic index may be increased ten to twenty times.

Diagnosis.—Acute pancreatitis is such an urgent abdominal condition that in actual practice it is rarely diagnosed though in theory it is possible to do so. In several respects it resembles perforated peptic ulcers, acute intestinal obstruction, ruptured appendix or acute cholangitis. It may be diagnosed from perforated peptic ulcer by the presence of extreme restlessness in the former and the absolute quietness in the latter. In a case of perforation the patient is lying with his knees drawn up and remains perfectly quiet. In acute intestinal obstruction the vomiting is continuous and becomes foecal but the vomit of acute pancreatitis is bile stained but never foecal. Auscultation of the abdomen helps in the diagnosis as the abdomen is silent in pancreatitis and noisy in obstruction. X-ray examination of the abdomen reveals a crescent of free gas under the diaphragm in cases of perforated gastric or duodenal ulcer but not in pancreatitis. Acute pancreatitis generally occurs in males of the obese type who are subject to gall bladder infection. The signs and tests already enumerated should be taken into consideraton in arriving at a diagnosis. The high diastatic index of the urine is an outstanding diagnostic sign. The finding of areas of fat necrosis on opening the abdomen absolutely clinches the diagnosis.

Treatment.—Except in the very mild cases operation is the only treatment. The abdomen should be opened by a mid-line epigastric incision and the pancreas drained through the gastro-colic omentum. Retro-peritoneal drainage through the left loin is more advantageous than the abdominal route as far as drainage is concerned.

H. S. Hindu, male, aged 37, a burly fat person, was brought to the Howra General Hospital, with a history of severe pain in the upper abdomen and vomiting of twelve hours' duration. He gave a history of an attack of colic sometiine back. This was most probably an attack of biliary colic. Condition on admission:—Temperature 96°, pulse rate 120, feeble, respiration 30. body cold and clammy. Patient restless and in severe pain. He had an injection of morphine and atropine two hours after the commencement of the pain. This injection did not give him any relief. His abdomen was slightly distended. He was tentatively

diagnosed at night as a case either, of a perforated peptic ulcer or intestinal obstruction. He was advised an operation which he declined. His condition steadily grew worse. He did however agree to an operation next day when his abdomen was opened by a median epigastric incision. A fair quantity of blood-stained fluid escaped from the abdominal cavity. Exploration of the abdomen did not reveal anything abnormal when some areas of fat necrosis were found in the omentum. This led to an examination of the pancreas through the gostro-colic omentum. The pancreas was swollen and distended and by an incision over the most oedematous area, drainage was established. The general condition of the patient was far from satisfactory at the time of the operation. He was sent back to the ward and received saline and glucose by the intravenous drop method. In addition to this he received 200 c.c. of whole bood. He died 18 hours after the operation.

Discussion.—This case was not diagnosed as a case of acute pancreatitis though there were several points in favour of such a diagnosis. This patient was restless and tossing about which is not a feature of any perforation in the abdomen. There was no board like rigidity of the abdominal wall which excludes acute peritonitis and perforations. The abdomen was silent on auscultation, a point against acute intestinal obstruction. Acute pancreatitis was diagnosed on opening the abdomen and finding opaque white spots of fat necrosis. One wonders if an early operation would have saved the life of this patient, This is the first case of acute pancreatitis that I have come across and this made me contribute this note on this elusive disease.

Test for Latent Jaundice

The following test for latent jaundice is recommended by Brodribb and Cullinan (London) as being applicable to cases of cholelithiasis, catarrhal jaundice, pernicious anaemia, etc. The patient is placed in good daylight (artificial light is unsatisfactory) and a small area of skin is cleansed with spirit. One minim of a sterile solution containing 0.1 mg. of histamine is injected *intradermally* into this area. In about five minutes a circular weal, surrounded by an erythematous zone, develops at the site of injection and reaches its maximum in from ten to twenty minutes. If the result is positive the weal is definitely yellow when compared with the adjoining normal skin. If there is any doubt about the yellow colour the reaction is regarded as negative.—*The Prescriber*,

On the Red-Pigment-forming Meningococcus *

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Director, Serum Institute of India, (Biological Department, Union Drug Co., Ltd.)

A GROUP of yellow-pigment-forming Meningococcus was isolated by Sara E. Branham, at the Hygienic Laboratory Washington D. C., in the year 1928, which has since been known as Neisseria Flavescens n. Sp. She found 14 strains during an outbreak of epidemic of cerebrospinal meningitis in Chicago, out of a total of 155 strains received at the laboratory, which did not fall into any of the four serological types represented in the Gordon-Murray classification. These strains were all isolated from the spinal fluids of cases suffering from cerebrospinal meningitis and produced a golden yellow pigment and did not ferment any of the carbohydrates generally used in classifying this genus viz: Dextrose, Levulose, Maltose and Saccharose. These were gram-negative, biscuit-shaped cocci, occurring in flattened pairs. In short, a new meningococcus was described by her which was indistinguishable in form, from other members of the genus Neisseria but differing from it in the production of yellow pigment, in lack of fermentative reactions and in antigenic relationship (non-agglutinable by group sera). (*1*).

Von Lingelsheim's yellow cocci of this genus (Neisseria Flava) and Elser and Huntoon's chromogenic groups (Neisseria Subflava) found earlier than this (*2*), are separate classes by themselves and they ferment dextrose and maltose, though they differ in the type of pigment produced which were grey, or greenish yellow but never red. Moreover, these organisms (N. Flava and Sub Flava) were all isolated from Nasopharynx and not from C. S. F., hence they used to go by the general name of Pharyngococcus.

Long after Neisseria Flavescens was isolated in Chicago, the writer of this was successful in isolating another new group of meningococcus, in the Calcutta Epidemic Meningitis in 1934, which has been named as 6 A Group of meningococcus, which is *not* pigmented and does *not* ferment any of the above mentioned sugars. This group is changing its Biochemical characteristics, after 300 generations (*3*). This group of organisms has no doubt got a close relationship with Sera E. Branham's Neisseria Flavescens (*1*), except that it is not pigmented and that it grows very well in ordinary agar from the very beginning.

* Read before a meeting of the Biochemical Society of India on the 7th July, 1936 and sent to the Antiseptic for publication.

During the last four years of my study of the cerebrospinal fluid, I have come across an altogether different type of meningococcus which has the capacity of producing red pigments. As I have not found red-pigment-forming meningococcus described in any literature, I have thought it fit to present before the Biochemical Society, a preliminary report on it, this afternoon.

Strain No. 184 has been isolated in the middle of April 1936 from spinal fluid of a case suffering from cerebrospinal meningitis. The history of the case is as follows:—The case was admitted on the 11th April after development of meningeal symptoms. 6 S. F. was sent to different laboratories with the same findings *i. e.*, growth of meningococcus. The case was treated with antimeningococcus serum, and took a chronic turn, followed by recovery after one month and five days The strain isolated from this case did not grow on ordinary agar-but required either serum or blood for its growth in its primary culture (this is unlike 6 A Group of meningococcus noted above). It has now been trained to grow in ordinary agar as well. When first isolated, it was found to be, under the microscope mostly tetrads, not definitely gram-negative—but on further sub-culture it has slowly and gradually turned out into a gram-negative biscuit-shaped diplococcus, occurring in flattened pairs. The size of the cocci is also gradually getting smaller in comparison with that of the primary culture. The peculiarity of this strain is that from the very beginning, we could not detect any red pigment—but the colour developed after a few generations (7 to 10). The organism is now producing red pigment within 24 hours of its growth. When first isolated it was found to give positive sugar reactions with Dextrose and Maltose but now it is giving sugar reactions very slightly positive bordering on negative. This pigment is insoluble in water—but soluble in alcohol, ether and chloroform.

The question of the presence of lipochromes in certain bacteria was presented by Vera Reader (1925) in a very lucid way (*4*). Zopf (1889) has also published a series of papers in which he has described "Chromolipoids" in eight species of bacteria. In one of these only (Sphoerotilus Roseus) he found, along with a yellow water-soluble pigment, a red alcohol-soluble one, the latter showing the absorption bands of carotene. Steenbock and Cross (1919), and Rosenheim and Drummond (1920) have ascribed a

more or less general association of Vitamin A with lipochromes in the tissues of higher plants exposed to the light. These and other observations of authorities in the line, have suggested the advisibility of making an examination of the coloured organism for the presence of Vitamin A.

Rosenheim & Drummond's delicate colour reaction for Vitamin A was carried out by adding 1 c.c. of arsenic chloride to 5 drops of the alcoholic solution of this pigment and shaking the test tube at once. A faint blue solution was obtained which gradually faded away. The absorption spectrum of the substance was examined. A definite absorption band near about 334$\mu\mu$ was obtained—but it was not a continuous one. Spectroscopically therefore it appears to be something different from carotene because alcoholic solutions of carotene show two absorption bands 492-497 $\mu\mu$ (covering the F. line) and 456-442 $\mu\mu$ (between the F. & G. lines).

The cultures of this organism were grown on loventhal. The growth was scraped off the surface after 48 hours' incubation, ground with anhydrous sodium sulphate and boiled with absolute alcohol for 5 minutes. Practically the whole of the pigment was thus extracted. This pigment is free from iron. Colour tests were performed with conc. H_2SO_4 and HNO_3 and greenish blue colour was obtained.

The following are the results of experiments carried out to determine the biochemical characteristics of this organism as compared with others of this genus :—

	6 A Group of Meningococcus (300 generations old.)	6 A Group of Meningococcus (new)	Meningococcus (standard)	Strain No. 184.
Indol Reaction ...	−	−	−	±
M. R. ...	+	−	±	−
V. P. ...	+	−	−	−
Nitrate Reaction ...	+	−	−	−
Ammonia ...	−	−	−	−
Methylene blue Reductase ...	+	−	+	−
Catalase ...	−	+	+	+

From the little that I could study of this organism, I am of opinion that it is associated more closely with 6 A group than with either Neisseria Flavescens or with standard Meningococcus because, the lytic principles (*i.e.* bacteriophage) I could isolate from the C. S. F. of a different case of meningitis, (from which a strain belonging to the 6 A group of meningococcus was isolated),

could lyse not only this particular strain No. 184 but almost all other strains of 6 A group but it has not yet been able to act upon the standard strains of meningococcus.*

Though premature, I take this opportunity of announcing this afternoon the first isolation of Meningococcus bacteriophage in my laboratory, the Serum Institute of India, from a case of cerebrospinal meningitis and admitted in a Calcutta Hospital. Perhaps this will mark an epoch in the history of the treatment of meningococcus meningitis by way of proper intrathecal application as Dysentery Phage has done in the case of bacillary dysentery. A report on meningococcus bacteriophage will shortly be published.

In conclusion, I acknowledge with thanks the assistance rendered by my colleagues, in particular Dr. K. P. Ganguli, Mr. S. K. Das Gupta, M.Sc., and Dr. K. K. Guha in collecting materials and working in the biochemical and the bacteriophage lines with me.

Further study of the chemistry of the pigment has kindly been taken up by Dr. P. K. Basu, D. Sc., and Mr. N. C. Guha, M. Sc., of the University College of Science Calcutta, and my best thanks are due to them.

The name Neisseria Rubrefaciens is suggested for this strain.

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2. *Bergy, D. H.—Manual of Determinative Bacteriology p. 71.*
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Sodium Citrate as a Spirochaeticide

Leadingham (Atlanta, Ga.) reports the accidental discovery that a drop of 2 per cent. sodium citrate solution on a slide containing the spirochaetes of Vincent's angina caused the organisms to cease movement with apparent eventual dissolution. Repeated experiments gave the same result. Later, the same solution was applied to the ulcer from which the specimen had been taken, and in ten minutes no organisms were found. They did not reappear on subsequent days and the patient was dismissed. It is suggested that the drug might find a place in the treatment of spirochaetal infections.—*The Prescriber.*

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* *Subsequent to this report, Meningococcus Bacteriophage, after repeated passages, has now been found to lyse standard strains of Meningococcus as well. The Clinical aspect of the Meningococcus Bacteriophage is under study.*

Hippocrates and His Teachings*

By

CAPTAIN P. S. GUPTE, M.B., B.S.,

Nasik.

LIVES of great men are always inspiring. In the midst of our daily perplexities and in the present stress of competition, it is really a relief to pause and review their lives which refresh our minds, invigorate us and create higher thought in us. They are beacons on the life's main to guide us to the path of glory and eternal truth. The study of the history of the Medical Science is very instructive and gives us a knowledge of how great men contributed to its growth, what difficulties they had to surmount and what inspired them to carry on their work even in discouraging circumstances. It will be a fitting tribute to learn about the life of Hippocrates, the 'father of the Medical Science'.

Wherein lies the greatness of Hippocrates? Why is he revered so much even after a lapse of so many centuries? It is admitted on all hands that he laid the foundation of the present Medical Science, the edifice of which since then is being raised by a succession of men who are really the 'flower of civilisation'. His influence is even now felt and will continue to act throughout the ages to come. He is the Muhammad of the Medical Science whose principles of facts and ethics nobody can change. What Socrates did for Philosophy, Hippocrates did for Medical Science. It was he who first emancipated medicine from religion, mysticism and superstition which must have been rife when he first laid down his principle of rational thought, observation, precision and facts. He continues to hold our admiration by the spirit of his teachings. From his writings we know that he had a passionate love of the medical art with which he gave a tremendous impetus to search for Truth in the medical field.

" Undue respect for the opinions of authorities, conventions, and a general sense of the common people are obstacles to progress of Knowledge. Do away with these and mysteries of nature are solved like an 'open sesame method.' Hippocrates had the boldness to fling away these impediments to true knowledge and insisted on observation and facts by bedside which guided his reason and commonsense. Every phenomenon in life was to be explained not by an abstract speculation but by collecting facts with exactness and coordinating them. This logical process

* Specially contributed to the Antiseptic.

required labour, patience and acute observation which had developed in him to a remarkable extent.

He was born in the island of Cos in the Aegian Sea, near Asia Minor, in the latter part of the fifth century B.C. (460 B. C.) when Greek culture was at the pinnacle of its glory. Plato was his contemporary and the philosophy of Socrates must have influenced him a good deal in his career. He lived a long and useful life. His father was a physician and belonged to an Aesculpaedian sect which is connected with Aesculapius the physician, hero of the Trojan War in the Iliad.

What we learn about his teachings is drawn from the Hippocratic collections–a mass of writings done by Hippocrates and his disciples over a period of a century or two. It is very difficult to sift what material was written by Hippocrates himself. But one thing is very noticeable throughout these writings for which his name has become immortal – *i. e.* he would not allow superstition to play any part in the medical art. He made science and reason the warp and woof of this art. Epilepsy was known in those days by the name of 'Sacred Disease'. In describing that disease, he says:—' It (Epilepsy) is not, in my opinion, any more divine or more sacred than other diseases, but has a natural cause and its supposed divine origin is due to Men's inexperience'. To declare such an opinion at a time when belief in spirits and ghosts was the order of the day, shows what an amount of confidence he had in his teachings and how clearly he grasped what he observed.

A few of his many useful aphorisms are given below to show his vast experience and fruitful reasoning. They cannot be improved even now in these days of paraphernalia of laboratory apparatus :–

(1) When sleep puts an end to delirium it is a good sign.

(2) Spontaneous weariness indicates disease.

(3) Pains and fevers occur when pus is forming rather than when it has been formed.

(4) If Diarrhoea attacks consumptive patient, it is a fatal symptom.

A high mark is reached when we come to his ethics. His well-known Hippocratic oath is even now taken by medical graduates in some Universities. He enjoins his disciples not to divulge anything about his patient which they come to know in the course of their profession or in the intercourse with men. ' Physicians who

meet in consultation must not quarrel or jeer at each other. They should not put on luxurious headgear and elaborate perfume' – a sound advice to new entrants to the temple of Medical Science.

Before closing this article, I would suggest that medical students be made acquainted with lives of great medical men to inspire them with higher objects in the humane work of medical practice. For Plato has well said, 'It may be, in short, that the possession of all science, if unaccompanied by knowledge of the best, will, more often than not, injure the possessor.'

Extra Systloe*

BY

T. P. TIWARI, L.M.P.,

Assistant Medical Officer, Dhamtari, C.P.

MUSCULAR tissue of the heart is endowed with an inherent property of creating and conducting an impulse of contraction. These contractions occur at regular intervals and under normal conditions originate at the sino-atrial node near the mouth of superior vena cava. They are thence conducted along the muscle fibres to the auricles and are eventually conveyed to ventricles along the atrioventricular bundle of His. Such contractions may however originate under certain abnormal conditions from places other than the sino-atrial node in the heart and extra systole is a term employed to indicate a beat which arises in response to such a stimulus created anywhere in the auricles or ventricles independent of the normal stimulus of the sino-atrial node. This naturally results in an irregularity revealed by an interruption of the cardiac rhythm by premature beats. Amongst all the types of arrhythmias, this type is by far the commonest.

Looking for the causes of this condition, it is not unusual to find it associated with unhealthy myocardium. I have thus seen it developing in a man after influenza during the course of which there was evidence of a mild form of myocarditis. Diphtheria and many other infectious diseases which not uncommonly adversely affect the heart may similarly leave behind this condition as a monument of their outrage. Extra systole is however not infrequently met with in persons without the least evidence of a myocardial disease. Such cases are generally due to either a septic

* Specially contributed to the Antiseptic,

focus somewhere in the body or to dyspepsia or over-indulgence in tea or tobacco.

Signs and symptoms.—When the ventricles contract in response to the abnormal stimulus, the subsequent normal stimulus of the sino-atrial node occurs during the refractory period and the ventricles therefore fail to respond to it and miss a contraction. They only contract again when the next normal stimulus falls due. The diastolic period is thus considerably prolonged. The condition can be recognised by auscultation when one would hear the normal rhythm of the heart being suddenly interrupted by a less intense first and second sound occurring much too soon and followed by a long pause. Such extra systolic contractions are however prone to be weaker and it sometimes happens that they are unable to open the semilunar valves. In such cases the normal cardiac rhythm is disturbed by only one single sound followed by a long pause. Condition of the pulse varies according to whether the semilunar valves are opened or not by the extra systolic contraction. If they are opened, a smaller wave is felt at the wrist earlier than expected and followed by a long pause. If they are not opened, a beat is missed altogether. It is not uncommon to see these extra systoles occurring at regular intervals, say after every two or three normal beats. They are also not always constant. They may appear for a while and then remain absent for hours together. Subjective feelings in this condition may sometimes be altogether none but since the systole following the long pause takes place almost always with a greater force than usual, it is felt by the patients in most cases as a sudden thump in the chest. This feeling is also accompanied by a peculiar sensation of something coming suddenly in the throat.

Differential Diagnosis.—The only condition with which the missing of pulse beats in extra systole can be confused is partial heart block. Diagnosis can however always be made if both the heart and pulse are examined at one and the same time. In extra systole sounds caused by the premature beats will always be made out interrupting the normal rhythm and the number of heart beats will sometimes be more than the number of pulse beats. In partial heart block no premature sounds will be heard There will be an occasional missing of a complete cardiac cycle and the number of heart beats will always be the same as the number of pulse beats.

Treatment.—Extra systole in large majority of cases is due to extra cardiac reasons like dyspepsia, septic focus somewhere in the body or excessive indulgence in tea and tobacco. Treatment

in such cases resolves into removal of the cause which in most cases often brings about a cure. If, however, the trouble persists and continues to give mental embarrassment to the patient, drugs have got to be taken recourse to and a very good drug for the purpose is quinidine sulph. It is administered in 3-6 grain doses in capsules three times a day for a few days. It is gradually reduced as improvement occurs to two doses a day, then one dose a day and then discontinued altogether. It is desirable to test the idiosyncrasy of the patient by giving a small dose in the beginning. Acceleration of the heart's action brought about by administration of strychnine in suitable doses for some time has also been known to give relief in many cases.

In the event of extra systole being the result of a myocardial disease suitable treatment for the latter should be adopted. Regulated diet and exercise together with a care-free life should be insisted upon. Specific treatment in the shape of Iodides and Mercury, in the event of a syphilitic history, should be had recourse to. Drugs of the 914 group are likely to prove injurious and are better avoided. With a view to nourish and build the diseased heart, vitaminised glucose and other vitamin preparations can be advantageously made use of. I have used Glucose D and Ferradol in some of my cases and have been satisfied with the results.

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Discharging Ears Treated by the Iodine Powder Method

R. H. Bettington, (M. J. Australia, 1 : 747, June 15 1935,) reports excellent results in the treatment of discharging ears with a powder consisting of iodine (a 0.75 per cent solution) and boric acid (a 99.25 per cent solution). The air is irrigated and dried and the powder blown in. Both acutely and chronically discharging ears respond well to this method of treatment.—*A. J. D. C.*

Treatment of Wounds*

BY

S. K. BOSE, M.B,

P. O. Balangir, Via-Sambalpore. B. N. R.

WE have marked a tremendous change, of course with various opinions for the treatment of wounds at the present time. Now practically we are in the midst of such a period that in future will replace the idea of antiseptic dressings and depend more on the help we obtain from Nature provided she is allowed to do her work properly. If such an idea be kept in mind during the treatment of wounds we will in many cases avoid dangerous complications that sometimes come on our way and the cause of which can be pointed out to be our more energetic treatment. Judicious treatment cannot spare the help of nature. For the present we cannot have a single definite principle for the treatment of all wounds and they should be judged by their individual character.

From the practical point of view, wounds should be divided into two main heads namely those produced as a result of surgical operation and accidental wounds which include all others. Now in the first group we find that a good amount of precaution is generally taken in order to avoid bacterial invasion, hence the consequence is naturally better than the other group. Even in the first group we find the cases which for some reason or other had to be handled frequently require more time to heal than the cases which are less disturbed: for an everyday example of this, I may add the case of an ordinary abscess. If they are properly opened and then covered up with sterile gauze cotton and bandage taking the only precaution that the incised margins do not appose too early and the first change of dressing is done after 24 hours with subsequent dressings every third day, the result thus obtained is much better than the cases where they are handled more frequently or treated vigorously with different types of antiseptic dressings. Application of strong antiseptics inside an abscess cavity, and that too frequently made, has been proved to be more detrimental to the condition. Absolute rest to the part is essential. For the second group, that is, cases of accidental wounds, where we generally expect bacterial invasion, the same principle of treatment, modified according to the individual necessity, produces good result. Though it is too early to say whether a septic wound should be treated for its local condition with

* Specially contributed to 'The Antiseptic'

aseptic methods only, yet, it has now been proved that for these cases proper aseptic methods of treatment with measures for the improvement of the general condition of the patient produce a speedy cure. As an example of the above statement, I should like to mention the following case :—

One Hindu male, aged 28 years, was admitted on 23-7-36, in the State Hospital, for extensive injury caused by bear-bite. His face was completely disfigured and the right arm was also in a similar condition ; injuries of a minor degree were seen over other parts of the body. The patient was admitted in a very low condition. Extensive suppuration was noted over the whole face and the right arm. Patient was cleaned with normal saline and bandaged with sterile gauze. The dressings were changed every 24 hours. This continued for six days and after that, with the idea of rapidly improving the condition, iodoform gauze was used. The ulcers, instead of improving, showed increased amount of discharge with much discomfort to the patient ; iodoform gauze was then discontinued and the sterile dressing was again continued. The dressings from that time were changed every 48 hours. The result was that the patient thereafter had a quick and uneventful recovery. I could add here a number of other cases which are daily being cured with this simple method of treatment but as they would be unnecessary repetitions, I refrain from doing so.

Wounds with extensive suppuration, after being properly cleaned, should be given dressings twice daily with simple sterile gauze and cotton for the first three days, followed by a week of dressing once daily and subsequently it should be dressed every 48 hours, or even longer periods of interval may be given. Complete rest in bed is certainly an adjuvant for the cure of these cases and wherever possible the parts should be properly immobilized with correct splintage. Proper attention should be paid for the diet of the patient specially when he is strictly confined to bed. Chronic ulcers improve a good deal if they are treated with exposures to Ultra violet rays—half a minute's exposure preceded by a fifteen minutes' exposure to Infra-red rays. Particular care should be taken here in order to avoid overdosage of Ultra-violet rays. In cases of overdosage serious consequences may arise, and it will not be out of place to mention that whenever such overdosage is suspected it is better to expose again to Infra-red rays for about ten or fifteen minutes. Such ray treatment is of course possible in the hospitals only where they are generally available free for the use of general public ; otherwise, it will be very expensive for the patient. Such a simple treatment, if followed properly, will not

only make the patient fit within a short period but will also be of great help from economic point of view specially in hospitals where a large number of patients are to be treated within a limited amount of funds. Lastly I should add that the cases treated with this simple sterile dressings, in the Patna State Hospital, did not receive any injection of either serum or vaccine either as curative or preventive measure and no untoward results have been noted uptill now.

Rest and bandage is the treatment recommended by Robb for cellulitis, especially of the limbs, which generally gives immediate relief to the patient, thus helping him to resume his work more quickly. Treatment with dyes does not help much in the highly infected cases but certainly it is of great use in promoting the growth of the skin where the wound is otherwise healthy. There are other forms of treatment such as surgical maggots, the result of which is still to be seen. Moreover it is certainly a difficult task to induce a patient to undergo such sort of treatment. Cod-liver oil in the treatment of wounds has been recommended by Loehr for fresh injuries; it is doubtful whether it has any effect on the highly contaminated wounds. Cod-liver oil per mouth helps to improve the general condition of the patient when he is confined to bed for his injuries, especially when combined with general irradiation of the whole body with Ultra-violet rays, but the latter must be used with great caution.

Conclusion.—Unnecessary disturbance of the wounds or application of strong antiseptics produces great harm to the local condition rather than doing any good. They should generally be dressed with simple sterile dressings and the changing of dressings should not be too frequently done excepting only in the early stages. Proper dieting with addition of Cod-liver oil and absolute rest in bed is indicated This will not only bring about speedy cure for the patient of his bodily ailments but will enable him to resume his normal duties earlier than by other methods where more energetic treatments are employed ; further this simple method of treatment will be able to avoid dangerous complications that sometimes come in our way as a result of treatment with strong antiseptics.

My thanks to Dr. P. P. John, Chief Medical Officer, Patna State, for allowing me to use the records of his hospital cases.

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Some Observations on the Prevalence and Treatment of Malaria*

In Terai District of Bengal with Notes on Blackwater Fever

BY

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General Considerations

THE tract of land lying on the foot of the Himalayas and spreading over the north border of Jalpaiguri district and southern border of Darjeeling district in Bengal is known as Terai. The major part of this land is plain and occupied by villages with adjoining paddy and jute cultivations, tea plantations and virgin forests consisting mainly of sal (*Shorea robusta*) trees. From the northern border rises the great Himalaya and this part of the country is known to be one of the most unhealthy tracts of Bengal where malaria and kala-azar reign supreme over all other diseases. The spleen index amongst children between 2 and 12 years of age varies between 75 to 80 per cent and parasitic index often exceeds 60 per cent.

The land affords ideal breeding places for anophelines. There are two hill streams, Mahananda and Teesta, flowing through which are excellent sources of breeding all the year. During the monsoon months, small hill streams, which dry up in winter are in full flow and drains, swamps, burrow pits and collection of water in paddy fields which are scattered all over the district, turn into excellent breeding areas. The annual rainfall amounts to about 130 inches and diurnal temperature varies between 80° to 90° F. in summer months.

So far as the writer could collect information, the anopheline population consists of *A. hyrcanus*, *A. vagus*, *A. barbirostris*, *A. aconitus*, *A. stiphensii*, *A. philippinensis*, *A. maculatus*, *A. culicifacis*, *A. minimus*. No dissection of infected anopheles has been carried out to determine the particular transmitting species, but on the analogy of similar climatic and topographical conditions prevailing in an adjacent land Duars, where extensive malaria survey has been carried under auspices of some of the tea companies, we can assume that *A. Philippinensis*, *A. culicifacis*,

* Specially contributed to 'The Antiseptic'.

A. maculatus and A. minimus may be the potential carriers in this part of the country as well.

Malaria

Almost all varieties of clinical malaria that have been described in treatises on tropical diseases are encountered in this area. The type of infection in average percentage may be mentioned as follows:—

P. falciparum	...	77 per cent.
P. vivax	...	16 „ „
P. malarae	...	1 „ „
Mixed infection	...	6 „ „

As the subtertian infection manifests the very variable clinical signs, we will discuss first the main clinical types encountered in every day practice here. Sometimes the symptoms are of the gravest character and present severe diagnostic difficulties even leading the physician into gross error. In out-lying dispensaries no microscopic examinations are possible and even in towns where every facility for blood examination exists, sometimes the dangerous symptoms declare themselves in such hurry demanding institution of immediate treatment to save the patient's life, that no examination of blood is possible before commencement of treatment.

All regularities and all irregularities in temperature may be met with according to the presence of different swarms of parasites in blood,—the double rise, the daily quotidian rise or a remittant type of fever continuing for a specific period of time, which is often mistaken for enteric fever. The malignant tertian malaria may appear in any guise and simulate many different diseases and in the following columns the writer will endeavour to describe his personal observations with specific illustrations wherever necessary.

A reproduction from Stitt (1929) of the explanations given for the perniciousness of the symptoms may be of interest here. These are:—

(1) "The very large number of red cells infected and destroyed by the malaria parasites".

(2) "Out-put at the time of sporalation, of a large amount of materials in the blood stream".

(3) "Plugging of the capillaries of important internal organs by adult parasites" 'The cerebral symptoms are due to blocking of the capillaries of the different nerve centres in the brain' (Manson).

Clinical Varieties of Pernicious Attacks

1. *Hyperpyrexia.* — Usually the temperature rises up to 105° F. or 105·5° F. but the writer has treated two cases having a rise of 107° F. without fatal result. The temperature can be controlled by cold sponging and application of cold to the head.

2. *Comatose.*—The patient may at first become delirious gradually sinking into coma. Temperature may not be very high, even 101° F. or 102° F. The prognosis of such cases are not very bad if treatment can be instituted early. It is equally common in adults and children. The delirium or coma may start simultaneously with fever or may supervene after initial fever for a day or two. The following cases are interesting:

Case I. Mr. B. K. S., a Local Board Overseer, aged 40, residing about 12 miles from town was getting fever for three days, with daily intermission in the morning. Temperature did not rise above 102° F. and he took three atebrin tablets on the third day. At about 10 o'clock at night his servant found him lying unconscious in the bed. He cycled to the town to call a doctor. The medical aid arrived at the spot at 1 A.M. when he was found lying listless with shallow respiration, pulse imperceptible at the wrist and temperature, 103°F. He was immediately given 10 grains of quinine intravenously, 25 c.c. of glucose solution intravenously and normal saline with glucose per rectum. Next morning, he was still unconscious, temperature 101° F. was swallowing liquid by mouth. A senior doctor was called in for consultation. He was given 0.3 grm. atebrin musonat parenterally, glucose solution repeated intravenously and glucose water given by mouth ad lib. He regained consciousness next morning after 32 hours of unconsciousness, when another 0.3 grm. of atebrin musonat was injected. Rest of the recovery was uneventful. Blood showed *P. falciparum* rings.

Case II. S. K. G., aged 26, a motor driver, got high fever in the evening with intense headache. Immediately he became wildly delirious, sometimes getting out of bed. On examination, he was found in the following condition: temperature 104° F., pulse rapid and full, eyes congested, speaking incoherently, spleen three fingers. He was given an injection of quinine bihydrochloride, ten grains and left for the night. Ice bag was applied on the head. Next morning, he was found to be comatose, temperature 102° F., pulse losing its volume but perceptible at wrist, right heart little dilated, patient, refusing to swallow any thing and getting diarrhoea off and on. He was given an injection of adrenalin immediately followed by quinine ten grains in the

muscle, and glucose solution 25 c.c. intravenously. Rectal saline in drop method was also enjoined. In the evening, the temperature rose to 104·5°F., general condition remaining the same. He was given another ten grains of quinine and one cubic centimeter of pituitrin intramuscularly, ice bag continued and cardiazol liquid by mouth. Next day, the mental condition became somewhat clear, often losing judgment. Patient swallowed liquid on request, pulse same, temperature 102° F., quinine ten grains injected, cardiazol and glucose by mouth. Diarrhoea continued althroughout. Next morning, temperature 101° F., mind clear, diarrhoea continued. Bismuth, quinine, glucose and cardiazol by mouth. Temperature came down to normal the next day but after two or three days he was attacked with lobar pneumonia. After a hard struggle with death, the patient recovered ultimately after four weeks.

These cases show how coma alone or delirium with coma comes on. Early administration of quinine or atebrin by intramuscular route is imperative in such cases.

3. *Convulsion.*—Convulsion is very common in children, sometimes persisting for hours together. It may start in before rise of temperature or it may set in simultaneously with fever or supervene when temperature reaches its height. It is a common cause of death in children and must be looked upon as a grave emergency. Application of cold on head, either drenching the head with cold water or putting ice bag, immediate clearing of bowels with glycerine enemata, immersion of the lower part of the body in warm water and inhalation of amyl nitrite often relieve the spasm. Quinine must be injected at the earliest opportunity.

4. *Simulating insanity.*—Cases showing signs of sudden insanity are sometimes seen with the onset of fever. Uptil now, the writer has come across three cases but usually such cases are not brought to the doctors as these are taken to be attacks of ghosts.

Case I. Ramawater, an up-country Brahmin, Railway-brakesman, suddenly got 'mad' and was running from the railway barracks, screaming, talking incoherently, often being furious to his attendants. Fortunately I was called in and found him to be suffering from fever, 102° F. Blood slides were taken and one injection of quinine and hyoscine hydrobromide was given at once. Next morning, he became quiet and rest of the recovery was uneventful. Films showed *P. falciparum* rings.

Case II. A Nepali hillman, brakesman, who arrived from Darjeeling by evening train, got fever in the train. When he arrived here, he became 'mad' and ran away from the platform.

Nobody took care of him that night and he was found lying unconscious in the local market-place next morning. He was brought to the hospital in a moribund condition and succumbed within a few hours.

Case III, was met with in Assam a few years ago. An elderly Oriya woman suddenly went 'mad' and was brought to the hospital for safe custody. The writer at first could not ascertain the cause of this sudden out-burst. On routine examination, temperature was found to be 99°F., and hence blood-films were examined which showed subtertian parasites. Temperature rose to 103° F. next evening when mental condition became clear.

5. *Simulating apoplexy.*—The patient, otherwise healthy, usually feels dizziness for a minute or two and suddenly loses consciousness followed by complete relaxation of extremities. Usually there is no temperature at the outset but fever usually follows after a few hours to a day. In some cases, the patient may have a primary fit, which may be transient and pass off quickly. The patient feels better for a few minutes to an hour and then gets another fit, whence the typical signs manifest themselves. Peripheral blood may or may not show malaria parasites. Blood pressure is usually normal or below and this is the criterion of diagnosis if malaria parasite is not found.

Case I. G. C. D. a Railway-Overseer, *aet* 45, suddenly got fainted while he was going from his office to his quarters. However he recovered quickly and was able to walk to his quarters which was about five minutes' way. He again fainted from which he never regained consciousness again. He was attended by three eminent doctors including the Chief Medical Officer and was found to be in the following condition :—Completely unconscious with complete relaxation of limbs, temperature 101° F. Pulse and respiration proportionate, pupils equal and little dilated, urine normal, blood sugar normal, blood pressure 130/85, no malaria parasites in peripheral blood. A diagnosis of cerebral type of malaria was made which was later confirmed by Colonel Thomas, I.M.S, Civil Surgeon of Darjeeling. The case proved fatal.

Cases of sudden loss of consciousness especially when not associated with immediate rise of temperature, often leads the physician astray and the following case is also interesting: —

Case II. A boy, aged 7, son of a Railway employee went to pass urine in the pucca drain near their quarters, where he fell down suddenly and became unconscious. A doctor, who came newly into the district was immediately called in, who took it to be a case of concussion of the brain. Later, two senior doctors of the town were called in who, in consultation, suggested cerebral malaria, but the former doctor disagreed on the ground of absence of fever. Blood films were taken but were found to be negative, yet quinine was injected. The temperature rose to 104.5° F. After about three hours, films taken again showed scanty *P. falciparum* rings. The fever continued for a few days, the boy regaining consciousness after 24 hours. The recovery was uneventful.

6. *Choleraiac form.*—The stools become suddenly loose, profuse and frequent, sometimes being typical ricewatery. Axillary temperature usually rises high but sometimes there is no fever, when true diagnosis is hard to establish. In some cases there is rapid cessation of choleraiac symptoms followed by rigor and rise of temperature. Early cases of acute bacillary dysentery especially Shiga infection may exhibit similar symptoms and may also cause considerable difficulty to arrive at a correct diagnosis.

Treatment consists of quinine or atebrin by injection and saline intravenously or subcutaneously according to the severity of the case. Glucose intravenous is always helpful.

Case of malignant tertian malaria simulating acute bacillary or amoebic dysentery, passing typical stools consisting of blood and mucus and associated with griping and tenesmus are sometimes met with. These cases are, as a rule, associated with high fever. These cases are more common amongst children and blood examination usually reveals malaria parasite. Acute nephritis of malarial origin is also seen amongst children and the writer has treated several such cases. The appearance of malaria in many, disguised, suggests once again the necessity of routine examination of blood in every case of admission in a tropical hospital. The physician must be alert for malaria in every case of unusual clinical picture or complicated clinical manifestations.

General Consideration of Treatment

CINCHONA ALKALOIDS.—It is a tradition among some practitioners and more so among the lay patients that administration of quinine should be delayed till defervescence takes place, but sometimes this practice proves to be dangerous owing to very severe infection with malignant tertian parasites and sometimes no such opportunity is at all available in some cases, who suffer from continuous high temperature for days together. Difficulty is that the patient rarely agrees to take quinine during height of temperature and the writer's practice is to commence quinine as soon as

there is remission of a degree or two. The usual daily dose given in Terai is 20 grains divided into three or four doses preceded by alkalis, as suggested by Knowles and Das Gupta (1931). Sinton (1930) recommends a standard course of 30 grains daily but so far as the writer's experience goes, very few of his patients in Terai are agreeable, to such big doses. Plasmochin, when suitable, is administered subsequent to quinine, 1/6 grain twice daily after meals for three or four days.

In out-door practice of the Railway dispensary, cinchona febrifuge is used in place of quinine and the results appear to be as good for any practical purpose. It is given in solution with suitable purgative when necessary.

In malignant tertian malaria, acid quinine hydrochloride is injected when prompt action is desired especially in cases of pernicious and algid types supplemented by peroral administration. From the literatures, it appears that intravenous injection is gradually becoming more popular but the writer intends to insert here a word of caution. Intravenous injections are attended with immediate danger in many instances owing to excessive liberation of toxins due to rapid destruction of parasites, which may cause sudden stoppage of the heart's action. The blood pressure suddenly falls down and there are cases on record where death has immediately ensued. In private practice, a physician necessarily hesitates to take such a risk and it is better to be cautious than to rashly push where it can be avoided. Besides, from his own experience and from discussion with other leading physicians of the locality, the writer has formed his conviction that even in moderately severe cases of pernicious or algid malaria, the intramuscular injection is as good as intravenous without the special risk associated with the latter.

ATEBRIN.—Since atebrin has been offered for treatment of malaria, it has been extensively tried all over the world and our readers are more or less acquainted with the enormous literature published from time to time. It has certain distinct advantages over cinchona alkaloids and they are :—

(1) Effective if administered in tablet forms,

(1) Short course of treatment,

(2) No neurotrophic symptoms like tinnitus, headache, deafness etc.,

(4) Can be given safely in pregnancy having no deleterious effect on gravid uterus, and

(5) Having no tendency to produce haemoglobinurea.

Atebrin has been found to be equally efficacious in all the three types of infections. (Bhattacharjee, 1936). Usually the clinical symptoms subside after exhibition of the drug for two or three days. No systematic study of relative value of atebrin and quinine has been carried out, but the writer's impression is that in controlling the clinical symptoms specially temperature, quinine acts rather more quickly than atebrin when given by mouth and this is in conformity with the observations of Bhattacharyya (1936) in Assam. Usually one course of fifteen tablets of 0.1 gram each, to be given in five days, effects a cure and in specially resistant cases, a second course may be necessary.

In heavily infected cases, the drug may be injected * intramuscularly or intravenously. The writer has no experience of intravenous injection of atebrin but the manufacturers state that intravenous injections do not offer special advantages so far as the speed action is concerned.

Intramuscular atebrin musonat has been extensively tried in the last Ceylon epidemic. Recent reports from Malaya (Vardy, 1935) speak highly of immediate clinical response achieved after intramuscular medication. The writer has used the same on pregnant women and some cases of cerebral malaria with encouraging results but his series of cases is too small to draw a final conclusion.

A Scheme of Treatment in Pernicious Malaria

When a patient shows signs of cerebral irritation he should be put to bed at once and cold, preferably ice bag, should be applied over the head and hot bottles to the legs. The patient should be given an injection of quinine, at least 10 grains either intravenously or intramuscularly to be repeated, twice or thrice daily till the patient is able to take the medication perorally. Or he may be given an injection of atebrin musonat to be repeated next morning. With a view to enhancing the action of quinine 0.5 to 1 c.c. of adrenalin chloride solution may be injected but adrenalin and quinine should not be combined together if given

* For parenteral use, special soluble powder (Atebrin Musonat) is available in ampoules of 0.1 gram. and 0.3 gram, For injection purpose 0.1 gram is dissolved in 3 c.c. and 0.3 gram. in 10 c.c. of sterile distilled water. The doses recommended are :—

For adult and children above 8 years—0.3 gram. atebrin per day.
„ children—4 to 8 years —0.2 gram. „ „ „
„ „ up to 4 years —0.1 gram. „ „ „

The daily dose is to be given in one single injection and repeated after 24 hours. Two injections complete the treatment. The injections are less painful than quinine as it is said to be non-irritating to the tissues—J. C. B.

intramuscularly as the former being a vaso-constrictor delays absorption of the latter. For cardiac weakness glucose solution 12½ to 25 per cent. 25 c.c. may be injected intravenously and repeated as often as necessary. Fluid should be given in plenty and if necessary through bowels in the form of normal saline with glucose at body temperature. Bowels should be kept open by saline aperient daily. For heart, cardiazol, digifortis, camphor in ether, adrenalin chloride may be useful. Alkalis with bromides should be given by mouth. In comatose cases, some recommend lumbar puncture for decompression. The percentage of cure is very high if the above treatment can be commenced early in the disease.

In bilious remittant, dysenteric and other forms of malaria, the same principle is to be followed and emergent symptoms as they arise are to be attended to. For repeated vomiting, fractional doses of calomel, washing of the stomach by warm alkaline drinks, fragments of ice to suck, diluted hydrocyanic acid and bismuth may be tried. For sleeplessness bromide in full doses, paraldehyde, chloretone and veramon may achieve good results. Morphia should better be avoided. In hyperpyrexia, cold pack and ice water enema quickly bring down the temperature.

TREATMENT OF MALARIA IN CHILDREN.—Much difficulty is experienced in treating children and infants owing to the very bitter taste of almost all anti-malaria drugs. Euquinine of course has always to be resorted to but the effect obtained is always doubtful. In fact, the writer doubts very much if euquinine has any schizonticidal power at all. Aristochin (Bayer) is tasteless but almost useless in clinical malaria.

RESUSCITATIVE TREATMENT.—During convalescence, small doses of quinine, iron and arsenic are useful and addition of small doses of plasmochin aids in the prevention of relapses. For chronically enlarged spleen, specially in adults, with fibrosis, no treatment proves to be efficacious and external application of ointments and injections of milk or iodine advocated by many, has proved futile at our hands. Only the recent enlargement is amenable to treatment.

Incidence of Relapses—Immunity and its Mechanisms

In a hyperendemic country like this, the repeated suffering from frequent relapses is a troublesome problem both to the physician and the patient ; it has a direct economic bearing as well, as the morbidity and mortality caused by malaria has a deep concern with employers of large labour forces like Railway, tea gardens, estates etc., Where reinfection or superinfection is a daily

occurrence, the term 'relapse' does not carry the meaning in its true sense and hence the modern clinicians and research workers are paying much of their attention to understand the mechanism of immunity and the way to induce the same. Several workers in India and abroad (Chopra and Mukerjee. 1936) have been engaged to study the problem with a view to eradicating the evil. The Malaria Commissions of the League of Nations have included in their reports amongst other things the question of immunity for which the readers may be referred to the Quarterly Bulletin of Health Organisation, Vol. II No. 2, June, 1933.

The observed facts are :—

(1) Frequent attacks of malaria specially in childhood immunizes an individual against malaria. According to Christophers (1924), this immunity is acquired during the first fifteen years of life. By repeated attacks, the adults can also acquire this tolerance to some extent

(2) This immunity is specific to the particular strains of parasites and immunity acquired in one locality may not protect the individual in another part of the country.

(3) Different geographical strains or species vary in their virulence. So an effective standard treatment in one locality may not prove to be appropriate in another country.

(4) By too intensive or too early treatment with quinine, the individual is prevented from acquiring the tolerance or immunity and becomes subject of frequent relapses, which are too troublesome and debilitating.

(5) This immunity or tolerance is caused by continuous stimulation of the defence mechanism by the plasmodia of a latent infection in patient's blood or by continued re-infection by the same strains of parasites.

In view of the above, Sinton (1935) summarizes the suggested principles of the treatment of malaria infections in the following few lines :—

(1) "In population of individuals in whom the chances of reinfection are comparatively slight, the treatment adopted should aim at a radical cure of the infection.

(2) "In population liable to constant infection and re-infection with multiple strains and species of parasites,

such a radical cure should not be attempted but the treatment should aim at the production of rapid clinical cure of attacks of the disease.

(3) "Under special condition, where it is advisable to reduce the malarial morbidity and inefficiency in any population to the lowest limits, for a relatively short period, clinical prophylaxis should be employed if financially sound."

PROPHYLAXIS.—According to the Commission's opinion, quinine is effective for prophylactic purpose and the correct plan is to take a daily dose of 6 grains. But the Commission states in the same report that quinine has little or no appreciable effect during incubation period or fever free-period or parasite-free period just before relapse. It has little or no action until a febrile attack is imminent or has already set in and even during first or second day of initial fever. In that, the recommendation of the Commission appears to be paradoxical. So far as the writer's experience goes, mass prophylactic measure has come to a failure in Assam tea gardens, where it was customary till a few years ago to administer daily doses of 10 grains of quinine in solution to the whole labour force during the malaria transmission season. Of course this measure may be useful to temporary residents who come to a malarious country for a short period of time. In a highly endemic locality like this, where occurrence of black-water fever is not a rarity, irregular use of quinine must at any rate be condemned.

TREATMENT OF RELAPSES.—Quinine plus plasmochin is the best form of treatment. At any rate, by giving quinine and plasmochin, a higher percentage of permanent cures are obtained than with quinine alone. Even if a permanent cure is not obtained, the interval between the attacks or recrudescences may be much prolonged. The manufacturers of atebrin claim that with atebrin the relapse rate is comparatively lower, but as no relative test has been carried out by the writer and as his impressions are not conclusive on that point, he refrains from making a comment.

Black-water Fever, Quinine and Malarial Haemoglobinurea

INCIDENCE AND EPIDEMIOLOGY.—So far as the writer's experience goes, black-water fever is more common in the submountainous malarious region than in plain country side. Cases are more often encountered in Terai and Duars in Bengal and sub-Himalayan plains in north Assam. Where subtertian infection is common and the local strains are virulent, it attacks the new comers as well as the old residents in equal proportion. Europeans are as

susceptible as Indians. Exposure to cold and chill, a lowered state of general health, over-exertion and fatigue are the exciting causes. Another important feature is that the cases are more often encountered in winter months, when there is a general decrease of malarial incidents.

Haemoglobinurea following very high rise of temperature and that following administration of quinine are more common than typical black-water fever, and several cases have been previously reported by me (Bhattacharjee, 1935). The cases of these two groups usually turn up favourably, but in true black-water fever, having typical black colour urine, the prognosis is always grave and extreme care in treatment and expert nursing are absolutely essential. Of course, if expert nursing and systematic treatment are instituted from the beginning, the mortality is not very high.

Cases once suffering from haemoglobinurea due to one or other of the above causes show special predilection for recurrence of the same under similar circumstances, and should be advised to leave the place for good but in a poor country like this, often the circumstances are such that the unfortunate sufferer is unable to leave his employment or properties even at the risk of his life. I have seen cases, who have suffered not less than three or four times from bloody urine and have ultimately succumbed to it.

Clinical Picture of a Typical Black-water Fever Case

Onset is sudden. Usually there is a sharp chill followed by severe rigor, headache, pain in the limbs and loins followed by rise of temperature, which may go up to 104° F. or 105° F. The patient may feel a strong desire for micturition and passes, to his surprise, dark red or black coloured urine. The temperature runs an irregular course, sometimes with daily remission. I have seen an European who had no initial fever. He suddenly passed typical deep coffee-coloured urine and then slowly there was rise of temperature. Blood may or may not show malignant tertian parasites. The writer had to attend one European patient, while in Assam, who used to have daily intermission of fever in the morning. Blood films, taken during fever, showed plenty of *P. falciparum* rings but those, taken during afebrile period, were always negative.

Colour of urine is due to haemoglobin in solution and not due to bile, though bile pigment may be present in urine. Urine in true black-water fever is very dark in colour and may even be black, but in ordinary haemoglobinurea or in that following hyperpyrexia or quinine administration, the colour is bright red.

Jaundice is as pathognomonic as haemoglobinurea and sets in early. In Black-water fever, it is usually very intense.

Nausea, bilious vomiting, sometimes bilious diarrhoea, hiccough, epigastric pain and distress are usual accompaniments. Urine is at first copious but may gradually diminish in amount. If the case turns for better, the urinary flow remains free and gradually passing through different paling shades, becomes once more clear.

The fever continues with daily intermission or without remission but may not rise so high as in first one or two days. The patient may suffer from liverache and loinache and there may be complete suppression of urine, in which case, the prognosis is very bad.

The pulse is at first rapid with tension but gradually loses its volume. There is enormous blood destruction resulting in profound anaemia. Death in our experience is more often due to anuria and consequent toxaemia though due to exhaustion and failure of heart is not rare.

Treatment

Patient should be put to bed at once, warmly clad and should not be moved at all. In the existing state of our knowledge, there is no drug in the pharmacopoea, which can prevent haemolysis in black-water and the aim of treatment should be to :—

(*a*) maintain flow of urine and dilute toxins in the blood,

(*b*) treat the specific cause if any, and

(*c*) maintain heart and circulation and to treat other emergent symptoms as they arise.

(a) Plenty of fluid in the form of barley water, lemon barley water (L. B. W.), whey, glucose water, plain boiled water, soda and lemonade must be enjoined from the beginning. Green cocoanut water is an excellent drink both as gastro-intestinal sedative and a bland diuretic and can be highly commended. If there is severe vomiting and the patient cannot retain sufficient liquid by mouth, rectal saline with 5 per cent. glucose and sodium bicarbonate should be administered. Alkalis must be given in plenty as sodium and potassium citrate and sodium bicarbonate to maintain alkalinity of blood and urine and to maintain flow of urine, which should be tested every time. If the urine tends to lessen in amount, 25 c.c. of 25 per cent. glucose solution should be injected intravenously without hesitation, which sometimes acts marvellously. No stimulant diuretic should be given,

Alkali and fluid form the sheet anchor in the treatment of black-water fever. If suppression of urine is imminent, small doses of sodium bicarbonate 10 grains in 25 c.c. of glucose solution may be injected intravenously supplemented by subcutaneous saline. Some advocate large doses of sodium bicarbonate intravenously in normal saline but it does not offer any advantage as it is liable to throw extra strain upon the circulatory apparatus and even cause alkalosis in blood (Ross, 1932). Fluid extract of Cassia Ceareana, in half to one drachm doses, given three or four times a day, also helps to clear the urine. It is also reported that fresh decoction of leaves of *Vitex pedanculari*s, a native herb of Assam is very efficacious in cases of black-water fever, but the writer has has no personal experience about it. Tepid sponging is also necessary.

(b) In the existing state of our knowledge, treatment for eradication of cause should be directed against malarial parasites. Quinine should not be given in active stage of the disease on any account as it has been seen to increase the haemoglobinurea in hundred per cent. of cases. If available 0.3 grm. of atebrin musonat must be given at once to be repeated after 24 hours. If atebrin is not ready at hand, it will be better to wait than to push quinine at once as several disastrous results have followed in several instances. In milder cases, atebrin may be given by mouth. If in any case, the use of quinine is imperative, it should be given after the first few days, when urine is free and almost clear. In that case, sufficient alkalis must be given in the beginning and when urine is alkaline, small doses, say two or three grains, may be combined with alkalis in an effervescing mixture and given once or twice daily and urine watched. If concentration of haemoglobin does not increase, the dose may be repeated or increased as necessary.

(c) To maintain heart and circulation, intravenous glucose and adrenalin are very useful. Pituitrin, cardiazol and one or other of digitalis preparations may be used when necessary. Pituitrin and adrenalin also act sometimes as indirect diuretics by enhancing the blood pressure. Caffein and caffein sodium benzoate are also advocated by some. In intravenous glucose and atebrin, we have obtained two excellent weapons, for want of which many lives had to be lost in the past.

Bilious vomiting and epigastric distress are two distressing symptoms. Fragments of ice, green cocoanut water and five to ten drops of adrenalin chloride in water given per mouth quickly check the vomiting. Hydrarg. subchloride in fractional doses,

$\frac{1}{6}$ to $\frac{1}{4}$ grain should be repeated several times, which is sometimes very useful. If vomiting still persists, stomach wash with alkaline water may be useful. A pint of warm alkaline water may be given as a wash. Bowels should be kept open daily by mild aperient such as sal hepatica or seidlitz powder. For progressive anaemia, transfusion of blood where possible may be of value. Calcium lactate or chloride is without any effect, so also haemostatic serum. Morphia should not be given. When the flow of wine is scanty, high rectal lavage with hot water is useful in inducing flow of urine. Dry cupping and hot fomentation over the renal regions may be resorted to when necessary.

Expert nursing and careful attendance to the patient are of prime importance. During convalescence massive doses of iron, arsenic and liver extract should be given. The mortality, by following the above scheme of treatment is, no doubt, very low but the writer invites the attention of the expert clinicians and requests them to report their valuable experiences through the columns of this Journal for the benefit of the general practitioners.

Summary

1. Terai is a sub-Himalayan tract of land lying in the northern border of Bengal, where malaria is hyperendemic.

2. Many different clinical manifestations of the malarial infections are met with here. Often cases with severe pernicious symptoms and occasionally cases of black-water fever are encountered with.

3. In the text of the paper, an endeavour has been made to discuss the important varieties, from a clinical point of view, with the writer's experience and treatment.

4. A resume of the recent researches on problems of immunity, relapses and clinical prophylaxis has also been incorporated.

5. A separate chapter has been devoted to black-water fever dealing with epidemiology, clinical phenomena and details of treatment.

Acknowledgment

My most sincere thanks are due to my chief, Dr. S. K. Biswas, Medical Officer, D. H. Railway, for his kind interest in this paper, and whose advice and guidance have been invaluable to me in the treatment of many complicated cases. I am further indebted to my fellow practitioners of the town, whose experience and advice have also been of use to me in writing out the paper.

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CASES AND COMMENTS

A Case of Abortion with Haemorrhage

BY

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A MOHAMMADAN woman, aged 26 years, mother of 3 children, was in the 6th month of her pregnancy. She suddenly started bleeding. Nothing abnormal in previous history, except that she had aborted in her last pregnancy also, in the 3rd month. No history of syphilis or habitual abortions on her mother's side. Children living and all healthy. Heart normal.

On June 30, after serving breakfast to her children and some guests, she began to bleed. Small in amount at first, and not attended to. After some hours, blood began to come out in gushes of about four ounces at intervals of 2 or 3 hours. This alarmed her and her husband ran to the Dispensary, about 1/4 mile away. As he could not give definite answer to my enquiries, I asked him to let me see her, but he was unwilling and pressed me for medicines, though I pointed it out to him that delay was dangerous, and that nothing could be done at the eleventh hour. I was constrained to order a mixture of Calcis Chloride gr. XV, with Tr. Opii m X, to be taken every 2 hours (4 doses). In the evening her husband again came, complaining that there was no improvement, the bleeding being as before, and in gushes every 2 or 3 hours. Telling him that it was now imperative to see the patient, I asked him to follow me.

External examination was only allowed and I found the size of the uterus to correspond to a six months pregnancy. The uterus was firm and on touching contracted, and foetal movements could be felt. Pulse quick, but otherwise the patient was cheerful and did not look any way prostrated, though she had lost so much blood. As no internal examination was allowed, a local Dhai (Chamain) was called in, who informed me that the cervix was not dilated. The discharges could not be examined having been all thrown away.

Treatment.—As it was not possible to send the patient to Head quarters, 30 miles off, and communications being cut off with the onset of the monsoon, I had to take the case in hand. I injected $\frac{1}{4}$ gr. of morphia and ordered perfect rest in the recumbent position, pointing out to the family, the danger of her being

allowed to move about and do her household duties in her present state. I also told them that she was not to be disturbed any more, as she would soon fall off to sleep. I came away, telling the husband to report in case of necessity.

Next morning I was informed that she had slept the whole night and there had been no bleeding. Unfortunately in spite of my warning, she went out to some distance to ease herself in the morning, as there is no latrine system in the village.

She took some refreshment as usual, but some three hours after this, she again started bleeding in gushes as before at intervals, but in greater quantity. Frightened at the sight of so much blood, the husband ran to me and called me in, I found the pulse all right and learnt from the Chamain that the os was still not dilated. I could not make out any labour pains. I injected Haemostatic serum (5 c.c.s) (B. C. P. W.) and prescribed a mixture of Ergot and Strychnine. A tent was introduced into the cervix, and the vagina was firmly plugged. I visited the patient again in the evening and found pains had set in though not strong and infrequent. There was no bleeding nor was the uterus increased in size. The membranes had ruptured, and some Liqr. Amnii had come out. Encouraging the patient that it would be all right, I left, telling them to report if need be, as before.

Early in the morning, I went to see the patient, but was informed that she had delivered a dead child about 4 A.M. in the night.

There was still some bleeding which was stopped by an injection of Pituitrin. A P. P. mixture was given. There was no further trouble, and she made a rapid recovery, though she had a discharge with a faint bad odour for some time.

Point of Interest.—Midwifery cases in areas so far away from Sadar Hospital cause much anxiety to the attending doctor, but he is compelled to take them on hand, though without any other help. No internal examination is allowed as a rule, and we have to do the best that can be done under the circumstances. Aseptic conditions are not always practicable, but it is astonishing to see that innate vitality can withstand.

Lexin in Snake Bite

BY.

M. M. CHAKRAVARTY, L.M.P.,

In-Charge Govt. Dispensary, P. O. Mushkipur Dist. Monghyr, Bihar.

Case 1. I was called out to the Local Bazar sometime ago to see a patient who was bitten in the early morning hours by a cobra. The patient was a strong man of about 25 years of age and had seen the snake which was hanging on his leg near the left ankle by the teeth pulled off. Unfortunately no tourniquet was applied and about 3 hours had elapsed since the bite. The 2 fang marks were distinct and serum was oozing from them. The man was in an advanced state of poisoning and could hardly stand on his legs or swallow anything. I gave him at once 40 c.c. of anti-venom intravenously and Lexin was given to inhale. I waited for 15 minutes but the condition did not improve in the least. Breathing became shallower and shallower and the pulse was becoming almost imperceptible. Artificial respiration was started and lexin was dropped (some 15 minims) into the nostrils. An injection was given of Liq. Adrenalin Chloride 1 c.c. into the heart and the pulse improved in about 5 minutes, only to become worse in about a quarter of an hour. Respiration too became shallow. Lexin, whenever dried up in the nostrils, was repeated. Slowly but steadily the man went from bad to worse and expired in my presence in about $2\frac{1}{2}$ to 3 hours.

Case 2. A girl servant, quite healthy and strong, aged about 10, was bitten by a Krait at about 4 a. m. some 25 days ago—and was brought to the dispensary at 6 a.m. but without a tourniquet being applied. The fang marks were distinct on the right great toe. Free incisions were given on the site of bite after applying a tourniquet tightly on the thigh. No teeth could be found and bleeding was encouraged by pouring hot water over the bite and massage. There is a popular belief that all sensations are diminished or absent near the site of snake bite—and I tested for the sensations. They were quite as they were on the other foot. I was further told by the attendants of the girl that the snake was hiding below a basket in a corner of the same room as the patient was bitten in. I ordered it to be killed and brought for my inspection. It was done and I found it to be a Krait measuring about $2\frac{1}{2}$ ft. from mouth to tail.

The bleeding was encouraged and continued upto about

$\frac{3}{4}$ ounces—the blood was venous and thick. Nothing extraordinary about it was found, nor was it expected. Pot permanganate was rubbed in the incised part. Lexin was given for inhalation almost simultaneously with the incisions and as a matter of fact from the conditions of the patient, I had doubts at the beginning if the snake could inject poison at all. The pulse and respiration were normal and if there was anything wrong about the child it was her fear about the dispensary. For one hour the bleeding was encouraged and Lexin inhaled. She was detained in the dispensary for observation. After about 2 hours she complained of a peculiar painful sensation at the pit of the stomach. I examined the heart and found it slower and the beats were about 50 per minute and the respiration was 10 per minute. The upper eyelids were drooping.

Unfortunately no anti-venom was present in the stock and I gave her a dose of stimulant containing spirit amm. aromat m. vii, spt. Etherus m. vii, spt chloroform m. x with aqua ad. oz. i, and it was swallowed with some difficulty—the patient was advised to be walking about. In half an hour the conditions became grave and the girl was paralysed altogether with a very very feeble pulse and respiration. In another half an hour she was almost dead. An injection of adrenaline $\frac{1}{2}$ c.c. in 1 c.c. of normal saline was given intravenously but without any avail. She expired while artificial respiration was being done. In this connection I may mention here that I have treated not less than 100 cases of snake bite in 22 years of my professional life and the method most successful is the application of tourniquet within 3 minutes of bite followed by free incisions and bleeding and application of pot. permang. crystals to the incised parts. Sometimes I inject Pot. Permang. Solution around the site of bite in 1/1000 (sterile distilled water.)

I have not had success, even apart from the two cases above mentioned—by the inhalation of Lexin. Intramuscular or intravenous injections of Lexin were never given by me.

P. S.—My experience with Lexin has been disappointing; and I shall be glad to hear from my colleagues who have found it to be successful in the treatment of snake bites, barring fallacies of course, as every snake is not poisonous and every poisonous biting is not sure to inject the poison. A poisonous or non-poisonous snake, by nature, bites generally when hurt or irritated. But time or opportunities at each bite may not be favourable for the injection of poison and in this way we may discount a large number of snake bite cases as innocent.

A Case of Acute Poliomyelitis

BY

RASAMAY BHATTA CHARYA, L.M.P., (ASSAM), D.T.M., (Cal.),

Bokpara Tea Estate Doom Dooma, Assam.

Linga's child (B) age 6 years, caste Parja, was admitted to the hospital on 26-4-33, with fever, cough, running from nose, semi-consciousness, spastic paraplegia of the right leg and twitchings of fingers of the right hand. All these symptoms came on acutely the previous night and the child was brought to the hospital the next morning. On physical examination knee jerk was found exaggerated, Babinski negative. Blood film showed no malarial parasites.

The patient was kept under segregation. A soap water enema was given and he was put on Bromide and Hexamin. In two days' time the affected muscles became flaccid. Superficial and deep reflexes were abolished and the knee-jerk lost. Fever subsided on the fifth day. The affected part was kept warm and care was taken to prevent over-stretching of the paralysed muscles. The patient remained in hospital for a fortnight but as no improvement was noticed, his parents absconded with him from the hospital. This case is reported because it is very rare in Tea Garden practice.

I am grateful to my chief Dr. W. F. Whaley, M.D., for his kind permission to publish this note.

TREATMENT OF THE UNDESCENDED TESTIS

E. D'Arcy McCrea, *Lancet*, 2:753 (Oct. 5), 1935. The sites of arrest in cases of undescended testis as usually described are: (1) the abdominal or supra-inguinal region, (2) the inguinal region and (3) the subinguinal region.

Maldescent predisposes to hernia, torsion, strangulation, trauma, tumor, hydrocele, inflammation and neurasthenia.

Four indicatoins for operation are: (1) nondescent of both testis; (2) the presence of symptoms (e. g., pain or neurasthenia); (3) inguinal or subinguinal testis. and (4) existence of a hernia.

In cases of bilateral cryptorchidism, operation should be performed during the third or fourth year, and in cases of unilateral cryptorchidism, any time after the third year.

Transposition through the scrotal septum is recommended as the routine operation. If it should prove impracticable, the two stage Keetley-Torek operation is advised.—*A. J. D. C.*

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EDITORIAL

Modern Anaesthesia

CONSIDERABLE progress has been made during the last few years in this field. New methods have been described which give greater safety to the patient when used for routine operations. New methods which permit new and difficult operations to be performed with reasonable safety as in Cranial, Thyroid and Thoracic Surgery, where formerly the mortality was extremely high, have been devised. Methods which reduce pre-operative apprehension and post-operative mortality have been suggested. It does not necessarily follow that these new methods are desirable. Experience alone will have to show whether they are as safe as the methods they supersede.

It is now generally agreed that, from the anaesthetic point of view, the less preparation the patient has, the better The stomach and rectum should be empty when anaesthesia is induced and the minimal amount of aperients should be used to ensure this result. A tranquil night is of great benefit. Glucose should be given the day before the operation and many think that a small dose of insulin given half an hour before operation is very useful in diminishing the toxic effects of lipoid soluble drugs such as chloroform and ether. With regard to the estimation of operative risk, there is no known formula which is reliable, and the anaesthetist must call upon his own skill and experience.

The majority of patients now wish to be spared as much apprehension as possible, before operation. Two techniques for

this purpose are in common use. In " Sedation ", the patient should come to the operating theatre either in a light sleep, or so sleepy that his apprehension is dulled or absent. This is the ideal method if local analgesia is to be employed. The usual drugs employed for this purpose are morphine or omnopon and scopolamine, or some barbiturate by mouth such as Nembutal, sodium amytal etc. In " Basal narcosis " the patient is profoundly unconscious, but usually exhibits reflex movements on stimulation. This method is useful for highly nervous patients. In children rectal paraldehyde in doses of 1 dram per stone of body weight in a 10% solution is safe and reliable. Avertin, given rectally in doses not exceeding .1 gm. per kilogramme of body weight, has no smell and is valuable in adults. If the intravenous route is preferred, sodium amytal, Nembutal or pernocton can be injected slowly until consciousness is lost. Sodium evipan has such a rapid effect that it can be used as an anaesthetic. The most reliable antidotes to inadvertent dosage with basal narcosis appear to be Coramine or Icoral given intramuscularly or even intravenously.

The number of general anaesthetics is so large that it is difficult to choose. The list can be arranged in a definite order of potency and consequent toxicity, beginning with nitrous oxide and continuing through ethylene, acetylene, ethyl chloride and ether to chloroform. Sodium Evipan must also be considered here.

Nitrous oxide is an inert gas extremely soluble in blood and so far as is known, exerts no toxic effects on the protoplasm. Given by the single dose method, it is quite adequate only for minor operations lasting for a few seconds and if given alternately with air, is useful for longer procedures and for dental extractions.

Ethylene is used in the same way and with the same apparatus as nitrous oxide. A slightly deeper anaesthesia is possible. Against these advantages must be placed the unpleasant smell of ethylene and its explosive properties when mixed with certain proportions of air and oxygen. Anaesthetists as a whole, regard its drawbacks as outweighing its merits. Acetylene has properties similar to Ethylene. Ethyl chloride is an extremely useful drug. The ' open ' method is preferable to the ' closed ' one, but if the latter is used a mouth prop should be inserted before the induction of anaesthesia in case of masseteric spasm. It is very popular for the induction of anaesthesia in children and when Nitrous oxide is not available.

Ether is now manufactured in a very pure state. A

' straight ' ether administration gives admirable anaesthesia, if an adequate dose of atropine has been previously administered. Ether however has a prejudicial effect on existing pulmonary disease and affects metabolism as well. It is therefore considered advisable to use just enough ether as an adjuvant to nitrous oxide and oxygen rather than to give it alone. Late ether convulsions are sometimes seen after deep and prolonged anæsthesia. The administration of a carbon-dioxide and oxygen mixture effects a cure. Chloroform, as practically everyone knows, affords a most perfect anæsthesia. It is however extremely toxic. Most of the ill-effects mentioned under ether occur in an accentuated form with chloroform. In addition, there is a risk of primary cardiac failure, which is held to be due to either vagal stimulation with immediate cardiac arrest or to ventricular fibrillation. Deaths from chloroform can also occur from secondary cardiac failure due to an overdose or remotely from hepatic atrophy. For these reasons chloroform is now rarely used alone.

Sodium Evipan has attracted much attention recently owing to its being the first relatively satisfactory intravenous anaesthetic. It is a rapidly acting barbiturate which must be freshly dissolved in distilled water, the final concentration being ten per cent. The fluid is injected at the rate of 1 c.c. in 15 seconds. Recently, the " continuous " method is being practised. Considerable difference of opinion exists as to the safety of sodium evipan. A large proportion of the fatalities are due to incorrect technique or using the method in unsuitable cases. Contra-indications are grave toxaemia, jaundice, and respiratory and cardiac embarrassment. The patients should always be properly prepared and all precautions, taken during the course of any other general anaesthetic, should be observed.

In the last few years three new agents have been given an extensive trial as general anaesthetic agents. They are Propylene, Cyclopropane, and Di-vinyl ether. The first gas has not proved satisfactory but the two latter compounds appear likely to achieve a permanent place in anaesthesia. Cyclopropane is an inflammable gas which is explosive with certain proportion of air and oxygen. It has a rather pungent but not unpleasant odour and possesses a rapid and powerful action. A mixture of 10 per cent cyclopropane in oxygen produces a light anaesthesia, while 15 per cent usually provides adequate muscular relaxation. Recovery is rapid without any after-effects. Di-vinyl ether is a clean colourless liquid and is more volatile than di-ethyl ether. The pure drug readily decomposes but a preparation known as Vinethane is said to be more

stable. The anaesthetic potency is about four times that of diethyl ether, there is little irritation of respiratory tract, relaxation is satisfactory and after-effects are rare.

Local analgesia has not made the great advance that was predicted for it some years ago. At the present time it is used chiefly for minor operations where the injection can be made into sterile tissues and for major operations in combination with gas and oxygen in order to minimise shock and capillary oozing and secure muscular relaxation without the use of lipoid soluble drugs such as chloroform and ether. The main methods now employed are by surface application or permeation and by infiltration of line of incision, blocking nerve endings at site of operation or of walls of analgesia, blocking nerves on their way to the operating area and by nerve blocking in which individual nerves are blocked at some point remote from the operation area. The drugs employed in local analgesia are few. Cocaine hydrochloride, the first local anaesthesia, is now hardly used except for surface application, on account of its toxicity. Novocaine is the most popular drug for infiltration and field blocking. Owing to its vaso-dilator effect, adrenalin in a final concentration of 1 in 400,000 is added. Novocaine however has little effect as a surface application. Percaine is tending to drive out cocaine as a surface anaesthetic and is used extensively in spinal blocking. It is effective in very high dilutions and has much more prolonged action than novocaine. Of the drugs recently introduced, Pantocaine, Neothesine and Diothane appear to show the most promise.

Spinal analgesia has been regularly used for nearly twenty years. But still perhaps there is no subject in which there exists such a profound disagreement as to its relative merits and demerits. Dr. Langton Hewer, in an admirable lecture delivered to the Dartford division of the B.M.A. and published in the '*Clinical Journal*' and from which the subject matter of this short note is drawn, gives his views in a very definite way. He thinks low spinal blocks limited to S, 3, 4, 5 can be used with almost absolute safety using 0.4 c.c. of a hyperboric solution of 10 per cent stovaine in saline, injected between L. 4 and 5 with the patient sitting up. This is of great use in perineal operations. With higher blocks the safety factor looms larger. Spinal blocks not higher than D. 4 or 5 are useful for major abdominal operations which are likely to be prolonged or cause excessive shock, or which require complete muscular relaxation or for patients very susceptible to pulmonary disease. Spinal blocking is also indicated in paralytic ileus. Spinal analgesia however should not be attempted on patients who are badly shocked or who have advanced myocardial degeneration or abnormally low blood pressure, any respiratory embarrassment, or any disease of the central nervous system or sepsis in the region of the proposed lumbar puncture. Extensive vertebral lesions such as curvature or arthritis or blood stream infections are also considered contra-indications.

This paper would not be complete without a discussion of anaesthetic sequelae. Nausea and vomiting are uncommon after gas and oxygen and after local analgesia. They can be diminished by using minimal quantities of lipoid soluble drugs, by the use of basal narcotics and by pre-operative insulin and glucose, followed by post-operative insulin. Many think that a short administration of carbon dioxide and oxygen diminishes vomiting if much ether has been used. It must not be forgotten that post-operative vomiting is frequently due to swallowed blood as after nose and throat operations and to manipulation of abdominal viscera.

Pulmonary complications remain one of the great problems of major surgery. Prophylactic measures include the preliminary treatment of dental and tonsillar sepsis; the postponement of non-urgent operations on persons recently suffering from colds; caution in the exhibition of powerful narcotics especially morphia; administration of an adequate amount of fluids before and after operations; the use of minimal quantities of ether or if ether must be used in large quantities, the giving of an adequate dose of atropine combined with subsequuent de-etherization with carbon dioxide and oxygen. It is clear that the anaesthetic technique (whether general, local or combined) does not greatly affect their incidence, provided the method is carried out skilfully and is well adopted to the type of patient and operation.

GLEANINGS FROM MEDICAL PRESS

Medicine and Therapeutics

The Treatment of Tetany Following Thyroidectomy by the Transplantation of Boiled Bone According to Oppel's Method, by M. M. Lewine, Lyon Chir. (1934) 21 : 164.

Tetany, as a complication following thyroidectomy, occurs in from 3 to 5 per cent of patients, which figures mount to from 20 to 30 per cent when the gland is totally removed. At the Mayo Clinic it was observed only once in 3,203 patients. However,

tetany occasionally follows operations remote from the parathyroids, like Cesarean section Knowing tetany to be secondary to hypoparathyroidism, the transplantation of parathyroid tissue or the administration of parathyroid extracts has been tried. The immediate results were favorable in a few cases, but they did not last long. Working on the theory of an existing relationship between bone formation and the function of parathyroid glands, Oppel tried to raise the calcium content in the body by subcutaneous bone transplants either from a cadaver or boiled beef bone. The rise in calcium does not begin to be apparent until after five or seven days and lasts for some months only but does not return to the usual low level. On account of the delayed absorption of calcium, the transplantation was later done five to seven days before performing the thyroidectomy, in this manner placing the body in optimum calcium level at the time of operation. Beef bone was used after boiling in rivanol at first ; but, on account of its slightly irritating effect, the boiling was later done in a saturated soda solution and normal salt solution.—*Jour. P. I. M. A.*

The Search for Koch's Bacilli in the Urine, by Wongensimer and Colson, Jour. d'Urol., Med. et Chir. (1934) 37 : 489.

There are four methods of finding tubercle bacilli in the urine ; namely (1) direct examination after centrifugation and staining : (2) guinea-pig inoculation : (3) examination after enrichment ; and (4) microculture. Direct examination yields positive results in from 14 to 57.95 per cent, and guinea-pig inoculation in 90 per cent of cases. After an experience of fourteen years with it, the authors strongly recommend the combination of concentration and direct examination methods which yields them positive results in 95.45 per cent of cases. They claim the combined method is sufficiently reliable to prove the presence or absence of unilateral or bilateral renal tuberculosis. The method is as follows :

After a thorough cleansing of the required utensils, the urine is centrifuged at the rate of 4,500 revolutions for fifteen minutes. The sediment thus obtained is forthwith stained with hot Ziehl-Nielsen stain for five minutes and decolorized with nitric acid and alcohol, with a little picric acid. The sediment is counterstained with methylene blue. If, after a thorough microscopic examination, no bacilli are detected, Ellerman-Erlandsen's auto-digestion method is adopted and carried out as follows :

The sediment previously centrifuged is diluted with a 1:400 solution of sodium carbonate and left twenty-four hours in an incubator at 37° C. It is again centrifuged at 4,500 revolutions

for fifteen minutes, diluted again as before, and boiled in a bath for five minutes. The sediment is cooled, centrifuged once more for the same length of time, and stained as previously. It is then ready for direct examination.

Microculture is not recommended by the authors on account of its difficulty and the prolonged technic (nine to twenty-seven days).—*J. P. I. M. A.*

Mandelic Acid in the Treatment of Bacilluria.—Its advantages over the Ketogenic Diet. Ben G. Budge, M.D., Ames.

After the usual disappointments with urinary tract infections, my interest was renewed by Dr. Helmholz, the pioneer in the use of the ketogenic diet in bacilluria. My first case was worthy of, and was welcomed with the zeal of the new convert. The history briefly is follows : A little girl, eight years of age, was catheterized when she was two days old, and had suffered from urinary disturbances from that time. She was cross, fretful, and undernourished. Her many attacks of frequent and painful urination with high temperature would continue for about four days. These upsets had increased in frequency until she was having more febrile than afebrile days. The uncentrifuged urine was loaded with pus and colon bacilli. With considerable difficulty a ketogenic diet was arranged according to the outline furnished by the Mayo Clinic. She was put on this diet for four periods of four to ten days each, with rest intervals. There have been no more attacks and the urine has remained clear for more than two years. Improvement in the physical condition and behavior has been remarkable. Following this success, about thirty cases of bacilluria treated with the ketogenic diet between July, 1934, and July, 1935, gave very satisfactory results.

While preparing a paper on "The Ketogenic Diet in Bacilluria," my attention was called to an article by Rosenheim in the May 4, 1935, *Lancet*, under the title, "Mandelic Acid in Treatment of Urinary Tract Infections." Treatment with mandelic acid as described by Rosenheim seemed simple indeed when compared with the difficulties encountered with the ketogenic diet. Mandelic acid could not be obtained. Eastman listed it at eight dollars per 100 grams, but had none for sale and specifically stated that their product was not to be used for medicinal purposes. This difficulty was brought to an end when Dr. I. B. Johns of the Department of Chemistry at Iowa State College volunteered to furnish mandelic acid, which he produced in his own laboratory in a pure state and at a much lower cost.

From July 18, 1935, to September, 1936, fortysix cases of bacilluria have been treated with mandelic acid and ammonium chloride with such satisfactory results that the ketogenic diet has been discontinued. Of the fifty cases that were put on mandelic acid, the following four patients, who were treated with the hope of allaying distress rather than of eradicating infection, are not included in this report: An aged woman with a fractured femur had a complete prolapse and much residual urine: a man, seventy-six years of age, with an obstructing prostate gland and eight ounces of residual urine; a man, sixty-nine years of age, had sustained a minor stroke and was passing gravel at the time the treatment was begun; a woman, thirty-two years of age, complaining of urinary distress, showed motile organisms and some pus. These organisms were many times larger than B. coli. Although her symptoms disappeared and the large motile bacilli decreased greatly in number, they were not entirely absent at the time she discontinued treatment.

In the forty-six cases reported, varying in age from two to seventy-six years and treated by my associate, Dr. Joe G. Fellows, and myself, there have been no failures.* There has been one known recurrence in a young woman who discontinued treatment against instructions. In a man, forty-three years of age, there was the severe complication of hemorrhage with acute retention, probably from the false passage of a sound in an attempt to dilate a stricture; however, he was relieved of symptoms. These forty-six cases include twenty-one married women, thirteen unmarried women, six girls under twelve years of age, five men and one boy. They appear in Table I grouped according to age and sex.

TABLE I

AGE	MALE	FEMALE	TOTAL
1— 5		1	1
6—10	1	4	5
11—15		1	1
16—20		5	5
21—30	1	16	17
31—40		6	6
41—50	2	3	5
51—65	1	2	3
66—80	1	2	3
Totals	6	40	46

* Cultural methods of determining a cure were not available. Patients have been considered cured when symptoms have disappeared and when repeated examinations of the urine have been nagative.

It seems unusual that 34.8 per cent are women in the 21 to 30 year age group. Of the twenty-one married women, three were in their first pregnancies and two in their second. In all cases the treatment as outlined by Rosenheim has been used. The doses of mandelic acid and ammonium chloride for children have been regulated according to size and age. The following prescription has been found convenient, and supplies sufficient mandelic acid in the form of the sodium salt for four days' treatment:

Mandelic acid	...	Gm. 48
Sodium Bicarbonate	...	Gm. 25.6
Lemon	...	To flavor
Water q. s. ad	...	500 cc.

Directions: 1 oz. four times a day.

With mandelic acid, as with the ketogenic diet, best results are obtained with a highly acid urine.* It has not been found necessary to prescribe ammonium chloride in the amount given by Rosenheim. One gram in water four to six times a day has been sufficient to keep the urine at a p^H of 5.2 or lower. One sample powder of one gram of ammonium chloride with 60 grams of this salt in bulk is usually prescribed. According to the p^H of the urine, the patient is instructed to take in water four to six times in the twenty-four hours, a portion of the ammonium chloride equal to the sample powder. This lessens the expense of the treatment. Usually three to four doses of ammonium chloride are given before the mandelic acid is started. As nearly as possible, both medicines are to be taken at regular intervals throughout the twenty-four hours. This insures a low p^H at all times during the treatment. The fluid intake is not limited, nor the diet restricted. After two days' treatment, the patient returns to the office. Adult females are usually catheterized and the urine from small girls is collected in a clean vessel after the external genitals have been thoroughly cleansed. Centrifuged specimens are examined immediately since no urine is deemed fit for examination that has stood for any time or that might possibly have been contaminated.

If, at the end of four days, the urine is free from pus and colon bacilli, treatment may be temporarily discontinued but the urine is examined daily. Not infrequently, no more treatment will be required. Mistakes have been made by considering some

* One drop of 0.04 per cent chlorphenol red is added to 20 drops of the urine. If the color remains unchanged, the p^H value of the urine is 5.2 or less. If the color changes to a pink or red, the p^H value of the urine is greater than 5.5 and is not sufficiently acid. The LaMotte Urine p^H Outfit is convenient in determining the p^H value of urine.

patients cured at this stage (Cases 20, 41 and 45). Best results have been obtained when, after a rest period of one to two days following the first four days' treatment, the mandelic acid is again resumed for another four days ' course. In those cases showing severe symptoms or a very high degree of infection, treatment has been continued for eight days and resumed after short rest periods even though the urine has remained clear. Some cases show greater resistance to treatment than others and the duration of treatment has varied from four to thirty days, including rest periods. With mandelic acid as with the ketogenic diet, a few patients will show hyaline casts. These soon disappear when the treatment is stopped.

Mandelic acid appears as a finely granular, highly soluble, white crystalline substance, with the odor of vinegar and a taste not unlike citric acid. It is made synthetically from sodium cyanide, benzaldehyde, sodium bisulphite and hydrochloric acid. It is well tolerated when taken as the sodium salt and only one patient has complained. Rosenheim has demonstrated that all mandelic acid taken by mouth is excreted in the urine.

The cases presented include the first patient, and one recently treated ; the youngest and the oldest ; one in acute and severe pain and another without urinary tract symptoms ; one whose symptoms were of but a few days' duration and another who had had urinary tract disturbance for twenty-five years.—*Journal of Iowa State Medical Society.*

Surgery

Adhesions of Joints and Injury.—R. Watson Jones. *British Med. J.*, I, 925, May 9, 1936.

The author states that the conditions under which adhesions form around joints constitute one of the fundamental problems of fracture treatment. It is a problem which is frequently misunderstood.

Joint stiffness after injury is due to adhesion of the capsular plications, which, in turn, is the result of organization of any exudate in the periarticular tissues. In fact, it is the recurrence and persistence of serofibrinous exudation which provides the key to the problem of adhesion formation. Frequently the source of the exudate is extra-articular, as the joint itself is normal.

The following factors, several of which may occur in the same case, are considered responsible for continued or recurrent exudation : (1) disuse with continued venous stasis, (2) recurrent

oedema, (3) the recurrent trauma of daily passive stretching or repeated manipulation, (4) the constant trauma of immobilization in a position of strain, (5) continued infection near a joint, and (6) the continued irritation of foreign bodies near a joint.

Immobilization in itself is not a major factor in the development of adhesions when uncomplicated by other factors. Any adhesions formed are the result of venous stasis. Once a patient resumes active use of the part, recovery of normal function occurs.

The author emphasizes the serious disability that follows the presence of continued oedema in a limb which is immobilized. " There is no more potent factor in adhesion formation, for oedema is the glue of which adhesions are made." Swelling is controlled by external pressure and active muscle exercise.

The author particularly denounces passive stretching and exercise, since such therapy results in a continual recurrent traumatic exudation, with the formation of fresh adhesions.

Under the heading " Foreign Bodies Near Joints," the use of skeletal traction near joints is condemned particularly, because where the foreign body (pin or wire) penetrates the skin there is the possibility of a low-grade infection. This infection may be of minimal degree and may show no external signs, but it is the cause of continued exudation in neighbouring tissues, and hence of adhesions which are much more resistant than the adhesions of simple immobility. Again, in contrast to fracture experience in this country, the author states that the factors noted account for the frequency of permanent stiffness of joints when articular fractures are treated with wires and screws. For example, he believes that olecranon fractures treated by internal wire fixation usually exhibit permanent limitation of extension movement, because the wire is associated with a low-grade inflammatory reaction, and the resultant irritative serofibrinous exudation gives rise to periarticular adhesions which are particularly resistant.—*G. E. Haggart, M.D., Boston, Massachusetts.—The Journal of Bone and Joint Surgery.*

The Use of Trichloracetic Acid to Obliterate Bleeding Points Upon the Nasal Septum.—Frank Graham Murphy, M.D., Mason City. To eradicate permanently a bleeding point upon the nasal septum with trichloracetic acid is an easy matter when the correct technic is used. Its safety, effectiveness and easy application should, on the basis of clinical evidence covering a period of thirty-five years, justify a claim for its more universal

use. In applying it the operator need not be afraid of destroying the submucous tissues nor of doing injury to the nasal septum. He must remind himself that trichloracetic acid does not readily attack normal tissues but will obliterate loosely protected capillaries which are responsible for the majority of nasal haemorrhages not resulting from traumatism or operation.

Every physician has among his patients those who at times complain of having nosebleed. The attacks may be mild or severe and may occur at varied intervals. Regardless of the fact that epistaxis may originate from a varied etiology, the immediate concern of the physician is so to manage the treatment that the haemorrhage is quickly stopped, that it shall not recur, and that no damage shall have been done to the underlying tissues. If, because of inexperience with this remedy, a recurrence of the epistaxis does take place no harm will have been done and the operator is at liberty to be more thorough in his next attempt.

These patients usually call at the physician's office and inform him that they have nosebleed at times. Practically every physician has a head-mirror, a nasal speculum and a frosted electric light globe by which to inspect the anterior nasal chamber. These haemorrhages, as a rule, always occur upon the cartilaginous portion of the nasal septum and usually on its concave side. The bleeding point is usually from a half inch to an inch within and can readily be seen by the examiner. Why these broken capillaries should be nearly always found on the concave side where they would seem to be most protected is a matter of speculation. Usually a small blood clot may be seen around the spot where the last bleeding took place. A cotton tipped probe holding five or six drops 1-1000 adrenalin is allowed to touch the tissues around the clot which becomes softened by the adrenalin solution. Then with a fresh swab saturated with adrenalin the clot may be slowly but gently worked away without doing violence to the exposed capillaries. The adrenalin will then more effectively come in contact with the former bleeding surface and no further haemorrhage is usually encountered.

If oozing should start again pressure upon the bleeding point by the adrenalin saturated cotton-tipped probe will stop it if continued for a few moments. The procedure must not be hurried. The five per cent cocaine solution should then be applied upon, and for a half inch or more around, the location of the exposed capillaries. This procedure should be repeated several times at intervals of a few moments and alternating with the adrenalin solution. When no more haemorrhage is likely to occur and the cocaine anaesthesia is evident, the parts should be gently dried with medium sized cotton swabs before the trichloracetic acid is applied. The acid solution is applied from the end of the probe containing a small pledget of cotton wound tightly so as to contain no superfluous acid solution. The other end of the probe should have wound around it a more generous amount of cotton which is used to wipe the surface as dry as possible before reversing the ends of the probe to apply the acid remedy. After the parts have been prepared and the application of the acid solution has begun the operator's success will depend much upon his knowledge that the white coagulated mucus covering the surface is not sufficient to dehydrate the underlying offending capillaries. At the point where the haemorrhage took place a noticeable dark spot may be observed through the white coagulated mucus. Several applications of the acid must be made at this point accompanied by a little pressure to make sure that the capillaries are dehydrated sufficiently deep to remain closed. In about six days the dehydrated superficial capillaries along with the coagulated mucus and surface epithelial cells will loosen and be blown out. In a few weeks the surface will appear normal and no evidence of the past treatment will be apparent.

Occasionally a physician is called upon to treat an epistaxis that has existed for a considerable duration of time and about which there may be considerable anxiety. If this patient is at his own residence the physician should have with him an extension cord, although a kerosene lamp will do if the residence is not wired for electric lights. The operator prefers to have the patient in the upright position but if he is lying on his side the bleeding nostril should be farthest from the pillow. When the physician's equipment is in order about him the blood clots are removed with a towel or cotton. The inside of the bleeding nostril is then wiped out with the cotton on the probe until the oozing capillaries are seen. Then the other end of the probe containing cotton saturated with the adrenalin solution is quickly pressed against the bleeding point. This process is continued until the bleeding has entirely ceased when the cocaine solution may be added and followed in a few moments with the trichloracetic acid application as described above. To relieve epistaxis effectively and permanently with the least possible disturbance to the underlying tissues and with little discomfort to the patient, this remedy and the method of handling it seems to be ideal.—*Journal of Iowa State Medical Society.*

Treatment of Tuberculosis of the Spinal Column. — M. Grobelski. *Chir. Narz. Ruchu,* IX, 5, 1936. The author did not notice any distinct results after the use of Friedmann's serum. Calve's method of treatment of abscesses by paracentesis with special trocars gave negative results. In eighty cases Albee's operation was performed. In 48 per cent. the results were good; in 15 per cent., moderate; and in 15 per cent., unsatisfactory; 22 per cent. of the patients died. The author believes that one should not operate on children before the twelfth or fifteenth year. Albee's graft may be considered as an internal corset which abbreviates the duration of convalescence and stabilizes the results obtained by the preceding conservative treatment.—*Journal of Bone and Joint Surgery.*

PROCEEDINGS OF ASSOCIATIONS, SOCIETIES, ETC.

The Medical Practitioners' Association, Nuzvid

The Monthly meeting of the above Association was held at Nuzvid at the Local Government Hospital on Sunday, 29-11-'36 with Dr. P. Anjaiah Naidu, L.M.P., in the chair. Dr. N. Rama Rau, L.M.P., Secretary read the minutes of the previous meeting, which were duly adopted. The members then began discussions on the following professional topics:—

1. Dr. N. Rama Rau reminded the members of the case of of neuralgia of lower extremity simulating sciatica that was demonstrated by him during the last Anniversary meeting, and said that the case was sent for consultation to Dr. Guruswami Mudaliar of Madras who diagnosed the same as Faecesitis due to faecal concretions resulting from chronic constipation and also to an old though transient attack of gonorrhoea from which the patient claims a radical cure ever since. Under treatment by Gonococcal vaccine, constipation relieving remedies and anti-neuralgic sedatives, the patient improved a good deal.

2. Dr. P. Anjaiah Naidu mentioned about a new-born child of only 2 days old that was born with moderately well developed upper and lower incisor which caused much inconvenience to the mother while suckling and which he had to extract.

3. Dr. V. Ananthachari narrated the clinical course of a peculiar case that simulated malaria for a time and then the fever began to come every Wednesday for about a month. Anti-malarial remedies were not of much use but as the patient gave a history of syphilis, some time back and also of a rat that scratched his sole just superficially as not to cause any bleeding, the doctor was tempted to give Neosalvarsan which effected a erlief rather surprisingly.

4. Dr. T. Satyanarayana demonstrated a female patient that was operated for cervical adenitis (excision) in the General Hospital, Madras which later on resulted in a temporary paresis of the shoulder muscles. Now the patient, he said, is getting weaker and emaciating though she does not manifest definite tubercular lesions anywhere except that she complains of impaired movements at the left hip-joint with limping which he suspects to be of tubercular origin though in its very early stage.

5. Dr. S. Hanumantha Rao mentioned a case of Amenorrhoea primarily, then developing very bad obesity. The latter condition was controlled by thyroid medication, though Amenorrhoea still persists. Very many topics of interesting nature were brought in discussion and the members decided not to have the next meeting in December being Xmas season.

The meeting came to a close by 7 p. m.

The Tinnevelly District Medical Association, Palamcottah

(Affiliated to the Indian Medical Association)

The Tinnevelly District Medical Association held its monthly meeting on Saturday, the 21st of November, 1936, at the St. John's College Hall, Palamcottah. Under the Presidentship of Lieut. Col. T. S. Shastry, I.M.S., members, numbering 54 including 7 women doctors, gathered from all parts of the District.

The Secretary read the minutes of the monthly meeting held at Srivaikuntam, on Sunday, the 31st of October 1936, which were passed.

Dr. P. G. G. Unnithan, M.B.B.S., B.S.SC., D.P.H., (Hopkins) D.T.M. & H., (Eng)., District Health Officer, Ramnad, gave an interesting lecture on "Newer Knowledge of NUTRITION".

The following clinical cases were demonstrated:—1. By Lieut. Col. T. S. Shastry, I.M.S.,—"A Specimen of a Case of Ovarian Cyst". 2. By Dr. P. S. Srinivasan, L.M.P.,—" A Case of Duodenal Ulcer and Burst Abdomen".

Dr. P. S. Srinivasan, L.M.P., sub assistant surgeon of the Government Head Quarters Hospital, Palamcottah, read case-notes of (1) A case of Septic Meningitis as a result of fall, (2) A

case of rupture of posterior Tibial Artery, right leg, (3) A case of Chronic Duodenal Ulcer and "Burst Abdomen". Dr. Miss. A. Lazarus, L.M.P., of the Vannarpet Hospital, read case-notes of a case of Ovarian Cyst, which was operated on by Lieut. Col. T. S. Shastry, I.M.S.

The above cases and lecture were fully discussed by the members. After a few remarks by the President, the meeting was brought to a close.

Health Exhibition

Under the auspices of the Tinnevelly District Medical Association in connection with its monthly meeting at the Head Quarters (Palamcottah), a Health Exhibition was arranged at the Borstal School, Palamcottah, on Saturday the 21st of November 1936, at 10 A.M., under the Presidentship of Captain Inglefield Dall, Superintendent, Borstal School, Palamcottah. This was the first time that a Health Exhibition was held in the Borstal School, Palamcottah.

Lieut. Col. T. S. Shastry, I.M.S., the President of the Association welcomed the guests and requested Mrs. Dall to open the Health Exhibition. He explained to the audience the prevalence of Cholera in the District and how to prevent the same. He also explained the causation and prevention of other infectious diseases such as tuberculosis, small-pox etc. Dr. P. S. Srinivasan, explained in easy Tamil the gist of what Colonel Shastry said.

Dr. E. Avudainayagam and Dr. P. Ananta Nayar, sub-assistant surgeons of the Borstal School, Palamcottah, explained in Tamil, the posters on the prevention, and causation of tuberculosis, flies, and cholera for the benefit of about 400 inmates and of the warders.

This was very much appreciated by the gathering.

BOOK REVIEWS

The Glorious Bondage of Illness—A Translation of 'Servitude et Grandeur de la Maladie, *By A. D.* Preface *by Pierre Sanson*, O. P. Published by George Allen and Unwin Ltd., London : Ruskin House, 40. Museum Street, W. C. 1. Price 6/-net.

This book records the struggles of a French lady who had the misfortune to be confined to bed as a chronic sufferer from a heart disease which kept her life always in peril. It consists of two parts. Part I deals with the drama of the inner self, wherein are depicted her thoughts and reflections while alone in bed, leading to her gradual spiritualization. Part II is the drama in which her relationship with her own kith and kin, her doctors and others is chronicled. This book will not only interest the sick, the doctor and the nurse, but also the healthy who may at any time be liable to get sick and become chronic invalids when it may be necessary to adjust themselves to their environments and thus make their position less irksome.

Psychology and Religion—*By David Forsyth*, M.D.. D.Sc. (Lond), F.R.C.P., 2nd Edition, London. Watts & Co., 5 & 6, Johnson's Court, Fleet Street, E.C. 4. Price 7/6.

This book is a tirade against religion in general and Christianity in particular. Christianity, according to the author, has outlived its usefulness and civilization will henceforth pin its faith only in Science as the embodiment of all that is true and virtuous leading to the goal of human existence *viz.*, peace, plenty, prosperity and longevity. But Science is ever changing and what is admitted as true to-day is disclaimed as false to-morrow. Therefore, Science cannot be the eternal truth, if God is not. Further, Science, like religion, has in human hands become an engine of destruction and not an instrument of happiness. So, the suzerainty of Science is no more promising than that of religion. The author thinks that all ideas of God and Soul, sprang from the immature mind of the child, born of his imagination. The immortality of the soul is disputed but at the same time, the author concedes, 'that the idea of eternal life is to be found also in modern Scicence' and the biological continuty of the germ-cells has become generally accepted. Verily, there are more things in heaven and earth than are dreamt of by us mortals, and we think therefore, that this book cannot be taken as the last word on the subject of 'Science versus Religion.'

Practical Bazar Medicines—*By G. T. Birdwood*, M.A., M.D., etc. 1936. Third edition, pp. 210, with over 200 useful Prescriptions. Calcutta: Thacker, Spink & Co., (India) Ltd., 1933. Price Rs. 3/8.

The object of this little book is to supply a handy list of practical Bazar medicines and a list of useful prescriptions made up from them. Ever since its first appearance there has been a

steady increase in its demand and the present volume is in its third edition.

The book is divided into four chapters. Chapter I gives the list of bazar medicines used more commonly,arranged and grouped according to their actions. Chapter II, deals with sources, action and method of their use.

Chapter III, contains over 200 useful prescriptions.

Chapter IV. Emergency medicine.

The usefulness of this book cannot be over-emphasised; for it contains good many cheap and efficient remedies—drugs that can safely be extended to the suffering millions in the remote part of the country at minimum cost.

The get-up of the book is good; it is interleaved with blank paper to note down individual observations if any worth remembering. We recommend it to all practitioners.

PREPARATIONS AND INVENTIONS

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