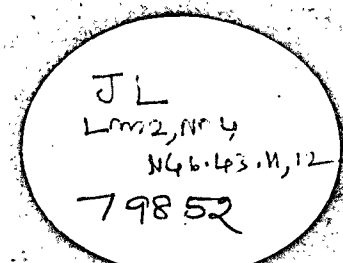
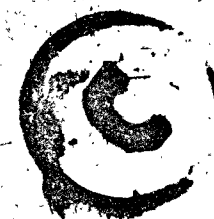


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1946

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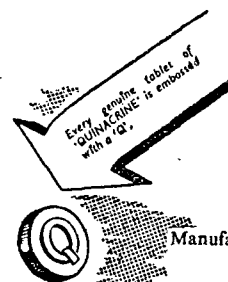
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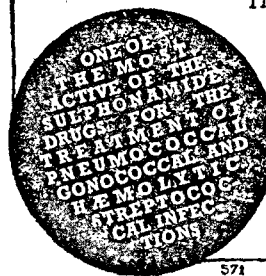
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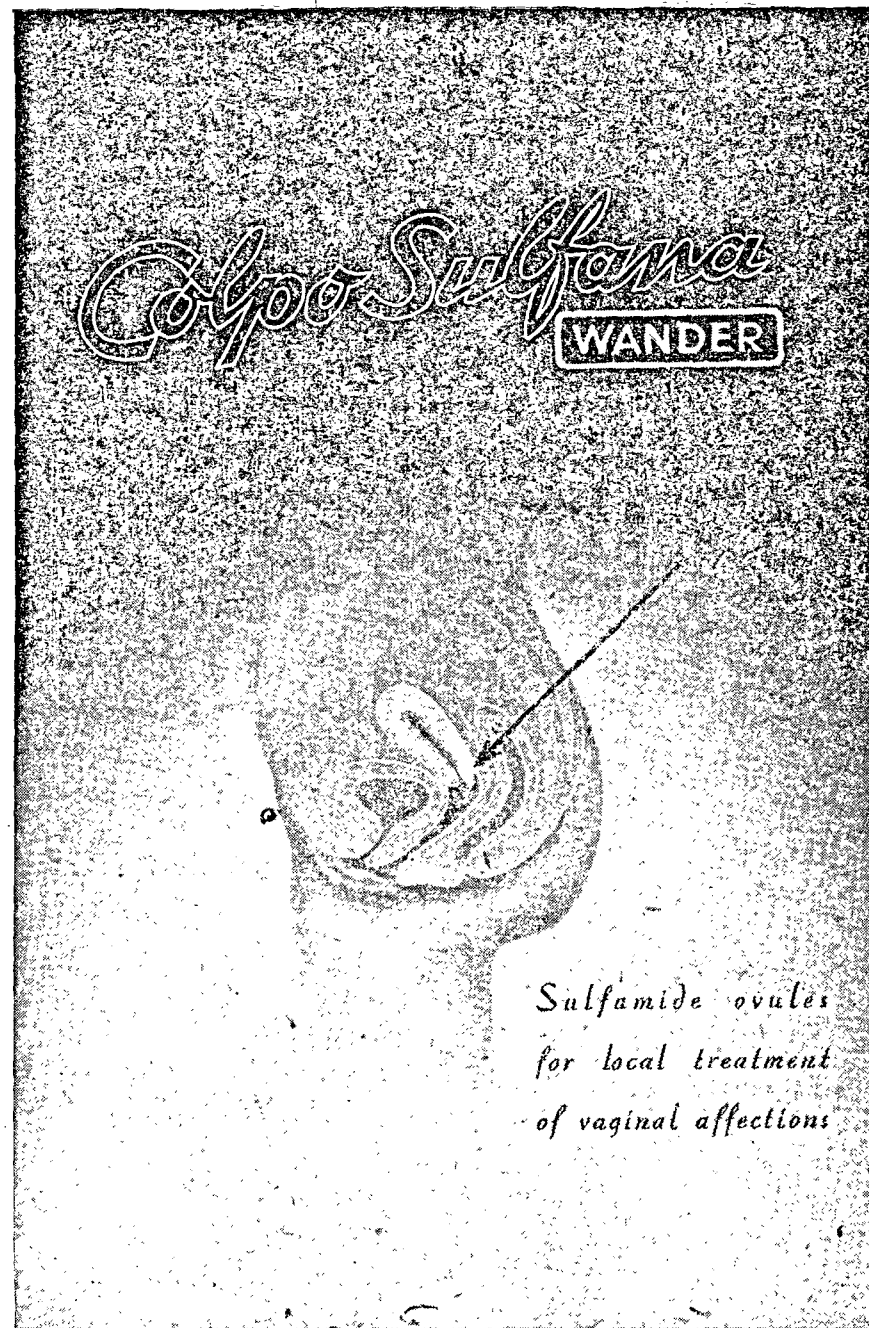
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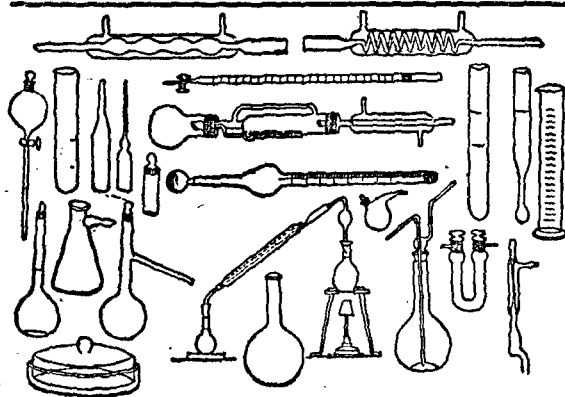
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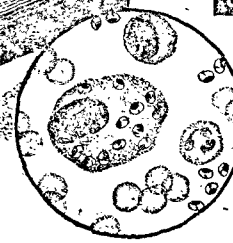
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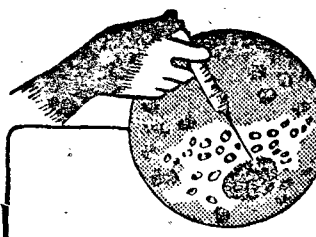
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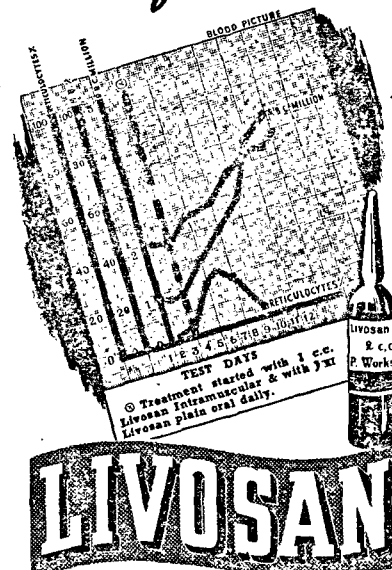
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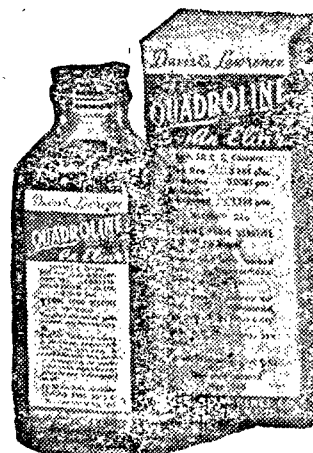
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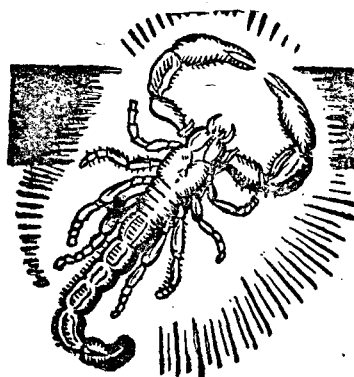
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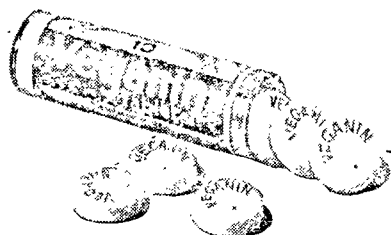
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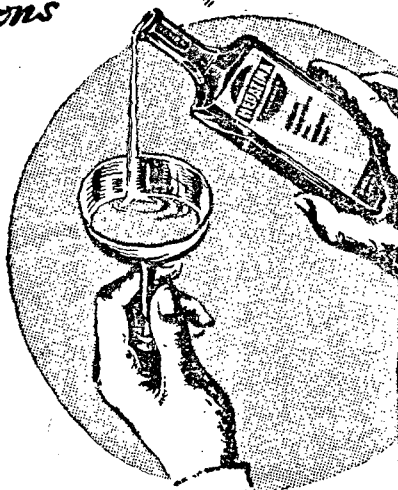
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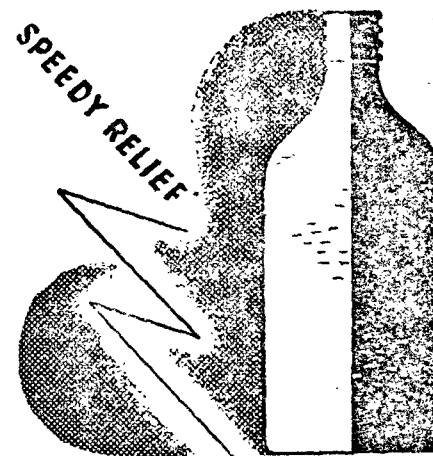
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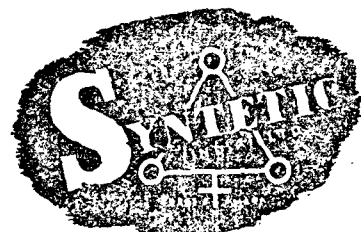
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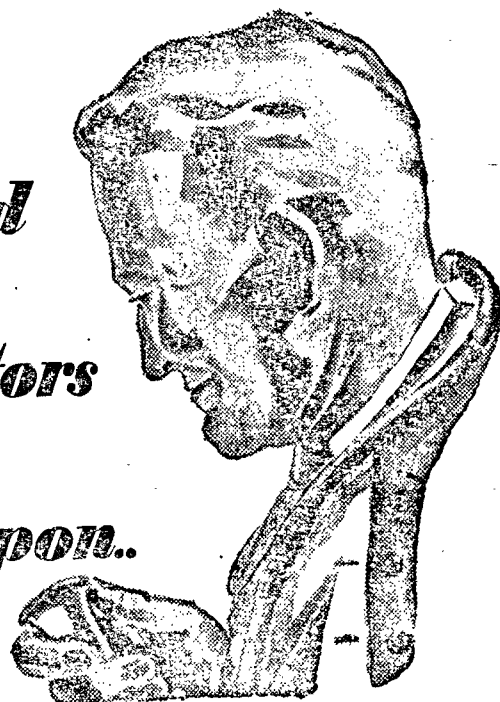
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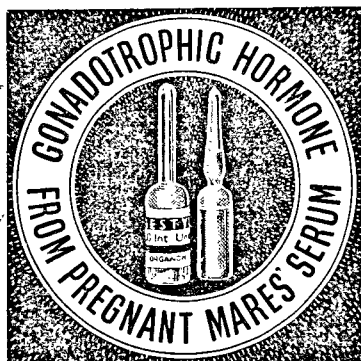
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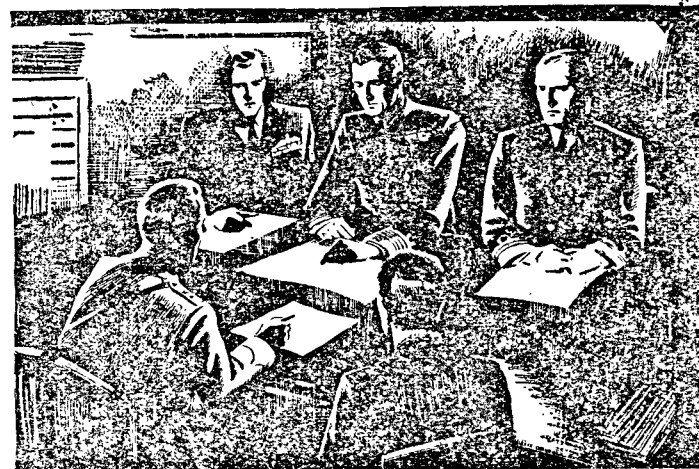
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Original Articles

Diagnosis and Treatment of Heart Failure*

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SPEAKING of heart failure, let us remember first of all what is called heart failure and yet has very little to do with the heart. When a case of pneumonia or meningitis, or typhoid or peritonitis dies, we are all too ready to deface the hospital ticket or the death certificate with the utterly wrong statement that the end was due to heart failure. Paper and statistics are patient and not much harm is done by this entry, provided it does not express the attitude of the medical attendant at the time when such a patient was still alive. Because the ultimate cause of the fatal end in all these acute infections as well as in surgical shock is a failing of the 'peripheral' circulation and not of the heart. The circulating toxins paralyse the vasomotor ending in the walls of arterioles and precapillaries with the effect that these small and smallest vessels lose their tone, and the blood stagnates in the vast lake of their innumerable branches and in the capillaries themselves. It stagnates instead of returning through the veins to the right heart and thus fails to maintain the action of the central motor. The consequences of such an inadequate venous return are: (1) That the motor beats empty; with nothing to feed it, it cannot keep up the supply: both, pulmonary and systemic circulation run dry; a mere trickle remains of the two streams which normally have their sources in the two ventricles; (2) the reduced blood volume passing through the lung capillaries is unable to bring down the required charge of oxygen to the left heart; the reduced stroke volume produced by it cannot make up for the oxygen deficit, the tissues begin to suffer from anoxæmia, from oxygen hunger, which leads to the production of toxic metabolites and thus to establishing a most dangerous vicious circle—but not due to a failing heart. The treatment of this condition is quite different from that of heart failure. Coramine, Caffeine, Strychnine, Cardiazole and the Adrenaline group might prove life savers when the peripheral circulation fails, whereas digitalis has no place in treating this emergency; its vagus stimulating and vessel

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dilating effects are definitely contra-indicated when tachycardia is a compensatory measure to maintain the minute-volume and all our attempts are directed towards re-establishing the lost vascular tone.

In dealing with our subject proper, our task is rendered easier by differentiating between left and right heart failure. Although the treatment of both these conditions is almost the same, the signs and symptoms show such great differences that it seems we have to deal with separate clinical entities.

An example of the first group is the well fed man, nearing fifty, who complains of a curious disturbance of his night rest. He who always was proud of his good sleep, of late several times every night suddenly wakes up with a jerk or with some dry cough and a kind of anxiety or oppression, reminding of a night-mare. If you make such a patient lie down, close his eyes and try to sleep, it might happen even in the consulting room that you find the explanation of his trouble: periodic breathing, a mild form of Cheyne-Stokes respiration. Breathing gradually deepens until a particularly deep, sighing inspiration is followed by the pathognomonic apnoeic phase; the respiration ceases completely for a varying length of time, then very superficial breathing starts which, gradually deepening, leads again to the characteristic, often noisy, very deep inspiration which precedes the respiratory stop.

These mild forms of Cheyne-Stokes respiration are one of the most common and earliest indications of left heart failure which usually are overlooked as the patient is not aware of them and people, sleeping with him in the same room, notice them only if their attention is drawn to this phenomenon. Therefore, if somebody with an increased blood pressure, an aortic valvular lesion, a chronic coronary insufficiency or any other condition leading to left ventricular failure complains of restlessness, insomnia or cough during the night, it is useless to give him sedatives or cough mixtures. In such a case digitalis is the only effective sleeping drug which also stops the cough, the latter being another indicator of beginning decompensation of the left heart and one of the greatest significance, because the mechanism which causes it, leads straight to cardiac asthma and, finally, pulmonary oedema.

Leaving aside all the complicated theories of the origin of cardiac asthma, it is clear that every weakening of the left ventricle with maintenance of the normal working capacity of the right one, leads to a predominance of the latter. If the right ventricle every minute pumps the normal amount of blood in the pulmonary circulation, whereas the left ventricle fails to expel simultaneously the same blood volume into the systemic circulation, a quantity of blood, increasing with every normal systole of the right and every defective systole of the left ventricle, accumulates in the pulmonary vessels. This engorgement, especially of the pulmonary capillaries, interferes with the oxygenization of blood; anoxemia and accumulation of abnormal acid metabolites develop; periodic breathing or paroxysmal dyspnoea are the results. Why the onset of these events is so sudden and occurs during the night, especially during rest and relaxation, is not clear, but just the paroxysmal character and the onset during rest are constant features; Cheyne-Stokes respiration and cardiac asthma do not occur on exertion.

The clinical picture of cardiac asthma which sometimes after the first attack, mostly after several repetitions and in some cases never, leads to

pulmonary oedema is well known. Usually at 2 or 3 a.m., the patient suddenly wakes up with a feeling of suffocation; fighting for breath, bathed in perspiration, he has to sit up or jumps out of bed, runs to the window, desperately pressing in service all the auxiliary muscles of respiration.

There is usually some dry, irritating cough with some rhonchi in the bases, right more than left. Such an attack, if untreated, either subsides after half an hour or so, or the dyspnoea deepens and increasing cough produces the characteristic pinkish foamy sputum of pulmonary oedema, one of the most dangerous emergencies in medical practice.

The treatment of left heart failure is directed towards strengthening the weakened myocardium on the one hand and diminishing the systemic load on the other; one has to realize that the cause of the breakdown usually is twofold. An increased blood pressure or the excessive hydrodynamic strain, caused by an aortic valvular lesion, continuously wearing down the resistance of the left ventricle, finally succeeds in breaking it when the myocardium itself suffers some damage, either by diffuse atherosclerosis or syphilis or, mostly, by coronary insufficiency. The prognosis of every condition of chronic left heart strain depends, therefore, on the degree of soundness of the myocardium. And here it is where the electrocardiogram finds one of its most important applications. The effect of every therapeutic measure and the prognosis of the individual case depend on the condition of the myocardium which only the cardiogram discloses fully. Muffled heart sounds might be due to emphysema, obesity of the outer cover, etc., in a normal heart; screening may show normal size and shape of the heart in a badly damaged heart muscle. Only a complete electrocardiogram with chest lead, taken before and after exercise, has very little sources of error and most of them are well known.

For improving the power of a hypertrophic and weakened heart muscle, digitalis is the remedy of choice. The best dosage is still controversial. On the continent the usual single dose is gr. $1\frac{1}{2}$ of the titrated powdered leaf or 15 to 20 drops of the tincture. In the U.S.A., some time ago, doses of Z 1 to 2 of the tincture have been frequently used but now even there moderation is increasingly recommended (WHITE, 1944). In India we found a dosage of xx m to xxv m of the tincture, three to four times a day, sufficient for the great majority of heart failure cases. Occasionally, when faced by complete decompensation, one need not hesitate to give i of the tincture, twice with an interval of 6 hours, continuing with xxx m 6 hourly for a day or two. It is useless to give digitalis more frequently than every 6 hours, this being the time required for this drug to produce the desired effect. If the speediest possible digitalis action has to be achieved, the intravenous route should be used; Digitoxin, Digilanid, Digalen are reliable preparations available for this purpose. Of the many patent brands for oral medication, Digifortis, P.D. is one of the best; another one, remarkably effective and in reasonable doses free from toxic by-effects, is Digitaline Nativelle in doses of 1/10 mg., three to four times a day.

Another way of improving the condition of the myocardium is to increase the coronary blood supply. This can be achieved by Theophylline Ethylen-Diamine which has a powerful dilating effect on the coronary arteries. It is marketed as Aminophylline, Cardophyllin, etc.; 10 c.c. ampoules, containing gr. 5, for intravenous, or 2 c.c. ampoules, containing

gr. 7½, for intramuscular injection, may be given daily or in longer intervals as the case requires. Apart from the effect on the coronary vessels, it causes relaxation of the bronchioles, is a powerful stimulant of the respiratory centre which is most useful in Cheyne-Stokes respiration, and a good diuretic. Dilatation of the coronary arteries might be achieved in some cases by full doses of testicular extract and by nicotinic acid (Niacine).

Whatever we achieve in supporting the myocardium would be of short duration if we did not succeed in diminishing the burden which caused its decompensation. An increased blood pressure being the foremost factor among the permanent heart strains, it is customary to reduce it as far as possible. The most effective remedy for this purpose is *Serpina*, containing various alkaloids of *Rhauwolfia Serpentina*. Pressure reduction should proceed gradually and slowly, every sudden lowering of the blood pressure in the presence of sclerotic vessels being accompanied by the danger of arterial thrombosis or sudden onset of renal insufficiency; the latter possibility is due to the fact that an increased blood pressure is required to maintain the necessary blood supply to the glomeruli if the afferent and efferent arterioles have lost their elasticity.

The various combinations of diuretin (theobromine sodium-salicylate) have little influence on the blood pressure. In our opinion the only useful one is theogardenal because of its luminal content, sedatives, such as bromides, valerian and barbiturates, having certainly a beneficial effect on the heart labouring under high pressure.

Nobody knows whether iodides are useful in this condition, but we all prescribe them and no harm is done, especially as they are of great value in the presence of cardiovascular syphilis.

Blood letting should be resorted to only if the blood pressure is excessive, going beyond 225/130 mm Hg. The effect of removing a quantity of 8 to 12 ounces blood is sometimes excellent but never of long duration.

One of the most important and frequently overlooked tasks is to reduce any over-weight which the patient may carry. As strenuous exercise cannot be enforced and thyroid is contraindicated, restriction of fluids, salt, fat and carbohydrates is imperative. Fluid intake should be limited to about 3 pints, salt to one half drachm. Lime juice may be used to improve the taste of unsalted food. Proteins, on the other hand, must be supplied amply, at the rate of 1 gm. per kilogram (2 lb.) of body weight. The total caloric intake should be kept between 1,500 and 1,800 calories.

Weight reduction should be so controlled that one or two pounds are lost every week; too radical slimming procedures cause or increase nervous irritability. And one of the main causes of the sudden breakdown of a precariously balanced compensation is nervous exertion. Excitement of any kind should be avoided; it is an old popular experience that even joy could be fatal to a weak heart. A frank discussion of the patient's sex life is desirable. Tobacco in every form causes angiospasm; as the coronary arteries seem to be particularly sensitive to nicotine, it is better to stop smoking completely, in the interest of maintaining the blood supply to the myocardium on the highest possible level.

It is common knowledge that excessive physical activities have to be curtailed. But frequently the medical adviser is too anxious on this point. The longer the patient is keeping to something approaching a normal way of

living, the longer mental happiness, or, at least, contentment could be maintained. The pensioner's quick downhill course is a very real danger to everybody who is prevented by external factors—retirement or doctor's veto—to do what he feels capable of still doing. Apart from this psychological factor, the heart muscle, like every other muscle, atrophies due to enforced activity. Moreover, vast experience of pathologists, especially in the U.S.A., proves that a very high percentage of heart patients who are confined to bed develop venous thrombosis with all the dreaded consequences of pulmonary infarction, pulmonary embolism and, if a patent foramen ovale is present, cerebral embolism, conditions ranging from agonizing pain to crippling damage or almost certain death. Therefore, it is essential to induce chronic heart patients to have a daily walk, preferably on level ground, to play a limited amount of golf, but to abstain from cycling, tennis, etc. One day a week complete rest in bed is more effective and less harmful than permanent restriction of activity.

Having dealt to some extent with chronic patients, suffering from a strained left heart, a few points should be emphasised of managing acute left heart failure in the form of cardiac asthma or pulmonary oedema. The only effective drug in this emergency is Morphine hypodermically in full doses of not less than gr. 1/3 to 1/2 with Atropine gr. 1/200: no possible sequelæ such as addiction have to be considered, no half measures such as morphine orally to be tried once the attack is on. When dilauid becomes available again, it should be substituted for morphine, the probability of addiction to it being remote indeed. Because of the life saving effect of morphine in this condition and the danger arising from its use in bronchial asthma, it is necessary to differentiate between these two forms of dyspnoea. It is rare that a bronchial asthma attack develops for the first time after the age 35 or 40, whereas cardiac asthma more frequently starts at about fifty or later. Wheezing sounds and rhonchi are audible always over both the lungs in the former condition, whereas the auscultatory signs in cardiac asthma usually are confined to a few moist rales in the basal parts, right more than left. In pulmonary oedema numerous fine crepitations are heard over both the lungs while wheezing is absent. Adrenalin, Ephedrine and Pituitrin, which are eminently effective in bronchial asthma, are contra-indicated in the cardiac form.

Turning to right heart failure, we find as a leading feature the absence of paroxysms and emergencies and the predominant influence of exertion. One could say, the left ventricle maintains compensation but fails suddenly and completely without a discernible immediate cause whereas the right heart fails sooner, more gradually and makes the patient feel its weakened condition by his inability to cope with any increased demand of circulating oxygen. This difference resembles that between coronary occlusion on the one hand with its sudden onset during rest and angina pectoris on the other, which is caused by effort due to the discrepancy between required and actually available coronary blood supply.

The common conditions leading to right heart failure are mitral valvular disease, "pulmonary heart" due to chronic bronchitis, emphysema, fibrosis of the lung, thickened pleura, kyphoscoliosis, etc.

In right heart failure first the right ventricle becomes unequal to the task of pumping all the blood into the lungs which flows in from the right auricle. With every systole the difference between in- and out-flowing blood increases and this growing volume of residual blood in the

ventricle increasingly obstructs the venous return. The earliest sign of right heart failure looks innocent enough; such patients complain of fulness in the epigastrium, heaviness after meals or discomfort in the liver area, the portal circulation being usually the first to feel the back pressure reaching down from the over-filled right auricle. At this stage the liver becomes palpable; whether it is tender on pressure, depends on the speed with which decompensation developed. Sudden failure might be accompanied by an agonizing liver pain due to the inability of the capsule to accommodate itself quickly enough to the enlarged liver. It depends on various factors whether first the portal engorgement leads to ascites formation or the stagnation in the inferior vena cava to the appearance of oedema, localized on the dependent parts and in loose tissues. Later on, hydrothorax develops, usually confined to the right pleural cavity; still later distension of the neck veins and cyanosis complete the picture. Finally, pitting oedema appears on wrist and back of the hands, a sign which the patient rarely survives for more than a few months if it is of cardiac origin. Renal oedema of this localization is much less ominous. Simultaneously with this development, congestion of the kidney leads to oliguria and albuminuria, liver congestion to an increased urobilinogen content in the urine which along with the increased concentration causes the high coloured urine, characteristic of heart failure. It is well to keep in mind that the urine in chronic nephritis is of a low specific gravity and light colour, a differentiating feature which becomes important for selecting a proper diuretic.

Foremost among the symptoms of congestive failure is dyspnoea on exertion. This is a telling difference between early left heart failure which is capable of working but unable to sleep and the failing right heart which suffers on physical exertion but is comparatively comfortable when resting.

The treatment of this condition is based on digitalis and diuretics. The principle of digitalis dosage is the same as in left heart failure but the response, for instance, in mitral stenosis and in pulmonary heart, is less satisfactory. It is often quite impossible to achieve bradycardia in a decompensated mitral heart until auricular fibrillation sets in, and to relieve dyspnoea in a failing pulmonary heart might prove a formidable task if a far progressed pulmonary emphysema continues to impede breathing. In such cases digitalis has to be given almost continuously unless bradycardia, vomiting or frequent extra systoles force us to stop it.

As soon as overstretching of the auricles leads to auricular fibrillation digitalis acts much better so that a patient with a fibrillating heart usually feels more comfortable, if properly managed, than one with a regular pulse. Digitalization is achieved when the pulse deficit disappears, i.e., when heart and pulse rate are equal at a rate of 76 to 80 per minute, although the irregularity of the pulse usually persists.

The other main stay of the failing right heart are the organic mercurial diuretics. Already in our first publication introducing Novasulol, the first injectible Mercurial diuretic (SAXL and HEILIG 1920), we pointed out indications and contra-indications of this powerful drug; we emphasized that in congestive heart failure, a term which covers right and whole heart failure, a mercurial diuretic is the remedy of choice, a statement confirmed by the experience of the last 25 years. On the other hand, it should not be forgotten that in fluid retention of renal origin Mercury is strictly contra-indicated. Somewhat later it was found that Ammonium Chloride, given for a few days prior to the Mercurial diuretic,

increases the latter's effect considerably. Our routine treatment of congestive heart failure, therefore, consists of a mixture, containing Tr. Digitalis m xv to m xxv and Ammonium Chloride gr. xv, followed, as soon as the patient's weight remains constant or decreases too slowly, by an *intramuscular* injection of Neptal, Mersalyl or Esidron; in no circumstances should any of these compounds be injected intravenously, every single untoward by- or after-effect ascribed to them having followed their intravenous administration. On the other hand, Mercurial diuretics, given by the intramuscular route, are not only safe but in many cases life preserving drugs, if they are withheld shortly after coronary thrombosis, in glomerular lesions, diarrhoea and severe anaemia. American cardiologists point out that, for instance, cardiac pseudo-cirrhosis of the liver is seen now about ten times as frequently as some 15 years ago because the Mercurial diuretics are prolonging so much the life span of congestive heart failure that such patients live long enough to develop these late sequelæ, a statistic effect similar to that of Insulin.

Alkaline diuretics too have their place in the treatment of congestive heart failure, but it would be a mistake to give them along with Ammonium Chloride which acts, most probably, due to its acidifying action; alternative courses of alkalizers and acidifiers should be given.

A diuretic which sometimes acts very satisfactorily and permits increasing the intervals between Mercurial injections, is urea; doses of gr. iiss to gr. vi, two or three times a day, are required to get a full effect; it should be given in one to two ounces water or fruit juice to cover the unpleasant taste. Another way to reduce the frequency of Mercurial injections is to use the diuretic properties of Theophylline-ethylen-diamine (Aminophylline, etc.); although injections are incomparably more effective than tablets, some patients feel highly benefited by the latter.

The dietary management is the same as in left heart failure. For psychological reasons it is necessary to relax restrictions from time to time; otherwise the patient may embark on a course of non-co-operation which does him more harm than occasional indulging in taking more fluid or salt.

Exercise should be regulated with a view to keeping up skeletal and heart muscle tone as long as possible and supporting the venous return, especially from leg veins and portal branches by walking and reasonable breathing exercises.

Every left heart failure which lives long enough develops right heart failure, not *vice versa*, so that in fact chronic left heart failure is the most common cause of right heart decompensation (WHITE, 1944). This course is unavoidable, because the lung congestion, caused by the inability of the failing left heart to cope with the blood volume pumped into the lesser circulation, acts as a constant and increasing strain on the right heart, leading sooner or later to its decompensation. It is interesting to see how the weakening of the right heart relieves many symptoms of left ventricular failure. We pointed out before that the most alarming manifestations of the latter, cardiac asthma and pulmonary oedema, are caused by the weakened left ventricle's inability to take out as much blood from the lungs as the normal right heart pumps in. Weakening of the right ventricle gradually diminishes its stroke volume to such an extent that the disturbed balance between right and left heart is re-established. As soon as this point is reached, pulmonary congestion decreases, the distressing cardiac cough which forced the patient to spend his night sitting on a chair is con-

siderably relieved, even cyanosis may show some improvement as pulmonary engorgement diminishes. Instead, signs and symptoms of venous stasis, liver and kidney congestion, œdema and ascites, are accentuated, all the blood which does not choke the pulmonary vessels being safely deposited in the portal and systemic venous circulation. If a patient is seen for the first time at this stage, it is difficult to recognize that hypertensive heart failure preceded and caused the present picture of congestive heart failure or, in other words, that it was the failing left ventricle which threw the right one out of gear, the whole clinical appearance of the case being dominated by the failing right heart.

It is a most thankless task to take over treatment at this stage. Digitalization frequently improves the function of the right heart sooner or more than that of the left ventricle which was decompensated much earlier; and so, digitalis restores the discrepancy between stronger right and weaker left heart which already gave so much trouble. The blood which stagnated in liver and kidney and caused comparatively little subjective discomfort, is forced back into circulation, causing again pulmonary engorgement, dyspnoea, disturbed nights, etc., and the patient feels worse due to our treatment. This, however, uses to be only a transient stage of recompensation. As soon as the left ventricle responds to digitalis and diuretics remove the congestion, a tremendous relief is achieved—for sometime anyhow.

The prognosis of heart failure depends on the underlying condition, and on signs and symptoms of the individual case. Under proper treatment, especially continuous digitalis administration and avoiding of pregnancy, a case of moderate hypertension or moderate mitral lesion may carry on for many years. Decompensation of a syphilitic aortitis, aortic regurgitation or heart failure due to coronary insufficiency, especially coronary thrombosis, has a much more serious prognosis. Once cardiac asthma sets in, the probable duration of life is considerably limited; an attack of pulmonary œdema or the appearance of œdema on the upper extremities is of grave significance.

Concluding, it should be emphasized that heart failure is seen in a high percentage of our patients here. Rheumatic heart disease is as frequent in India as anywhere in the West and pulmonary heart more common, especially in Rajputana, than any other cause of cardiac decompensation. Hypertension is not at all rare here, although perhaps rarer than among Brahmins in South India. Syphilitic aortitis and aortic regurgitation are less frequently seen than one would expect from the high rate of syphilitic infections in almost every class of the local population. Myocardial damage is so common among our hospital patients that it is difficult to find a normal electrocardiogram; malnutrition, chronic diarrhoea, chronic bronchitis and emphysema, frequent fever attacks, surprisingly wide spread hookworm infestation among the rural population, drink, syphilis and atherosclerosis are the common ætiological factors. Coronary disease is confined mostly to professions which are working under mental stress, such as doctors, lawyers, speculators, etc. But it is to be expected that with the spreading of industrialization coronary complaints will become as frequent in India as they are in Europe or the U.S.A., where at least one out of every five doctors dies of coronary failure, which is twice as many as of cancer. We may hope, however, that the knowledge of prevention and treatment of this curse of our atomic age will progress apace with the complexity of living conditions.

Eosinophilic Lung*

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A good deal of interest has been created in recent years about this syndrome and case reports are pouring in daily in medical literature from all over India. This syndrome is very common in Bombay during the last 1½ years. I myself came across more than 200 cases. First series of 140 cases from this was analysed in a paper read before the staff meeting of J. J. Hospital, Bombay, in February, 1946, and published in the *Indian Medical Gazette*, April-May, '46 issue. It is very difficult to explain why these cases are so frequent at present and were practically insignificant in the past. Were they overlooked in the past because of lack of hematological examinations or were they really not so frequent? I cannot say definitely.

I intend to put before you in this short article few facts which I have observed in my cases with a brief review of the subject.

I. **Etiology** of this syndrome still remains obscure. Many views and theories have been put forward but none is still convincing. Some believe this to be due to increased histamine circulation, because of increased eosinophils, but there is no relation with the number of eosinophils and the symptoms. Other views are in favour of either allergic, parasitic, virus or spirochaetal origin. But none of these has a strong case in its favour and so we have to continue our search for something convincing as etiological factor. This syndrome is observed at all ages, but 85% cases occur between 11 and 40 years of age. The syndrome is more common in males than in females. Occupation has nothing in particular but one fact I observed is that this syndrome is very frequent amongst Kutchhi community, staying specially in Mandvi area in Bombay. This area is a big business centre for grains and a majority of this community in that area are engaged in grain business. This syndrome is also observed in workers in grain shops. This suggests some correlated factor which needs further investigation. This syndrome is sometimes observed in many members of one family.

II. **Symptomatology**.—This is often very variable. Cough and breathlessness are essential symptoms. Onset is gradual. Triad of symptoms starts with cough, followed by choking sense in throat, loss of appetite, general malaise, heaviness in chest, marked fatigue, and prostration, sense of suffocation and is completed by precipitation of asthmatic attack. Cough is dry and unproductive and often paroxysmal. Interval between onset of cough and asthma may vary from few weeks to years. During this period patient has only cough and other symptoms lasting for a long time. Such cases should be investigated for this syndrome. Some cases may run low fever for some time, along with loss of appetite, weight, etc. These cases are often labelled as tuberculosis. This shows that clinical features vary widely, from simple prostration and cough to typical asthmatic attack and/or fever. Looking at this varying picture, I usually divide the cases under three types:—

(1) *Ambulatory type*:—Where patient has only mild symptoms, such as sense of fatigue, prostration, heaviness of chest and/or mild cough.

* Specially contributed to THE ANTISEPTIC.

(2) *Acute type*.—Where there are typical features of rapid onset such as cough, asthmatic attacks, etc.

(3) *Chronic types*.—Where symptoms are present for more than a year and onset is gradual.

Interval between onset of cough and asthmatic attack is also pretty long. In my series, some patients had the complaints lasting for more than 5 to 10 years. Many cases under this type are often treated as allergic asthma.

Symptomatology thus differs in different patients. Incidence of chief symptoms in my series was as follows:—

(1) Asthma	in	72%
(2) Cough	„	80 „
(3) Fatigue, prostration, loss of energy, etc.	„	20 „
(4) Loss of weight	„	15 „
(5) Heaviness on chest, sense of suffocation, precordial distress, etc.	„	30 „
(6) Low grade fever on and off for sometime	„	12 „

Many of these symptoms are combined in a patient. All the symptoms need not necessarily be present in all patients. Chief presenting symptoms vary widely. Some patients may consult a doctor for cough only, others for asthmatic attacks only, while others with combinations of symptoms. In my whole series, the chief complaints for which patient sought medical advice were as follows:—

(1) For Cough alone	...	20% cases
(2) „ Cough with asthmatic attacks.	...	55% „
(3) „ Asthma alone	...	17% „
(4) „ Heaviness in chest and cough.	...	3% „
(5) „ General malaise—Fatigue, etc....	...	2% „
(6) „ Prolonged irregular pyrexia	...	1% „
(7) „ Cough with hæmoptysis	...	1% „
(8) „ Precordial distress and dyspnœa.	...	1% „

This shows that cough and/or asthma are the chief presenting symptoms in this syndrome. In 20% cases there was only dry cough and such cases are usually dispensed with usual sedative expectorant mixtures without any benefit. This stresses that all such patients with dry persistent cough should be investigated for this syndrome.

Physical signs are few. Patient may show signs of mild bronchitis or asthmatic signs according to the state of patient. Enlargement of spleen and lymphatic glands may be met with.

This syndrome may be associated with any other illness, such as T. B., anæmia, etc. Temporary spontaneous relief is also observed in some cases.

III. Laboratory findings.—Hematological picture is confirmative of this syndrome. I included under this syndrome those cases who had some clinical features along with blood count showing more than 10,000 W.B.C. per cmm. and eosinophil count more than 1,500 per cmm. In my series, total W.B.C. count varied from 10,000 to 90,000 per cmm. and absolute

eosinophil count from 1,500 to 70,000 per cmm. Percentage of eosinophilia varied from 15 to 92 per cent in differential count. Thus leucocytosis with eosinophilia more than 15 per cent is diagnostic of this syndrome.

Routine examination of urine, stools and sputum does not show anything in particular. Sternal puncture shows eosinophilic myeloid reaction. Cold agglutination test is found positive in about 90 per cent cases in this syndrome, suggesting some virus etiology. Wassermann reaction is found positive, while Kahn test is negative in these cases.

IV. Radiological findings.—In these cases they are similar to those found in tuberculous infiltration of the lung. X-ray plate shows symmetrically distributed shadows on both sides, giving rise to diffused mottled picture. Screening alone may not be sufficient to show these shadows clearly. Shadows are independent of symptoms and blood picture, and disappear when patient is improved.

V. Diagnosis and differential diagnosis.—Diagnosis is made from clinical picture and typical blood picture. X-ray findings help in confirmation. All the cases having total W.B.C. count above 10,000 per cmm. and eosinophil count above 1,500 per cmm. with some of the clinical features described above, can be labelled as “Eosinophil lung”, provided there is no other cause giving rise to such identical clinical and blood pictures. This leads us to think of other conditions which give rise to similar pulmonary symptoms and blood picture.

The chief symptoms are cough and/or asthma. All possible causes of chronic cough, such as chronic bronchitis, emphysema, tuberculosis, syphilis of lung, fungus infection of lung, pulmonary coccidiomycosis, pulmonary ascaridiasis, pneumoconiosis, etc., must be thought of. Typical blood picture and sputum examination will clear the diagnosis.

When a patient comes with asthmatic attacks, true allergic asthma and other causes of such breathlessness must be excluded. This is easy in a majority of cases with laboratory aids. Leucocytosis is rare and eosinophilia is usually under 20 per cent in allergic asthma cases.

There are many conditions where one meets with eosinophilia and these conditions must be excluded before labelling a patient as eosinophilic lung case. The chief conditions where there is eosinophilia are as follows:—

(1) Parasitic infections.—Eosinophilia is upto 20 per cent and rarely upto 50 per cent. Total W.B.C. count is usually normal.

(2) Allergic conditions.—Total W.B.C. count is rarely beyond 20,000 per cmm. and eosinophil percentage ranges between 10 to 30 per cent.

(3) Skin conditions, such as allergic dermatitis, pemphigus, psoriasis, etc., may show eosinophilia upto 25 per cent.

(4) Blood diseases.—Leucocytosis with high eosinophilia is present in eosinophilic leukæmia. Presence of premature cells, splenic enlargement, etc., help in diagnosis.

(5) Familial eosinophilia.—Eosinophilia up to 15 per cent may be met with in many members of a family without any cause.

(6) Drug-eosinophilia.—Eosinophilia up to 20 per cent is often seen after drugging with Digitalis, Benzel, Nirvanel, Emetine, Sodium Dilantin, Acetylcholine, Insulin, etc.

(7) Pulmonary coccidiomycosis, pulmonary periarteritis nodosa, etc., may cause leucocytosis with high eosinophilia.

In the conditions described above, we do not get high W.B.C. count in all. The following few conditions need special note in differential diagnosis of this syndrome, as high leucocytosis, eosinophilia, and similar and pulmonary symptoms are also present in these conditions. They are

- (1) Eosinophilic leukæmia.
- (2) Pulmonary ascaridiasis and allied parasitic conditions.
- (3) Pulmonary coccidiomycosis and other fungus diseases.
- (4) Periarteritis nodosa involving lungs.
- (5) Acute trichiniasis with pulmonary involvement.
- (6) Some cases of allergic asthma.
- (7) Some cases of Hodgkin's disease involving lungs, etc.

Detailed history and investigations will lead to correct diagnosis. If necessary aids are available, a therapeutic test with arsenicals will help to confirm the diagnosis of this syndrome.

VI. Therapeutic aspects.—The treatment of this syndrome with arsenic was accidentally discovered by WEINGARTEN. Many cases of asthma in the past were reported cured by arsenic, and to my mind many of such cases might be of this syndrome. As we have no detailed laboratory findings of such cases at hand, nothing can be said with certainty.

Arsenic is found to be a specific in this syndrome. Preparations used are either N.A.B. intravenously, Sulpharsenal or Acetylarsan intramuscularly, or Carbarsone, Stovarsol, and Leucorsone orally. Dosage of N.A.B. is 0.3 to 0.6 gms. once a week intravenously for 6 to 8 injections. Acetylarsean 3 c.c. intramuscularly, once every fourth day for 6 to 8 injections is also sufficient. This method is very convenient in all patients. Arsenic orally is also quite useful. Carbarsone, Stovarsol or Leucorsone, one tablet twice a day for 10 days, is sufficient. Same course is to be repeated after 2 weeks interval. Results are quite satisfactory.

During the treatment, patient may show some signs of aggravation after first or second injection. Fever, dyspnoea, increase in cough are usual manifestations. Leucocytosis may increase along with eosinophil percentage. All these things settle of their own within a few days and so treatment should be continued as per schedule. This flare up phenomena is met with in about 10 per cent cases. Blood count and symptoms gradually come down and this takes about 6 to 10 weeks to be within normal limits. Mode of action of arsenic remains as obscure as is the etiology of this syndrome. We hope for better light in future.

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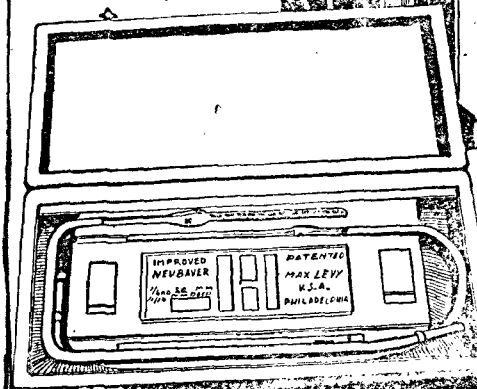
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Some Observations on 'Tropical Eosinophilia'

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EVER since the discovery of Tropical Eosinophilia as an independent 'disease' which now makes frequent appearances in the medical publications not only from the tropics, but from almost anywhere, I have been at work to find out to what extent this interesting condition may be found amongst the people living on the Malabar Coast in South India, keeping in mind Weingarten's original belief that the disease is peculiar to the coastal regions of India. With this object in view I have investigated a number of vague and nondescript respiratory affections in the hope that some of them might turn out to be tropical eosinophilia, with the result that I am now in a position to present the laboratory findings of 68 cases so examined which might interest the physicians practising in these areas.

Of the 68 cases referred to above, 41 had only normal eosinophile count (in this series up to 7% eosinophilia was regarded as normal or of 'no significance') and, therefore, went out of the investigation at the first stage. Of the remaining 27 cases with varying degrees of eosinophilia 8 had ankylostoms, ascaris and trichuris, 7 had ankylostoms and trichuris, 3 had ascaris and trichuris, 1 had trichuris only, 1 had tænia only, 2 had oxyuris only, and 5 cases stood out with 28, 29, 31, 72 and 38 per cent eosinophilia and with nothing to account for the increased eosinophile count except the originally suspected 'catarrhal chest.' These 5 cases therefore were provisionally diagnosed as tropical eosinophilia and given N.A.B. injections not only as a curative measure, but also as a therapeutic test, since Salvarsan group of arsenicals are said to act as 'Specific' in true tropical eosinophilia. All these cases made striking and uneventful recoveries under the treatment, one of them, however, presenting an interesting problem for consideration in the course of the treatment. In this case after the third N.A.B. injection, when a blood smear from the patient was being microscopically examined to note the progress made, much to my surprise and not a little to my amusement, I found for the first time, an unmistakably stained microfilaria in the slide!

Now, was this case with irregular fever, asthma like respiratory trouble and 31% eosinophilia in which probably due to the provocative action of the arsenic, a filarial embryo was accidentally seen in the day-time blood, a 'tropical eosinophilia', or one of filariasis pure and simple? In this connection MANSON's discovery that when filarial embryos are not inclined to come out into the peripheral blood their favourite resting place to be the vessels of the lungs is highly significant. Also the suggestion that in Loeffler's syndrome, a condition somewhat similar to 'tropical eosinophilia'—the respiratory symptoms and the increased eosinophile count might be due to the passage of ascaris larvæ through the lungs, is noteworthy.

The diagnosis of tropical eosinophilia depends mainly upon two distinct clinical findings. There must be a suggestive respiratory trouble which in most cases is not unlike ordinary bronchial asthma, and as the name of the disease indicates, a definitely increased eosinophile blood-count which, if not due to other causes, is the deciding factor. I have found the respiratory symptoms worthless, as such symptoms are common to a number of other chest affections as well. The eosinophilia alone remains

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then, as the mainstay. Here too the diagnostician has no plain sailing. He is sure to find to his vexation that more or less increased eosinophile count is not unusual in several other respiratory affections, not to speak of multitudes of other known and unknown factors which might produce eosinophilia in the tropics.

A word about the treatment of tropical eosinophilia will not be out of place here. Arsenic is the remedy and a few injections of N.A.B. or Acetylarsan will clear up the symptoms almost miraculously. But to me the treatment part of it is not a new discovery. Had I been tackling tropical eosinophilia 35 years ago, without, of course, knowing it by its new name, I would have thought of arsenical injections as the choicest remedy. I employed Atoxyl or Soamin when it was, practically, the only injectible arsenic available when Salvarsan was still being 'perfected' in its home laboratory—in chronic respiratory affections, often with phenomenal success having discovered this utility of the drug while I was working with it in the treatment of sleeping sickness in Equatorial Africa.

*Some impressions gathered:—*1. The diagnosis of tropical eosinophilia, as it is now understood, can only be made with reservations, the lung symptoms and the blood eosinophilia can be due to various other known and unknown causes, therefore not dependable.

2. The value of Arseno-therapy as a 'diagnostic test' in tropical eosinophilia is great but not absolute. While N.A.B. and allied arsenicals are infallible in the treatment of this condition, they can also cure or considerably improve other similar conditions.

3. If filarial infection is capable of producing eosinophilia and respiratory symptoms simulating 'tropical eosinophilia' as it probably did in one of my cases cited above, in places where filaria exists, it might remain another stumbling block, not easy to eliminate.

I remain grateful to the authorities of the Calcutta School of Tropical Medicine for so helpfully examining some of my slides and confirming my findings.

Erythrocyte Sedimentation Rate*

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Medical Officer, D.B. Champaran, Motihari.

THE present trend of clinicians is to assess the degree of objective evidence of diseases and to express it in figures which denote the exact extent of any pathological process and the evolution of the measurement of erythrocyte sedimentation rate is a clinical entity resultant upon this trend. The measuring of erythrocyte sedimentation rate (E.S.R.) is analogous to the counting of a patient's pulse rate and to measuring of his temperature. It is a biological phenomenon with imperfectly understood mechanism. E.S.R. gives valuable information about the diagnosis and prognosis of a disease and is a measure of great importance in controlling the treatment also. Although its limitations are many—its laboratory details have not been agreed upon by different authorities and its variations are very wide—its value should never be under-estimated.

Historical survey.—The earliest records of these observations come down from the time of the Greeks. HEWSON (1772) marked the formation of fibrin clot. LISTER in 1827 recognised the phenomenon of rouleaux

formation. FAHREUS in 1921 applied it as a laboratory test and since then the work done upon its improvement is vast and the controversies regarding it are numerous.

Fundamental principles.—A clear understanding of certain theoretical principles attached to the E.S.R. is of prime importance as these form the primary guide towards realization of its attendant irregularities. The sedimentation of erythrocyte occurs in three phases, and these, in turn, are controlled by a series of factors which will be outlined below. In the first phase the erythrocytes clump together; the second phase, the phase on which the clinical significance of sedimentation depends, consists of rapid sinking down of the red blood cells; and the third phase, of packing up of the sedimented R.B.C. at the bottom of the plasma volume.

As will be appreciated from the above, the first phase of rouleaux formation directly affects the sedimentation rate and effects it to a large extent. It is the major factor in sedimentation and is the actual index of abnormality. Many different theories have been propounded and many causes ascribed to explain the role of rouleaux formation; the most plausible amongst these being changes in the constitution of the plasma. The fibrinogen element is considered to be the most potent factor, an increase of it, which usually occurs in many inflammatory conditions, causes a rise of the E.S.R. It has also been shown that the same result is achieved either by increasing the globulin content or reducing the albumin content of the blood plasma.

Methods of determination of the E.S.R.—Prior to outlining the method of its determination certain technical factors, which may bring about a deviation of the readings obtained, will have to be pointed out. And these technical measures shall be headed under the term "extrinsic" causes. The first extrinsic factor is the anticoagulant added to the blood. There are various anticoagulants such as Heparin, Sodium Citrate (3.8%), Ammonium and Potassium Oxalates. The sedimentation rate is very much affected by quality, quantity and dilution of the anticoagulants used. Secondly, the tubes used in its determination vary in length and bore, sedimentation occurring rapidly in a longer tube. The tube should be held up in a truly vertical position and even minor deviations should not be allowed. Thirdly, the time interval between taking the blood sample and the performance of the test is also important as the sedimentation remains constant for at least two hours. No great change occurs in it even up to four hours, but after this interval, the sedimentation rate decreases markedly. Fourthly, the test should be performed at the room temperature as the sedimentation rate decreases with a lowering of the temperature to an appreciable degree. Fifthly, venous blood is preferable to capillary blood and there should be no venous constriction at the time of the drawing of the blood. Sixthly, as hæmolysis falsifies the results the appliances should be perfectly clean with no trace of antiseptics over them. Seventhly, there should be no air bubble in the sedimenting blood column.

The choice of the method used in determining the E.S.R. is also important and since the rate of sedimentation is modified by a number of factors a standard technique should be chosen and strictly adhered to. The method now-a-days most in vogue is that of WESTERGREEN. A 2 c.cm. syringe is one-fifth filled up with 3.8% solution of Sodium Citrate and then to capacity with venous blood. The blood and the Citrate solution are

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quickly mixed together by emptying the contents of the syringe into an empty tube. The mixture is drawn up to 200 mm. in a pipette of 3 mm. bore and 300 mm. long and the tube is vertically held up in an improvised stand. The reading of the length of the sunk down corpuscles is taken an hour later by measuring the graduation of the pipette.

Advantages of Westergreen method:—(a) The length of the tube used is such that a fair indication of the velocity of sedimentation is received within one hour and the longer tube in conjunction with Sodium Citrate as the anticoagulant is less sensitive to minor influences; (b) the method is less susceptible to the effects of anæmia; and (c) it is simple in operation.

The "intrinsic" factors modifying sedimentation need also be given a consideration as they are the footholds of a wide-range of controversies. The erythrocyte concentration in the blood for examination is a factor of importance as it has been conclusively proved that the rate of sedimentation is accelerated by oligocythæmia and retarded by polycythæmia. As the significance of E.S.R. is obscured by this effect in anæmia and plethoric conditions, particular methods for correction of this effect have been sought long. The most prevalent method for the finding out of this "corrected" E.S.R. consists in the use of correction charts, such as that devised by WINTROBE (1936). But the correction methods have not gained general acceptance as no universal chart could be made out and other correction methods have not stood the test of time. The degree of anæmia of the patient should be corrected in vivo and if it cannot return to normal, it is useless to correct it on paper.

Apart from the factor outlined above, there is another condition, namely the condition of the red cells themselves, which has to be considered as the red cells themselves, which has to be considered as the red cells in pernicious anæmia, liver deficiency diseases and sickle-cell anæmia vary in sizes and shapes and as such, the rouleaux formation is not normal, as the red cells cannot properly adhere by their opposing surfaces.

Practical applications.—(1) A patient of pulmonary tuberculosis with normal sedimentation rate throughout his illness has a favourable prognosis. In such cases, it is generally seen that the intrapulmonary lesion was slight. At the onset of *pulmonary effusions* the sedimentation is exceedingly high and the readings in primary pulmonary effusions return to normal quite early but if complications occur such as *spread of the disease to the lungs* or *invasion by secondary organisms* the sedimentation rate will continue high. In *pneumothorax* cases, a rise of E.S.R. suggests the formation of fluids and if the rise remains constant, it shows that the prognosis is not good and the fluid will be found to be T. B. positive on culture. The E.S.R. in cases of pulmonary tuberculosis should always be used in conjunction with other clinical tests and an isolated determination of it is of no good. The readings should be taken throughout the course of the treatment to determine the progress.

2. Its chief value in *rheumatic conditions* depends upon the fact that a deviation of E.S.R. towards the high side is an indication of the unfavourable prognosis due to the cardiac involvements brought about as effects of the rheumatic process. In *acute rheumatic conditions* the E.S.R. attains value after the subsidence of the temperature and the joint conditions as that is the stage when a heart condition may be present, which may warrant a non-ambulatory condition for the patient. The

E.S.R. should be determined at regular intervals for signs of the recurrence of the disease. Diagnosis cannot be settled up between active subacute rheumatic and subacute rheumatic conditions. Only E.S.R. furnishes the positive or negative answer in such cases. The disappearance of *rheumatic nodules* is closely associated with the gradual lowering of an increased E.S.R. A persistently raised E.S.R. signifies the continuance of the active phase. In *chorea* only a very slight E.S.R. alteration is noted.

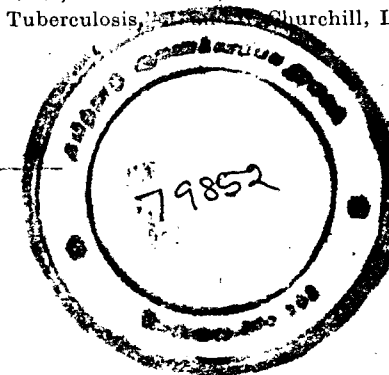
3. *Rheumatoid arthritis*.—E.S.R. is the main indication of the severity of the disease at present. The greater the number of the joints involved, the more the disease-reaction present in them, the higher the sedimentation rate. The E.S.R. is also indicative of the pathogenesis of rheumatic heart conditions. Employment of gold in the treatment of favourable cases of rheumatoid arthritis brings about a return of E.S.R. to normal. The prognosis even in such cases should be guarded unless the E.S.R. remains normal and at a constant level for a continuous period. In osteoarthritis, fibrositis and sciatica the variations in the E.S.R. are very slight. A rapid rate in such cases is indicative of other underlying troubles. In cases of gout the tissue destruction element as shown by raised E.S.R. is independent of metabolic disturbances. The E.S.R. level is not parallel with that of blood uric level which is the only clinical guide in gout. In cases of *ankylosing spondylitis* the E.S.R. rises high even in the earliest stages of the disease and is lowered only as a result of X-ray therapy.

4. In *microbic infections* such as acute tonsillitis, wounds, septicæmia, malaria, kala-azar and mild catarrhal infections, the E.S.R. is usually high.

5. In *coronary thrombosis* the rate attains a high peak after two or three weeks and it may return to normal, the infarct heals up or it may persist at a high level over a long period; in *hypertensive heart disease* the rate is variable. Conditions of *congestive heart failure* retard the sedimentation rate; whereas *angina of effort* has no marked significance over it. *Heart murmurs* with abnormal sedimentation rate point out to valvular diseases but the controversy of organic disease leading to the valvular damage cannot be fully settled up.

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Treatment of Hydrocele*

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SINCE nearly a century many methods of bloodless treatment of hydrocele testis have been suggested. Not considering here the simple tapping which mostly does not yield the desired result, mainly injections into the evacuated hydrocele sac have been recommended. The following substances were used for this purpose: Tinct. of Iodine, Lugol's solution (Velpeau), Chloroform (Langenbach), red wine, cold water (Albanese), alcohol (Monod), Ergot solution (Green), phenol solution (Hueter), ether plus Adrenalin solution (v. Lichtenberg), and others. It was endeavoured to cause a heavy irritation of the tissues and therewith a consecutive adhesion between the visceral and parietal layer of the tunica vaginalis testis. Adhesions of the two layers were really obtained in a high percentage with complete cure.

Very often, however, these injections brought about heavy pains and inflammations which forced the patient to his bed for about ten days. Due to uncertainty of the results, in spite of the unpleasant and strong reactions, and the combination with all sorts of complications, such injections were performed only seldom, and operation became the treatment of choice.

The numerous experiences gained with the intravenous treatment of varicose veins lead to a revival of the old injection treatment of hydroceles. Nearly all the sclerosing agents so successful against varices were also tried, in modern times Quinine Urethane, Quinine and Urea Hydrochloride, Sodium Morrhuas, Morestin's fluid, Monoethanolamine Oleate, etc. Most of these preparations cannot be called indifferent and are relatively expensive. Marked cinchonism may occur after Quinine preparations as well as tissue sloughs from subcutan extravasations; Morestin's fluid containing formalin, glycerine and alcohol is apt to produce severe pains, swellings and even edema scroti.

It may therefore be permitted for me to recall a method which I proposed some 14 years ago.

At that time NOBL introduced Calorose† solution as sclerosing agent for varicose veins. Calorose became nearly the medicament of choice for obliterating the varices. In thousandfold experiences it proved a strong irritant to the vein wall, it is not hazardous, and even paravenously it is not followed by unpleasant consequences (sloughing, pain, allergic reactions, etc.). Recently SULZBERGER confirms that of the various preparations sugar solutions or Sodium Morrhuate give the results with the least chance of disagreeable effects. The almost painless injections with invert sugar can be administered ambulatorily, cost little, and are scarcely accompanied by incapacity to work.

Considering whether invert sugar may influence the tunica vaginalis testis in a similar way as the vein wall I tried 60% Calorose solution intratunically for hydrocele treatment. At the beginning this patent medicine was applied. I injected it exclusively in cases of hydrocele

acquisita chronica, i.e., in such forms which possess no communications with the abdominal cavity. Originally I treated four cases which I could follow up for more than two years thus enabling me to gain an impression about the effectiveness.

In short, as examples, two histories:—

(1) Locksmith, 40 years of age. Four years ago left-sided epididymitis gonorrhoea with subsequent hydrocele. Aspiration showed an exudate with epithelia and diplococci. Involution after puncture. One year later renewed hydrocele, the result of another gonorrhoeal epididymitis. This time no healing after tapping. *Findings* at the start of injection treatment: Typical hydrocele left (ovoid, transparent, spherical delimitation at the top of the tumor, no disappearance of the fluid by digital compression). After draining off the hydrocele contents (200 c.c.) injection of 10 c.c. of 60% Calorose. Half a year later no new exudation. After a further quarter of a year no collection of fluid around the testicle, but an encapsulated hydrocele of the spermatic cord with 100 c.c. of fluid. Again aspiration and injection. Observation for over two years. Remained completely cured.

(2) Labourer, 50 years of age, with left-sided hydrocele acquisita for over three and a half years. Repeatedly punctured without lasting success. 200 c.c. of an amber coloured clear fluid was tapped off. Then injection of 10 c.c. Calorose 60%. Eight days later aspiration of 60 c.c. of a reddish liquid. Recidive after half a year, with a content of 400 c.c. Reiterated injection was followed by pulling pain towards the abdomen of brief duration. Half a year thereafter again recidive with 120 c.c. exudate; once more 10 c.c. Calorose. Now pulling pains into the abdomen for four hours. Eight days later moderate reactive exudate. Three quarters of a year after, no contents at all. Scrotum of completely normal appearance. No recidive during an observation of two years.

The first four cases which I treated with Calorose gave the following results: The material consisted of typical, uncomplicated, non-congenital hydroceles, two as consequences of gonorrhoeal epididymitis, two of unknown origin. In three of them repeated tapplings were of no avail. In one case one injection (case 1)—the hydrocele funiculi spermatici is not regarded as recidive, but as a new illness—in one case two injections, in one case three injections (case 2) have been necessary to establish complete cure. Case 4 seems to be a failure. As this patient got only one injection—a second injection was refused—it is impossible to assert whether repetition of treatment would not have become successful. In one case the tunica vaginalis was fibromously thickened, one and a quarter years later increase of thickening, but no more exudation. Whilst in two cases the injections caused no pains, the other complained about pulling ache along the funiculus spermaticus into the abdomen, when the injection was re-given. It seems that the discomfort gains in intensity with the number of applications. The aching, however, lasted always a short time, up to four hours. After the injections reactive engorgements were present which were absorbed spontaneously. Aspiration of these reactive exudates revealed admixture of blood, a sign of desired irritation, but they never gave rise to hematoceles. Otherwise the injections were well tolerated.

The mode of action of the invert sugar solution may be similar to that on the veins, as demonstrated by NOBL. Most probably hypertonic solutions

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† Trade mark for an invert sugar solution (= mixture of equal weights of dextrose and levulose).

exert dehydrating effects on the epithelia of the tunica vaginalis with severe irritation and damage of the cells, thus producing firm adhesions between the two layers of the tunica.

I am not able to make a statement on the fate of the injected substance within the hydrocele sac. One test with Nylander's sugar reagent gave a positive result. Other reagents such as Fehling or Benedict I had not at hand. This positive result is, however, by no means conclusive as the hydrocele fluid *per se* reduces Nylander's solution. This may be a pseudo sugar reaction, as highly albuminous liquids reduce Nylander too.

In a great many other cases I obtained similar good results with the Calorose treatment. I regret not to possess statistical corroborations on my further experiences. Since Calorose was unobtainable I employed invert sugar solution which I prepared; its preparation makes no difficulties. The results of treatment differ in no way from those obtained with the preparations on the market, but with the advantage that the costs are considerably reduced.

As example, the following case:—

(3) A Peria Malayali of the Shevaroy Hills, peasant, of about 30 years of age. Four years ago kick by a cow against the right testicle. Since then swelling. 31-1-'46—typical hydrocele acquisita right which was filled with 300 c.c. of a clear, yellowish fluid. Injection of 10 c.c. invert sugar solution (preparation see below). Control examination on the 25th of August, 1946—No re-effusion.

Technique of treatment with invert sugar solutions.—First the hydrocele fluid must be withdrawn. After the skin is cleansed with spirit and Iodine the tumor is fixed with the left hand and a large, thoroughly aseptic record aspiration needle is plunged into the cavity on the deepest pole of the hydrocele in a direction tangential to the testicle for avoiding impinging on it. When the jet of the fluid lessens, the residue may be evacuated by pressing it out with the aid of the fingers or by aspiration with a syringe. The empty hydrocele and the contents of the scrotum must be palpated thoroughly to scrutinise whether no important alterations are present especially on the testicles. Thereafter injection of 10 c.c. of 60–80% invert sugar solution through the still inserted needle. As sugar solutions of such high concentration are very viscous the caliber of the needle has to be adequate. The injected solution may be massaged to bring it into contact with the whole inner surface of the hydrocele sac. Then a compressing dressing with circular adhesive plaster strips, each layer of which should imbricately overlap the previous one. The injection is, as a rule, followed by a reactive effusion; it may be recommendable to tap it off after about eight days. But up to now it is not decided whether withdrawal is really necessary, as this exudate may be absorbed by itself. Should one injection not bring the expected result, two or three or even more repetitions may be made until cure.

Preparation of invert sugar solutions.—The preparation gives no difficulty to the physician.

760 grammes of sacrose is dissolved in distilled water, 1ml of N/1 hydrochloric acid is added and the solution made to a litre. After filtering, the solution is sterilised at 120°C for thirty minutes, inversion occurring simultaneously (HANSEN). The solution may be bottled in small containers. It is unnecessary to sterilise the solution before use since NOBL

could demonstrate experimentally, such hypertonic sugar solutions remain permanently sterile.

Indications for injection treatment.—In contrast to diffuse edemata scroti the term hydrocele is applied to accumulation of a serous effusion between the two layers of the tunica vaginalis testis resulting in formation of a well-defined fluctuating tumour which is, when small, soft, when big, tense and elastic. It has an oval, spherical or pear-shaped form. The surface is always smooth. The testicle is separated by a shallow furrow from the filled hydrocele sac, and is found on the lower end and behind it. The testicle feels harder than the fluctuating hydrocele, and gives rise to the characteristic, nasty testicle ache on pressure. The spermatic cord can be felt distinctly on the rear side of the swelling and above it. Even when the ordinary hydrocele is big sized it never reaches the subcutaneous inguinal ring, and never enters the inguinal canal. This is important in regard to the differential diagnosis against hernia. A light red transparency is found diaphanoscopically when lighted up with an electric bulb. The diagnosis is verified when aspiration yields a clear, amber to straw-coloured fluid.

Several forms are generally distinguished:—

I. Hydrocele Congenita S. Communicans or peritovaginalis.—When the processus vaginalis (*i.e.*, the extroversion of peritoneum which descends into the scrotum) does not close, and a serous exudation takes place, this kind of hydrocele is formed. It is in communication with the abdominal cavity. Very often it is combined with hernia. The tumour reduces in size on digital compression or in supine position to reappear when sitting up or on pressure to the abdomen. In this form injections are not indicated. It is also advisable to abstain from operation if not a complicating hernia requires it. It may be tried to effect adhesion of the peritoneal layers of the processus vaginalis by applying a truss with a strong pad.

II. Hydrocele acquisita.—1. *Hydrocele acuta.*—It occurs after trauma, contusion of the epididymis, but mostly after epididymitis gonorrhoeica as sequence of a periorchitis. Fever is sometimes present. Usually this inflammation gradually passes off within a fortnight. Sometimes, however, it may change into:

2. *Hydrocele chronica communis.*—Like the others it may be uni- or bi-lateral. In respect to etiology four kinds are usually distinguished:—

(a) *The traumatic form*, mostly as result of concussion or contusions. Nearly all circus-riders suffer from this form.

(b) *The idiopathic form*, without traceable cause, sometimes in the newborn [slight birth trauma] (?). According to SCHEUBE it is widely spread in tropical countries; the reason has not been clarified.

(c) *The gonorrhoeical form.*—The fluid accumulates some time after an inflammation of epididymis.

(d) *The symptomatic form* as a consequence or complication of diseases of the testicle, such as syphilis, sometimes malaria, tuberculosis, tumors, &c., or in filaria. The so called chylous dropsy of the tunica vaginalis (*syn.* Chylocele) is not an uncommon occurrence in filaria. It does not transmit light and is associated with lymph scrotum, &c. The exudate contains not seldom microfilariae; on the other hand, recurrent attacks of filarial orchitis and epididymitis—the common localisation of adult

worms—lead frequently to hydroceles. In the clear fluid microfilariæ or their remains are often demonstrable.

3. When the exudation only affects both layers of the processus vaginalis a small roundish elongated tumor—hydrocele funiculi spermatici (case 2) develops. There is no principal difference between hydrocele testis and hydrocele of the spermatic cord, except if there is a communication with the abdominal cavity as in hydrocele congenita. Here too hernia may simultaneously be present rendering the diagnosis complicated and more difficult. The remarks on hydrocele congenita are valid here too. Never try puncture and injection.

It would be too much to go into considerations of other and rare affections of the tunica vaginalis testis and the processus vaginalis funiculi spermatici.

It is my opinion that only hydrocele chronica saccata and hydrocele funiculi spermatici non-communicans enumerated under (2) and (3) give indications for injection treatment. It must be emphasised that filarial chylous dropsy of the tunica vaginalis and filarial hydrocele do not differ therapeutically from ordinary hydroceles; they also react favourably on injections.

Before starting an injection therapy, exact diagnosis is the first commandment. Assurance must be given that no communication of the hydrocele sac with the cavum abdominalis exists. In cases of hydrocele plus hernia greatest precaution should be taken and only if no connection exists between both, injections may be administered. In doubtful cases it is better not to inject, as injections may bring about disastrous consequences. Hydrocele fibrosa shows, owing to the thickenings of the tunica vaginalis, no transparency, but aspiration gives typical hydrocele fluid. This form, too, can be attacked by injections. Due to lack of experience I cannot say whether internal hematoceles give indications for sugar injections.

Spermatoceles should never be treated with sugar injections. Often they may be mistaken for hydroceles. A spermatocele yields a light watery, sometimes whitish opaque fluid like soap water: placed under a microscope sperm-cells will be found. The testicle is, in contrast to hydroceles, pushed into the foreparts.

Summary.—(1) Injections of invert sugar solutions of high concentration into the empty hydrocele sac are recommended for bloodless treatment of hydroceles.

(2) Only hydrocele chronica saccata communis and hydrocele funiculi spermatici saccata give indications at injection treatment.

(3) This treatment is contraindicated in cases of hydrocele congenita communicans with or without hernia and of hydrocele funiculi spermatici communicans.

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Eye Troubles in Old Age*

Dr. R. S. AGARWAL,
Eye Specialist, Delhi.

It is said that everyone nearing the fortieth year suffers from some defective eye-sight due to old age and glasses are the only palliative. This belief seems to be long standing. The eye is one of the sense organs like the ear, nose, etc. When the other sense organs do not become defective in old age except in a few cases, why should the eye? It indicates that there is some other cause, and treatment for that cause is the right treatment.

In the treatment of eye diseases the methods which are at hand with the medical profession in general are of little value. They neither prevent nor cure the disease. When the patient complains of defective eye-sight, glasses are given to him. After having the glasses the sight goes on deteriorating and higher powers of glasses are prescribed. Some of the cases become so bad that they are given up as incurable. When there are symptoms of cataract and glaucoma in the eye, patients are advised operation. Cataract patients have to wait and sometimes they have to wait for their whole life till the cataract is matured and glaucoma cases are seldom benefited by operation. Diseases of retina, choroid and the optic nerve are rarely cured by usual treatment. At first most of the time and money are wasted in finding out the cause of the diseases. Usually the cause is not found out and experimental treatment is given. Most of these cases are declared as hopeless sooner or later. Patients who have no organic defect in the eye but suffer from defective eye-sight are treated in various ineffective ways. In short, the present system of treating eye diseases and its discomforts are very unsatisfactory.

The remarkable discovery of Dr. W. H. BATES of America that strain is the real cause of most eye diseases and relaxation or relief of the strain is the real treatment of eye diseases has given to the medical profession something like an 'Elixir'. The curative value of Dr. BATES' system of treating eye diseases has already proved to be very great. Throughout the world there are men, women, and children to-day who think of him with gratitude because of pain relieved and sight restored.

During my practice nature guided me to find out the value of all the methods. In my early days of practice I prescribed glasses to all my patients and performed operations as others do. I studied the medical side from Ayurvedic books also and gained experience about the use of Ayurvedic medicines. SUSHRUTA is the first Ophthalmologist who wrote a book on eye diseases. I found that there was truth in the methods of application of medicines but they were not sufficient for the cure of all the eye diseases.

When I studied Dr. Bates' system of treating imperfect eye-sight I was very much impressed by it. I myself was using glasses at that time for nine years and was able to cure myself in a month's time. I tried the methods on a boy who was blind since birth with his left eye and was cured in one and a half months. I felt very much interested in this system and was feeling that some secret hand was constantly guiding and helping me. Later on a boy who was blind with the right eye since birth was cured in

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two hours. A careful study of the methods revealed many new things, but the history of that is too long to be discussed here.

I evolved a system of practical treatment based on all the old systems as well the methods of Dr. BATES. I find that all the methods of treatment—medicines, glasses, operations, relaxation, etc., have their value; but one has to discriminate what will be helpful in a particular case. Relaxation treatment as prescribed by Dr. BATES is unavoidable and indispensable in all cases. Even if it is necessary to perform operations or to prescribe glasses or medicine, it is very helpful to prescribe the methods of relaxation along with them. Without giving relaxation no constructive work can be done and the condition of patients will become worse.

The efficacy of Dr. BATES' relaxation methods is so great that one can successfully treat cases of eye troubles without having the diagnosis even. At times I was unable to diagnose the disease in some cases, but I found myself quite successful in treating such cases by intelligently following the relaxation methods. The reason is that whenever a patient complains of pain, headache, defective vision, etc., it indicates mental and eye strain. Treatment which can relieve this strain will surely prove useful, at times miraculous. Sometime back an elderly lady gave a history of constant pain and fatigue in the eyes, inability to sleep at night, presence of redness and swelling in the eyes in the mornings. Every doctor who examined her admitted that he did know what was wrong. Blindness was expected by some doctors in the course of a few years. I told the lady that I did not know what was wrong with her eyes but I believed that she could be cured even without any diagnosis being made or without discovering the cause of her troubles. Then I said to the lady: "Look at a large letter of the Snellen Test Card and note its blackness. Then cover your eyes with the palms of your hands, shutting out all the light, and remember the blackness of the letter until you saw everything black". She started to do as I suggested and after a few minutes she told me that she saw everything black," and she felt a great relief to her eye troubles. In a few days by frequent palming and swinging she got complete relief from all the discomforts from which she suffered. The details of all the relaxation methods have been fully explained in my book *Mind and Vision* but a short summary of them along with the synthetic treatment of all systems has been explained in the book *Eye Troubles in Old Age*.

The value of the practical work according to the synthetic treatment of all systems of Dr. Agarwal's Eye Institute, Delhi, has now become widely known and it is a surprise to many when the so called incurable patients get considerable improvement in their eye-sight. A report of some among such cases appear now and then in the medical journals. To popularise the synthetic treatment for the benefit of humanity, practical training is imparted to deserving medical men.

Through a series of short articles about synthetic treatment of eye troubles I shall try to equip the knowledge of the readers of the ANTISEPTIC and shall welcome any criticism or any question from the readers.

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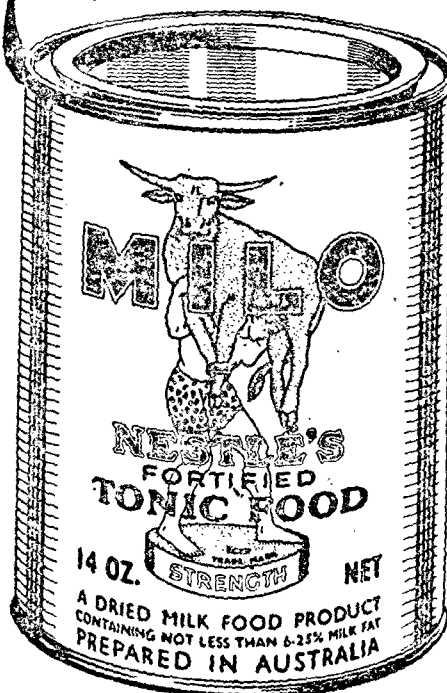
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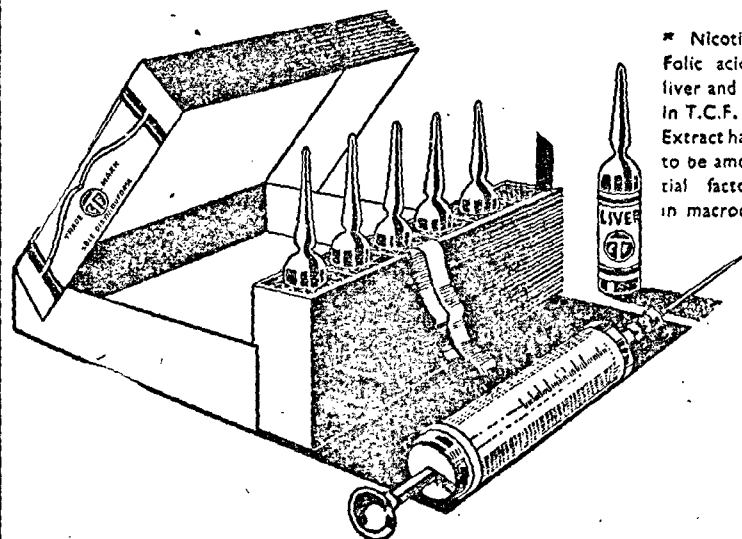
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Vitamin K*

N. J. BANDORAWALLA, M.B., M.S., F.C.P.S.,
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THE discovery of vitamin K is comparatively recent. DAM of Copenhagen showed in 1935, that deficiency of a fat soluble substance in the diet of newly hatched chicks caused fatal hæmorrhages with a low plasma prothombin level. The condition could be improved by the administration of a protective factor which DAM called vitamin K.

Vitamin K is present in vegetables such as spinach, tomatoes, and in green parts of other plants. "It can also be extracted from putrified fish and from rice bran where it is formed, probably by bacterial action.

Deficiency of K in the body leads to a fall in plasma prothombin; when the prothombin level reaches about 50% of the normal, dangerous hæmorrhages are likely. In obstructive jaundice this level is reached in about 20 days.

The following factors are necessary for the proper absorption and utilisation of K by the body:—

(1) The diet must contain enough K.

(2) Enough bile must pass into the intestine, and its composition must be normal. Even though the diet may contain abundant K, it cannot be absorbed by the intestines in the absence of bile. The role of bile here is more or less mechanical. K is a fat-soluble vitamin, and bile aids the emulsification and absorption of fats; hence, it aids the absorption of K from the intestines.

(3) Absorption and digestion of fats must not be hampered from any other factor.

(4) There must be enough normal intestinal mucosa to absorb K.

(5) Functions of the liver must be normal.

Knowing as we do the factors which are responsible for the absorption and utilisation of this vitamin, we can easily understand that there is deficiency of K in certain diseases. These we shall divide into the main groups, those in the adults and those in the new-born.

In adults obstructive jaundice and biliary fistula are the two main causes of K deficiency in the system. Here no bile passes into the intestine; naturally the emulsification and absorption of fats is hampered. The result is that very little K is absorbed as it is a fat-soluble vitamin. Lack of K causes a fall in the prothombin level in the blood. When this goes below 50% of the normal, dangerous hæmorrhages are likely, particularly after operations on jaundiced patients, especially if the obstruction cannot be removed. Prothombin level in the blood can also be reduced in cirrhosis and acute yellow atrophy of the liver, because of improper utilisation of K by the liver. Similarly in malnutrition, ulcerative colitis, cachexia, intestinal and gastro-colic fistula, surgical short circuits, etc., there is a tendency to spontaneous hæmorrhages or rather a difficulty in checking bleeding from wounds operative or otherwise because of low prothombin level in the blood owing to insufficient absorption of K.

We know that a good percentage of new-born babies suffer from slight or moderate jaundice from the 3rd or 4th day after birth due to breaking down of erythrocytes. Rarely this jaundice begins at birth, is very intense,

* Specially contributed to THE ANTISEPTIC.

and unless prompt and efficient treatment is undertaken, leads to a fatal termination due to hæmorrhages and coma. This condition is called icterus gravis neonatorum, and is due to thrombocytopenia caused by lack of K. In this connection some very interesting observations have been made on new-born babes. It has been found that there is a prothombin deficiency in the blood of all new-born babies, and that the prothombin level comes to normal on or about the 6th day. This explains why hæmorrhages in the new-born are practically unknown after the first week of extra-uterine life. There is no satisfactory explanation as to why there is this deficiency. It seems that babies are born with a poor stock of K in their system and they get very little from the mothers' milk. There is reason to believe that they get the necessary supply from their own intestine, where it is formed by bacterial action. Since the intestinal contents of the new-born are sterile, it takes some time before bacteria can enter the intestines, multiply and form K. This explanation seems hardly convincing and we must wait for further research to throw clearer light on the subject. Besides we do not know why in some cases the jaundice begins early and takes a serious turn.

There is reason to believe that prothombin deficiency may be the cause of intra-cranial hæmorrhage in the new-born, especially those cases where signs are late in appearing, suggesting that the bleeding is of a slow oozing character. Although trauma due to instrumentation, prolonged labour, powerful uterine contractions, etc., is the precipitating factor, poor clotting power due to prothombin deficiency is supposed to keep up the bleeding which would otherwise be slight and stop spontaneously. In hæmophilia, purpura, hæmatemesis, hæmaturia, etc., where the prothombin level in the blood is normal, K is of no use. In such cases attempts to raise the prothombin level in the blood far above the normal, by giving large doses of K and thus check the bleeding, proved a complete failure. We are, therefore, justified in concluding that the amount of K in the blood is not an important factor in determining the prothombin level.

To summarize, therefore, obstructive jaundice, whether due to gallstones, cancer or stricture of the common bile-duct, especially if an operation is necessary in any of these cases, may be considered absolute indications in adults. In infants in cases of icterus gravis neonatorum, and hæmorrhage in the new-born, prompt use of K may be life-saving. Besides in cirrhosis and acute yellow atrophy of the liver, in chronic ulcerative colitis, in short circuit operations, and in general malnutrition and avitaminosis, K may be administered where there is actual bleeding, or a tendency to hæmorrhage, or where an operation is contemplated in some of these conditions. In premature infants, or where labour may be instrumental or prolonged, a prophylactic injection of K is supposed to do no harm.

Now we shall consider the preparations in common use, their doses and the technique of administration. Now-a-days certain synthetic preparations have entirely replaced biological concentrations of K, because these preparations are much more powerful and because they are free from unpleasant after-effects like nausea, vomiting, diarrhoea, etc. Two of the synthetic compounds in common use are Kapilin (Glaxo Labs.), and Synkavit (Roche.). Kapilin is available for intra-muscular injections, each c.c. containing 5 mg. of the synthetic product dissolved in arachis oil. It is also available as 10 mg. tablets, or as an oily liquid each containing 10 mg. of the compound, for oral use. Synkavit has the advantage over Kapilin in being water soluble so that it can be given intravenously. The

action of Synkavit when given intravenously is more rapid but less sustained than that of Kapilin.

As regards the dosage, it will necessarily vary as to whether K is to be given as a preventive, or after hæmorrhage has actually set in. When a jaundiced patient is to be operated on, one injection of 5 mg. 3 or 4 days before, one the day before, and one 4 to 6 hours before operation will guard against bleeding. The injections should be continued on alternate days for 8 days after operation. If the patient objects to injections he may be given one tablet of 10 mg. daily. When a jaundiced patient is already bleeding more rapid action and larger doses are required, 10 to 20 mg. of Synkavit should be given intravenously, this should be followed by 5 to 10 mg. of Kapilin intramuscularly for sustained effect. If the bleeding does not stop or diminish markedly in 4 to 6 hours, transfusion of a pint of blood may save life. "Although it causes a moderate and temporary increase in prothombin, it may be sufficient to stop bleeding. After bleeding has stopped it is advisable to give one injection of Kapilin on alternate days or one tablet daily for about a week, to prevent recurrence."

As regards neonatal diseases, if there has been severe jaundice in previous babies or if obstructed or premature labour is anticipated, the mother may be given 10 mg. of K intramuscularly at the commencement of labour, or one tablet of 10 mg. daily 8 days previous to labour. Alternatively the baby may be given 5 mg. of Kapilin liquid orally for the first 6 days. Where icterus gravis has already started, one injection of Synkavit must be given intramuscularly followed by an injection of Kapilin within a few hours, the former for immediate and the latter for sustained effect. Kapilin injections may be repeated daily for 2 or 3 days. Later on as the symptoms subside the little patient may be given 10 mg. of Kapilin liquid orally daily for about 8 days more.

Injuries from Lightning*

B.M. SINHA, L.M.P., (Bihar), L.T.M. (Cal.),
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IN Bihar, this year, there have been too many deaths from lightning. A few months back when I was attached to a village dispensary, I had the opportunity to attend to patients who sustained severe injuries as a result of lightning. At one place I attended upon five girls who were below the age of twelve. It was raining heavily that day accompanied with thunderstorms. They were struck down when they were under a tall tree. Of the five one died at the spot then and there.

I noticed the following:—

1. Their clothes were all wet and at places they were damaged.
2. The hairs of the scalp of the two victims were singed.
3. Ecchymoses and contusions were present in the body.
4. The girls were nervous and frightened. They would not leave their relatives for fear of another stroke.
5. One was unconscious and apparently dead.
6. They could not tolerate light and wanted to be kept in dark places. They were feeling bitterly cold and were shaking from head to foot.
7. One of them had intense headache and ringing in the ears.

Other symptoms that are noticed in such patients are:

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When the lightning discharge is slight.—The individual complains of giddiness and ringing in the ears. Sometimes hysteria or nervousness may supervene.

When the discharge is severe.—Loss of memory, paralysis, tetanic convulsions, delirium, cardiac affections, blindness, deafness or dumbness may result.

Effects of lightning.—The effects of lightning are most marked upon the C.N.S. (central nervous system). They are:—

1. Focal petechial hæmorrhage scattered throughout the brain, especially medulla and spinal cord.
2. Chromatolysis of the pyramidal cells.
3. Wide dilatation of perivascular space.
4. Localised ballooning of the myelin sheath of the peripheral nerves with fragmentation and tortuosity of the axons, breaking down of the Schwann and infiltration of the epineurium with endothelial cells.

The passage of the lightning through the body kills the cells by producing electrolysis.

Types of injuries.—*Immediate*:—Including shock, unconsciousness and suspended animation.

Secondary:—Including burns, gangrene and temp., nervous disorders.

Remote effects:—Including neurological and ocular complication.

Treatment.—*Unconsciousness*:—If the patient is unconscious or apparently dead, artificial respiration should be started without any delay. Even if the victim is dead artificial respiration should be carried out. It is just possible that in cases in which circulation is not completely arrested, the ventricles being in a state of fibrillation, artificial respiration may restore a normal rhythm. Other measures, e.g., Carbon Dioxide is a valuable respiratory stimulant. Sometimes attempts like violent jarring, pummelling, or shaking may restore animation to a victim apparently dead. As soon as respiration is restored, cardiac stimulants should be given. The patient's temp. should be raised by wrapping him with blankets and hot bottles. Hot tea, milk or coffee may be given. Injections of Coramine, Strychnine, Camphor-in-oil, Adrenaline and Pituitrin may be given according as the case deserves.

Coma:—In cases of coma supervening, the treatment should be directed towards the reduction of the cerebral œdema which is associated with high intracranial pressure.

The safest method of reducing cerebral œdema is the prompt withdrawal of cerebro-spinal fluid by means of lumbar puncture.

Delirium:—In cases of motor agitation and delirium accompanying the unconsciousness attempts at sedation should be followed. Injections of Morphine and Hyoscine are not effective, rather dangerous. Safer drugs are Nembutal and Paraldehyde rectally. Luminal can be given intramuscularly.

Burns:—Burns due to lightning should be treated as in other types of burns or scald. Tannic acid application and Sulfonamide treatment are giving satisfactory results. As in all cases of burns, complications should be watched carefully and the treatment should be instituted accordingly.

Death:—Occurs immediately from shock or subsequently from the effects of burns.

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"Mepacrine" in the Treatment of Malaria*

Resulting in temporary insanity and producing other toxic symptoms (with case notes)

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"Mepacrine Hydrochloride.—Syn. Atebrin, Quinacrine, Erion (war quality) and other allied preparations have become the fashion of the day in the treatment of all kinds of malarial fevers by the lay public in general and the medical practitioners in particular. The state of affairs has become so vicious in this part of the country that it has led the public to the common assuetude of rushing to the new proprietary medicines and drugs that they may come across and use them wantonly, irrespective of their indications in various types of malaria and without knowing even the A.B.C. of their action, therapeutics and posology. Drugs like M & B 693, Cibazol, Mepacrine, and many Sulphanilamide preparations have become the common household remedies. In fact I have witnessed on many occasions, aches of different origins being treated with M&B 693, by lay persons. The indiscriminate use of these drugs by the quacks and the public at large is mainly responsible for causing many deaths, in a number of villages in the province of the Punjab. All these drugs are poison to a greater or lesser degree and their use without proper medical advice and supervision is not devoid of danger. Some may think it fortuitous but I attribute it to the delinquency on the part of authorities concerned who are solely responsible for the good health of the country. Time after time Acts and Laws are enacted to guard against various serious offences and petty peccadillos. But it is very sad when you come to think of it that these Acts and Laws are not rigidly enforced. The consequences are that the health of the people is seriously affected and jeopardized. Whatever that may be it is not my purpose to go into the detail of that matter and quiddle the time. My main object lies, however, in elucidating to my professional brethren in a few general lines our short-comings. How often are we ridiculed by the educated public for prescribing to them some of those remedies about which we are not technically acquainted? It is a baneful practice that we plunge ourselves headlong in the matter of treatment by merely reading the names of drugs advertised by various firms. We never take the trouble to study them closely and properly. I may be excused for putting down that nearly 50% of us are wont to this unfortunate habit. The whole trouble lies in the fact that nearly 70% of us do not practise our art in the rightful way (*the Hippocratic oath*). We generally learn and practise this art to gain riches and money. Money, if we seriously think about it, we will come to understand that it is a bane of bliss and source of woe.

Perhaps, I am going far beyond the sphere of my subject, but the following few lines in this connection by ROBERT LOUIS STEVENSON, I feel sure, would interest the readers, and are therefore worth mentioning:

"There are men and classes of men that stand above the common herd; the soldier; the sailor; and the shepherd not infrequently; the artist rarely; rarer still the clergyman; the physician almost as a rule. He is the flower (such as it is) of our civilization; and when that stage of man is done with, and only remembered to be marvelled

* Specially contributed to THE ANTISEPTIC.

at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practise an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in thousand embarrassments; and what are more important, Herculean cheerfulness and courage. So it is that he brings air and cheer into the sick room, and often enough, though not so often as he wishes, brings healing."

Another passage in this connection by FREDERICK L. HOFFMAN, LL.D., runs as follows:—

"The Physician"—No career presents more strenuous mental efforts, more exacting demands upon time, more sacrifice of means, more foregone leisure, than that of a doctor who takes his work seriously, and there are few who do not. No class of men renders a greater and more indispensable service to society than those who practise the art of medicine, in all its branches and selected specialties. Upon no group of men falls a heavier burden or a greater responsibility in peace and war. And none has done more to advance the cause of a true civilization, in which the blessing of a long life and freedom from illness and suffering is made the supreme test of its attainment on the part of an ever-increasing proportion of mankind."

In achieving good results in matters of treatment we must tend rather to adhere to the old and tried methods than to be always running after new gods, and be blown about by every wind of doctrine. The craze of trying the latest therapeutics should be eschewed until their merits have been thoroughly and scientifically testified.

"Be not the first by whom the new is tried,
Nor yet the last to lay the old aside."

It is usually wise to be a little behind the fashion in matters of treatment. In the treatment by drugs, it is rather difficult to form a just estimate of the part played by drugs. There was a time undoubtedly, when they were used too much, but there is now a tendency in some quarters to use them too little. Perhaps the truth as to their value is rightly expressed in the statement that they "sometime cure, often relieve, and always console." In many cases, of course, the use of drugs need form no part of the plan of treatment at all. Even in such cases, however, it may be advisable for the sake of their consolatory effect to prescribe what is called a placebo—especially when one is dealing with unintelligent patients.

It is wise to have only a few drugs in one's armoury, but to know them thoroughly, and if one decides to employ them, to do so boldly and in sufficient doses. But should neither undertreat nor overtreat a case. To select a remedy we should use our own common sense than to run after drugs hackneyed by the fellow neighbour. It is an old and well worn saying that doctors will disagree and it is true in a measure. We often differ in opinions as to questions of minor importance, as to application of certain remedies to well-known conditions, or as to the quickest and surest methods of restoring the health and vigor to the diseased body or mind in any specific case. In selecting the remedy the object should be, that the substances intended for use must be such that they are harmful to the

infesting parasites, *i.e.*, *parasitotropic*, and at the same time harmless to the host, *i.e.*, not *organotropic*. This point can only be achieved by careful study of drugs before they are selected for administration. Heedless application of remedies often leads to bad effects on the patient and brings disrepute to the attending physician. Besides it is of utmost importance to know and understand the primary and secondary action of drugs on the human system. In this connection although many attempts have been made to explain how the different drugs produce their effects, still we are far from any satisfactory solution as to the real action of most of them. Since the processes of life are governed by the chemical and physical changes in the constituents of the cells, it is possible that the different drugs may act by altering or modifying these chemical and physical factors in the cell by entering into definite chemical combination with the constituents of the protoplasm and produce corresponding changes in their function. Although the effects produced by some drugs are due to these changes, yet the action of many is produced differently and cannot be explained by chemical theory alone.

I shall not undertake to deal largely with the administration of drugs and how they act. In writing the above lines, it is my main purpose, however, to deal more with the clinical aspect of the toxic symptoms of Mepacrine and other similar preparations, tell you the toxic effects of these drugs as I see it and have been seeing it for the past four years in the Lahore District and other places in the Punjab. The toxic action of Mepacrine and other preparations of similar kind are perhaps known to the entire medical profession. However, I mention here some of them for reference's sake only. They are as follows: Gastro-intestinal symptoms, *e.g.*, vomiting, excessive perspiration, severe pain in the abdomen, yellow staining of skin and the conjunctiva, enlarged and tender liver, tachycardia, weakness, trembling of hands, impaired appetite, and temporary insanity. Of the 25 cases seen and treated by me the following are the figures as marked against each symptom separately:—

(1) Gastro-intestinal symptoms	...	4
(2) Yellow staining of skin and the conjunctiva with tender liver	...	5
(3) Tachycardia	...	4
(4) Tremors of hands with general weakness	...	7
(5) Temporary insanity	...	5

The doses given in different cases varied, and the least dose that brought about toxic symptoms (tremors of hands and general weakness) was 4 tablets of Mepacrine in all. The age incidence also differed, and the lowest age that was effected was 5 years.

Treatment given in each case was as follows:—(a) *Gastro-intestinal symptoms*:—These were treated with gastric sedatives. Vomiting was controlled by the administration of Vin Ipecac 6 m Homeo every three hours. For pain in liver area, Bryonia 6 m answered quite well. After controlling the symptoms the rest of the treatment was completed by Bismuth Carb. and acid Hydrocyanic dil. The results were very good. All the cases got cured.

(b) *Yellow staining of skin with pain in liver*:—Absolute rest, copious barley and fresh lemon water drinks *ad lib*. Fresh cow's buttermilk; Condiment free diet; free action of bowels; tepid baths. For liver pain

Byronia 6 m Homeo, three doses a day. In some cases vitamin K injections were used. All the cases got cured.

(c) *Tachycardia*:—Absolute rest, free action of bowels, freedom from worry and light, nourishing diet. Vitamin B by mouth and I.M. injections. Purple Foxglove Homeo, 6 m q.d.s. was very helpful in arresting the attack. One case did not respond well to this treatment. On discovering the cause, it was found that the patient was all the time worried about her family affairs. She left the hospital at her own request.

(d) *Tremors of hands and general weakness*:—General tonics like Metatone, P.D. & Co., good nourishing diet, open air and light exercise, massage of body, tepid bath. Vitamin B 60 mgs. twice a day by intramuscular injections proved very successful in curing all the cases.

(e) *Temporary insanity*:—The five cases which came under my care were effectively treated by free action of bowels, 25% Glucose Sol. I.V. and lots of Carbohydrates by mouth. Good nourishing and light diet, daily massage of body followed by tepid bath after one hour, light rubbing of head with *Kadoo Rogan*, (oil expelled from pumpkin seeds). Perfect rest was enjoined. Barley water, fresh cow's buttermilk, and fresh lemon juice were given freely with Glucose D. Sleep was induced by Soneryl M & B. Two tablets were enough to produce sleep during the day time. At night a drachm of Paraldehyde at bed time was given as a routine. The results were extremely good.

Short account of cases.—1. *Tachycardia*:—The patient was a young female, aged about 26 years, teacher by profession and of average height and weight. She had malaria in the month of June, '45, and after a week's routine treatment she got well. She kept well for about 20 days when she was re-attacked and by the usual treatment with Quinine she got alright. The third attack came on after about two months. Our Medical Superintendent happened to be here on official visit. The case was produced before him for examination and treatment. I was advised to treat the case with Mepacrine in full doses. On the recommendation of my superior I started the treatment. The patient did not get any further attack after the completion of treatment, and after enjoying a week's rest the patient resumed her work. Ten days later of her joining the school and at about 10 p.m., I was informed that the patient is very ill and is lying half dead. I rushed to the spot and found the patient in a precarious condition. She was bathed in sweat and the body was very cold. Pulse was very rapid and small in volume. Breathing was laboured. Conjunctival reflex was present, but the patient could not respond to questions. Stimulants by mouth and Camphor-in-oil subcutaneously were given. Patient came round in half an hour time. A small soap and water enema was given as there was some constipation. By the morning she felt much better, and was advised to remain in bed for two days. A week later, while teaching her class, she suddenly got a severe attack of palpitation, and was brought to the female out-patient department on a cot. On examination it was found that she had all the previous symptoms described above. Under treatment she got over the attack. I recommended her 3 months leave and she left for her home in U.P. with full instructions from me.

2. *Tremors of hands with general weakness*:—A young man of 27 years, clerk by profession, and working in the Railway Office, Lahore, came

to me in July last, with tremors of hands, excessive perspiration, general weakness and impaired eye sight. Duration was about a month. On taking history it was found that he suffered from malaria, and the doctor who treated him gave him 6 tablets of Mepacrine for the attack of fever. The fever did not return after he had taken the tablets. Soon after this he started getting tremors of both the hands and felt very exhausted on slight exertion. He also noticed that his eye sight is getting impaired. He was restored to the normal functioning of hands and eyes with the treatment described previously.

3. *Insanity*:—Two young, robust, and extremely healthy boys, aged 17 and 19 years respectively, and both real brothers, one a college student and the other reading in the local high school here, left for a place in the Amritsar district to spend the latter portion of their summer holidays. On or about the 25th of August '46, both of them got laid up with high fever. The doctor was sent for by the relatives who after diagnosing the cases as one of malaria gave them both Mepacrine treatment. The fever abated, but on the 3rd day of the subsidence of the fever both the brothers went out of head and got an acute attack of mania. The condition remained unknown to the relatives until both the youngmen at the height of maniacal symptoms escaped from the house, reached the nearest railway station and got into the train to reach Clarkabad. Both the brothers alighted at different railway stations, and arrived home next day one after another.

They were looking very indignant and peevish and were drowned in their individual caprices. No one could take the wind of them as they were very irrelevant in their talk. The parents got alarmed and were very much afraid. They were so upset that they asked me if I could take them to Lahore to have a second opinion in the matter. I examined the boys very carefully and closely, but could not trace the cause of the condition. History was not available owing to the fact that their answers to questions were not pertinent. More over their attitude towards each other was very indiscreet. I asked the parents if they could get any clue to their having taken some drug or intoxicant but they were not able to find out anything. The symptoms which the two boys exhibited appeared to me to be the result of taking something unusual. I therefore started treating them according to their symptoms. On the 4th day of the treatment they began behaving better and appeared to me on the road of progress. While I was talking to them on various matters, one of them, the younger, suddenly burst out, "wish I had killed that doctor who gave me Mepacrine". He spoke these words so loudly and in such a horror that the rest of the members of their family came running to the spot. This made the matter clear to me and I at once found out the cause of the condition. I now assured the parents and the friends that there is no cause to worry and that the boys will get alright with 10 days' time. From that time onward and under proper care and treatment the two young souls made remarkable recovery and became quite normal within 10 days.

4. *Yellow staining of skin and conjunctiva*:—On the 15th of August 1946, a female child, aged 6 years, was brought to me in the outdoor department. Her skin and conjunctivæ were stained deep yellow. The liver was enlarged about 6 fingers below the right costal margin and was tender. The abdomen was distended and the child suffered from diarrhoea alternating with constipation. She had slight temperature and digestion

was impaired. She was looking very lethargic. Before taking the history and from the looks of the patient, I diagnosed it to be a case of infantile cirrhosis of liver. Duration of illness was 20 days. On taking the history, I found out that the child had taken 3 tablets of Mepacrine, which were given to her as a remedy for malaria by her uncle who was working in some military hospital as nursing sepoy. The child got cured under the treatment stated on previous pages.

Synoptical representation of the action of Quinine, Mepacrine and Pamaquin in different types of Malaria.

Action on	Quinine	Mepacrine	Pamaquin	Remarks
Trophozoites ...	Disappear, re-appear after a variable interval. M. T. effective in large doses.	Action same as Q but little rapid. Relapses occur later, in M. T. effect same as Q.	Very slight action on B. T., & Q. T. None on M. T.	Differences in action may be attributed in some cases to differences of strains, persons and recurrences to attack.
Gametocytes...	Parasitocidal on G of B. T. & Q. T. Slightly so or nil on G. of M. T.	Action more or less like Q.	Effective in all stages and especially so in crescents.	
Acute clinical attack ...	Definite action on B. T., less so on M. T.	Marked in both, especially in certain types of M. T.	Of no advantage.	
Frequency of relapses ...	Common in B. T.	Less common.	Prevents relapses in combination with Q.	
Doses and duration of treatment ...	B. T., Q. T., 15 grs., M. T., 20-30 grs. daily for 5-7 days.	4½ grs. split into 3 doses daily for 5-7 days.	½ gr. split into 3 doses, 1/6th gr. each day for one week with ½ gr. a day for 5 days after M.	
Toxic effects ...	Cinchinism, ringing in the ears, or even temporary deafness, contraction of visual field, even temporary blindness, and headache & these are all central in origin.	Gastro-intestinal irritation, nausea, vomiting, epigastric pain, collapse with profuse perspiration. Hallucinations and delusions. Prostration, palpitation, yellow discoloration of skin and conjunctivæ, pain and enlargement of liver.	Gastro-intestinal irritation with collapse and sub-normal temp. and sweats. Methæmoglobinuria, headache and dizziness.	
Cumulative action ...	Nil.	Marked.	Less marked than M.	
Excretion ...	Very rapid.	Very slow.	Very slow.	
Corrigens ...	Acid Hydrobromic dil.	None.	None.	
Safe mode of administration ...	Oral, I. M., I. V.	Oral.	Oral only.	

5. (a) *Gastro-intestinal symptoms*:—A female aged 40 years, visited the outdoor department on the 6th of July '46 complaining of pain in the stomach, unappeased thirst, debility, and persisting vomiting. Duration was 5 days. Vomiting was so severe that it was not possible for her even to retain an ounce of water. She looked done up with the severity of pain and vomiting. As the relatives were in a great anxiety and wanted immediate relief from the symptoms, I had no other go than to resort to Morphine injection. I gave her at once 1/6th grain of Morphia subcutaneously. This relieved the symptoms after ¼ of an hour. Treatment was started according to the plan explained before. Before starting the treatment history was taken which showed that the patient was treated with Mepacrine tablets. About a week later she started getting the symptoms. Under treatment the patient got cured in two weeks' time.

(b) In June last a male, 28 years old, came to me suffering from stomatitis, yellow staining of the conjunctivæ, spleen enlarged about 4 fingers below the left costal margin, sallow colour of face, and pain in the right chondriac region. He had intense headache and was not able to open wide his eyes. Duration of the trouble was 20 days. On taking the history, I learnt that the patient took 11 tablets of Mepacrine for fever from which he was suffering. I made a thorough examination of the patient. He had anæmia and the colour (hæmoglobin index) was 60 per cent. Extreme weakness; palpitation of heart, ulceration of mouth with dribbling of saliva. Spleen was enlarged as stated above and there was yellow colouration of conjunctivæ and the skin. Symptomatic treatment supplemented with vitamin K and B therapy cured the patient in a month's time.

• **Conclusion**.—It will be seen from the case notes and the synoptic representation chart the dangers that we have to encounter in treating malarial cases with preparations other than Quinine. Mepacrine, Pamaquine and other preparations of similar kind may be of use in some selective cases of malaria but for treating malarial fevers in general Quinine sways all, and is by far the best and safer drug to use. Cinchona and Quinine have been in practice for treating malaria since very early times in the history of Allopathy. Even in the hands of lay public, ever since, it has not proved dangerous, and has rather been a boon. On the other hand, it has been found very effective as a prophylactic measure against malaria. Mepacrine and other similar preparations have very little margin of safety when used by routes other than the mouth, but Quinine when administered by either method as mentioned above has no danger whatsoever, provided it is done thoughtfully. The best method which I have found efficacious during my medical career of 22 years is the I. M. route. Intravenous administration in cerebral malaria and malarial colitis has no equal, but it should always be used with 10 cc. of normal saline and ½—1 c.c. of Pituitrin as the case may be. In my humble opinion Quinine should be given priority in treating all types of malaria.

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Treatment of Nagasore*

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A PART from the victims' suffering, a considerable amount of work may be lost annually during the rains in the endemic areas like the tea estates due to prevalence of Nagasore. So, I hope, a brief discussion on the measures for prevention and cure of the ailment will not be uninteresting to the medical profession, specially to the junior practitioners, and the discussion may be conveniently divided under the following heads:—

I. Prophylactic measures—(1) General measures; (2) Medicinal measures.

II. Curative measures—(1) Constitutional measures; (2) Medicinal local measures; (3) Operative measures.

I. **Prophylaxis.**—1. *General measures*:—The resisting power of the body should be maintained by all means as this is considered to be the first weapon to fight with all disorders of the human system, and good food and hygienic conditions are always necessary for this purpose. Weak conditions of health like anæmia may predispose one to various infections and this may be true in the case of Nagasore also although opinions vary on the latter point. Some hold that debilitating conditions of health exert influence neither in the causation nor in the course of the disease. (*Antiseptic*, July '45, p. 379). The disease may spread also through contact with a sufferer. Care should be taken in this respect too. Some investigators believe that the Nagasore virus has its habitat in the mud and mouldy vegetations of the marshes, and tramping about bare-footed and bare-legged in the mud exposes one to the infection (*Antiseptic*, July, '45, p. 379) so, protection of the exposed parts of the body such as the feet and legs from the mud is essential, particularly when there is some breach of the skin surface on the exposed parts through which the infection may enter the body and cause the ulcer. Although this preventive measure is not practicable for all, specially for the tea-garden labourers, small injuries to the feet as scratch, prick, insect-bite, etc., can be prevented by suitable footwears.

2. *Medicinal measures*:—Frequent washing of the feet and legs with Permanganate lotion may be an effective preventive measure against tropical ulcers (ROGERS and MEGAW). Weak solutions of Potassium Permanganate may be used for this purpose. Dr. E. BURKE recommends the use of Ammoniated Mercury ointment (2½ per cent) on all cuts and abrasions for prevention of Nagasore. The same result may probably be obtained by the use of Sulphanilamide powder and other antiseptics like Acriflavine in all such cases.

II. **Curative measures.**—1. *Constitutional measures*:—As stated above the patients' general health should be improved by nourishing food and suitable tonics. Vitamins and Calcium preparations have also been recommended by several authors for Nagasore cases. Concurrent diseases also should be properly treated. Also complete rest to the affected parts should be given.

2. *Medicinal local measures*:—Different methods of treatment have been adopted by different investigators in the treatment of Nagasore with

varying results as its aetiology has not yet been settled. Various preparations of a host of drugs have been tried in this particular variety of ulcer, and a majority of these drugs are applied locally (externally). Of course, a few of them have been administered also orally and parenterally in certain cases. No details of these different lines of treatment will be given here, only a mere list of some tried remedies with small notes on a few of them has been presented below:—

Copper Sulphate	... 2½ dr.	} McGuire's solution for topical application. (<i>Antiseptic</i> , July '45, p. 381).
Phenol	... 1 dr.	
Glycerine	... 1 oz.	
Perchloride of Mercury	(1 in 1,000 lotion).	
Permanganate of Potash	(1 in 500 lotion).	

Calcium.—Calcium Chloride and Calcium Gluconate. It has been stated that marked improvement of the ulcers ensues after intravenous use of Calcium Chloride (ROGERS and MEGAW) and oral use of Calcium Gluconate.

Acriflavine (1 in 1,000 lotion).

Bismuth Subnitrate	} Used as a dusting powder or as a paste with Iodoform
Liquid Paraffin	

Ammoniated Mercury	... 10 grs.	} Christie McGuire's formula (Wartime preventive medicine in Tea Estates, p. 65).
Zinc-oxide	... 1 dr.	
Paraffin molle	... 1 oz.	

Cod liver oil (applied locally).

Magnesium Sulphate (used locally in the forms of powder and paste).

Sulphonamides—Various preparations like Sulphonamide, M & B 693, etc., are usually used locally and also orally. Urea Sulfazide has been tried also parenterally (*Antiseptic*, Dec., '44, p. 725).

Novarsenobillon—used both parenterally and locally. N.A.B. 3% in Glycerine solution is used externally. (*Antiseptic*, July, '45, p. 382).

Stovarsol (given orally).

Boric Acid (ointment and powder).

E. C. (lotion in warm water).

Normal saline.

Urea stibamine used in the form of ointment. (*Antiseptic*, Aug. '44, [p. 502.]

Eusol.

H₂O₂.

This list is admittedly incomplete. It excludes many other preparations that have also been used in Nagasore. Some of these drugs have been used in our cases also, and the following preparations were found useful in our recent (1946) cases:—

(1) Acriflavine in 1 in 1,000 lotion. The ulcers were flushed with this lotion in all cases after removing the sloughs and crusts thoroughly, and then dressed with one of the preparations given herunder:

(2) Ung. Sulphanilamide 5%.

(3) Sulphanilamide powder.

(4) Magnesium Sulphate powder.

(5) Mixture of (3) and (4) in equal parts.

(6) Pulv. Sulphathiazole with 1% Proflavine Sulphate (M & B). The results with this preparation seemed to be more encouraging, the pus of the

* Specially contributed to THE ANTISEPTIC.

ulcers soon disappeared under this treatment. The medicament could, however, be tried only in a limited number of cases.

POINTS TO NOTE IN OUR CASES:—

(1) During the period from May to September more than 30 cases were recorded at the hospital, and roughly half of the cases occurred in the month of June. All the patients were tea garden labourers and they were all treated as out-patients.

(2) The general health of the patients was generally unsatisfactory. Many of them were more or less anæmic and diseased. Perhaps their diet also was not without defects.

(3) No rest to the affected parts was practicable.

(4) Occasionally certain patients took Quinine mixture, Iron mixture etc., for their other disorders but they took no other drug particularly for the sores. In certain cases local treatment also could not be carried out properly and regularly due to interference and reluctance of the patients.

(5) All the cases but one or two came under notice in their developed state.

(6) The dimension of the ulcers roughly varied from $\frac{1}{2}$ " to 3" in diameter. The larger ones had also greater depth.

(7) The lesions were all situated on the lower extremities below the knee.

(8) Only one or two ulcers were seen in the same individual.

(9) Dressing of the ulcers was usually done two times a day.

(10) Marked variation in the period of treatment was noticed. It exceeded six weeks only in very few cases [but in all other cases it was much shorter. Of course, few patients desisted from treatment without its completion]. The results, I believe, would have been much better, had it been possible to give properly and regularly both the constitutional and local treatments to the patients. Little modification and addition have been made in the wording put within the bracket after the paper has been seen by Dr. SARMA and Mr. CHRISTIE.

3. *Operative measures*:—(a) In rare cases local excision of the ulcer and skin-grafting for rapid healing may be necessary when other treatments fail (*Antiseptic*, July, '45, p. 382).

(b) The ulcer is firmly covered with elastoplast dressing after thorough cleaning and disinfection of its surface, and the dressing is left on for several days. Rapid healing is said to occur under this treatment.

I must tender my sincere thanks to Mr. F. St. J. CHRISTIE, the Manager of the Koilamari Division, Jokai (Assam) Tea Co., Ltd., and to Dr. M. N. SARMA, B.Sc., M.B., S.D. M.O., N. Lakhimpur, Offg. M.O., Koilamari Division, for their encouragement to publish these notes. My thanks are also due to Messrs. May & Baker for a free supply of their preparation Sulphathiazole with Proflavine for clinical trial.

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Chronic Pneumonias*

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Introduction.—There are but few diseases in the realm of medicine which have such a dramatic display as pneumococcal pneumonia. Its quick onset, its sudden offset, where the process of congestion, consolidation and resolution all run into a span of 36 hours or is drawn out into a course of couple of years. This dramatic type of 36-hours pneumonia may be the usual mild abortive pneumonia or the virulent type, where these stages though clearcut run in a quick reel of succession to a fatal termination. This and the other acute phase of the disease lasting, according to HIPPOCRATES, orthodox odd number of days is only too well known, while the chronic aspect of the disease is not quite as yet very familiar.

Cases of chronic pneumonia show at autopsy a pulmonary condition of early and late congestion, consolidation and varying stages of resolution; and in some cases suppuration too, the same being in different foci or in different parts of the same focus. It is something akin to winter and summer being painted in one landscape simultaneously and this essence is the very definition or rather a "Geographical definition" of chronic pneumonias which is often confused with the sequelæ of pneumonia or is wrongly diagnosed as tuberculosis even after a radiograph.

Text books do not yet universally describe a chronic pneumonia. The sequelæ of pneumonia, i.e., chronic fibrosis or chronic interstitial pneumonia or cases of delayed resolution are taken as synonymous for this definite clinical process which has a kaleidoscopic pathological picture of congestion, varying stages of resolution with perhaps foci of suppuration all in one. On the other hand, the sequelæ have a monotonous pathological picture of either fibrosis or a static interstitial inflammation, or a delay in the last phase of the pneumonic lung, i.e., late resolution. It is this pathological picture seen in the radiograph and verified at autopsy that puts chronic pneumonia as an entity by itself.

Early in the 19th century LÆNÆC recognised the long and often recrudescient variety, i.e., the chronic induration or the chronic organizing types of pneumonia. Later it was pursued by pathologists like MILNE (1911), FLOYD (1922) who recognised that this chronic variety may have a sudden or insidious onset with an organization of the exudate or go into suppuration and abscess formation.

The ball having been set in motion by pathologists the clinical interest in the disease seems to have originated from physicians like J. G. SCALDING (1935) who, with the usual pitfalls of a growing science, reported these cases as "Chronic diffused broncho-pneumonia" and later even as "pulmonary tuberculosis" till autopsy revealed all the pathological stages of pneumonia in one. Our own interest in the subject was kindled from several cases that we came across in general practice. These interesting pulmonary cases, though puzzling to start with, were ultimately recognized as a manifestation of chronic pneumonia. Subject to the usual handicap of private institutions it has been possible to arm ourselves with X-ray picture and other clinical data only in a few of the series.

Course of the disease.—Chronic pneumonias may be broadly classified for clinical purposes under three pathological headings, viz.,

* Specially contributed to THE ANTISEPTIC.

1. Chronic non-suppurative pneumonia.
2. Suppurative pneumonia without abscess formation.
3. Suppurative pneumonia with abscess formation.

Now to a few details regarding each of these.

1. *Chronic non-suppurative pneumonia*.—This is the usual type of pneumonia which sometimes runs into a couple of months with a delay in the phase of consolidation and resolution and the lung cleaning up without any gross fibrosis. The onset is insidious or sudden.

2. *Chronic suppurative pneumonia*.—This does not differ very much from the above condition except in that there are suppurative changes in the lungs without an actual abscess formation.

3. *Chronic suppurative pneumonia with abscess formation*.—While the above two conditions are fairly benign in nature and have a good prognosis, this suppurative type with abscess formation takes a high death toll.

According to SCALDING in this group is to be included the abscesses that seem to arise 'denovo' in the lungs.

Diagnosis.—In addition to the usual method of diagnosis of a case of pneumonia including a radiograph and sputum examination, we have very often found that a case history specially in regard to the onset has been very helpful in many of our cases, forcing us to disagree with the great clinician who said, "Eyes first and most, hands next and less, tongue last and least."

In cases where the pyrexia and cough is of sudden onset in an otherwise healthy subject and is long drawn, chronic pneumonia may be first thought of in preference to tuberculosis.

While our list of cases of chronic pneumonia is ever on the increase we shall discuss only a few of them here.

CASE 1:—Lady, 28 years, was passed on to us early in 1939 by a fellow practitioner while he was leaving the station, with instructions to continue a course of Sanocrysin—of course with a diagnosis dubbed as Cock's infection.

History of cough.—An year and two months with scanty sputum and a constant temperature of 99°F to 101°F.

Clinical examination of the lungs.—Showed impaired note over both the lungs—fine crepitations heard all over—more marked over the right apex and middle lobe. X-ray, chest—lung technique—reported as commencing fibrosis.

In this case the history of onset was, if anything, misleading than helpful as the disease set in insidiously after a delivery. As the patient had not lost much weight and as there was lack of cachexia, it was decided to confirm the diagnosis before embarking on the circuitous and condemned road of treatment for tuberculosis. Even so a blood picture with differential count was made which showed a preponderance of polymorphs—that could fit in only with an acute exacerbation of Cock's infection in a chronic case of tuberculosis which the patient's condition did not warrant of. Sputum examination revealed a field full of pneumococci and other secondary organisms with very little or no elastic tissue.

With the medical world then revelling in Dagenon which was so to say at its height of glory as a panacea for pneumococcal infections—we were tempted to try a course of M & B 693 as the sputum was teeming with diplococci and pus cells, since we believe in going from "the known to the unknown" and in this case as luck would have it the pneumococcal chronic non-suppurative pneumonia was the only 'known' and we had nothing to bother about the 'unknown' as the patient was free from all ailments in about two weeks and has since been mother of two children in the peak of health.

CASE 2:—Patient, male, 43, a village rustic, living "far from the maddening crowds' ignoble strife"—is our second case which followed close on the heels of the first one. Patient was suddenly taken ill with fever and cough one evening after returning from the day's work in his fields and was confined to bed since, a duration of 17 months. Clinical examination of the lungs showed well marked patches of consolidation and congestion. Patient was still coughing up sputum now and again which was slightly 'rusty.' There was not much emaciation or the cachectic picture. Temp. 102.6°F.

Here the mode of onset of the disease was the clinching part of the diagnosis and again M & B 693 worked the miracle though he was condemned as 'pulmonary tuberculosis' by the rural medical practitioner and confirmed too by a couple of consultants from the urban area.

CASE 3:—Patient, Mrs. M., 19. First confined eight months ago and has been running a low grade temperature ever since, 99/100.6°F. The lady doctor who attended on the delivery drenched the patient with Quinine to start with and ended in general tonics.

Examination of the chest revealed nothing more than a few fine crepitations at the left lower lobe, with peurile breathing over a greater part of left side of chest. Blood picture showed marked poly-morpho-nuclear leucocytosis with secondary anaemia. X-ray report was "commencing tuberculosis, left lower lobe" based on a slight haziness there. The sputum was thin and scanty not suitable for examination. In view of the leucocytosis and meagre signs in the lungs, with a radiograph which did not give support even to the "stretched out" maxim of "early tuberculosis is seen not heard", it was decided to try the wonder drug Penicillin and 100,000 units relieved the patient completely. Within about ten days patient had no cough, no temperature, and general health had much improved within three weeks, but complained of severe neuritis of both legs after a fortnight which was relieved with Thiamine Chloride parenteral and oral.

The diagnosis is one of incipient chronic non-suppurative pneumonia which was dubious on a radiological finding as well as in its mode of onset, i.e., after a confinement when one is apt to think of tuberculosis in a case of protracted pyrexia with cough.

CASE 4:—Male, V., age 19. History of fever and cough with rusty sputum now and then, 6 months' duration. Fever set in insidiously and has been continuous since—on admission temp. was 104°F, and went upto 105°F.

Clinical examination of lungs—areas of consolidation with patches of resolution. Blood picture marked polymorphous-nuclear leucocytosis. Sputum examination—full of diplococci, strepto-staphylococci. No acid free bacilli. Here again a tubercular cachexia was lacking and so the patient was put on Penicillin and he touched normal in 36 hours and the

patient's health recovered within a month. After two months the patient again called on us with temperature 101.4°F. The temperature again touched normal after the third injection of Penicillin, *i.e.*, after 60,000 units and this time an X-ray picture was taken before commencing treatment which revealed a pneumonitis on both sides.

CASE 5:—M., age 38. Patient started with fever and pain on the right side of chest, morning temperature 99.2°F, evening rising upto 101.4°F during the first week and going up in the 2nd and 3rd weeks to 103.2°F, in the evenings. There was very little cough or expectoration for about three weeks.

Patient himself being a doctor, took three Emetine injections, gr. $\frac{1}{2}$ each, as the pain was severe on the right side of the chest without any relief. Clinical examination early in the disease showed fine crepitations at the right apex and areas of impaired note and deficient air entry scattered all over the chest, front and back. After 3rd week cough and expectoration were more marked with definite congestive signs here and there.

Blood examination: Polymorphonuclear leucocytosis.

Sputum examination: Diplococci; secondary organisms; no acid fast bacilli. X-ray: Pneumonitis.

At this stage patient was given an idea—as there was more than one doctor attending on him—that he was a case of pulmonary tuberculosis. Patient left for Madras where he was put on a series of Calcium Chloride injections though there was no confirmatory evidence of tuberculosis. Patient returned after four months with a little relief only to retract after 3 months. Again patient was confined to bed with fever and cough, with divided opinion among doctors, till we prevailed on his being given Penicillin with the diagnosis non-suppurative chronic pneumonia. Ten injections of 20,000 units of Penicillin each, gave a great relief and the patient was able to resume work within six weeks after this course. It is now two years and the patient is hale and healthy going about his work.

Time and space do not permit of discussing more cases of the non-suppurative type and so we shall close with a case report of chronic suppurative pneumonia with abscess formation which we followed up though not our own.

CASE 6:—Patient, Mr. A., age 46. Patient was taken ill with cough and temperature, was treated with Cibazol, expectorants as for a straight forward case of pneumonia for three weeks. During the fourth week patient was still running a temperature with patches of congestion and consolidation with amphoric breathing at the right middle zone. Sputum was fetid and patient was restless and spent sleepless nights due to irritant cough.

Blood picture: Polymorphonuclear leucocytosis with secondary anaemia.

Sputum: Repeated examinations—pneumococci and secondary organisms; puss cells and R.B.C.—no acid fast bacilli.

X-ray: An abscess cavity of the size of a small hen's egg in right middle zone surrounded by areas of consolidation; left lower zone pneumonitis.

This was the commencement of the era of Penicillin to civil population and this was the first case to get it in this district. As in vogue in those

early days it was administered, intravenous, 20,000 units every four hours. The result was encouraging, for each course of Penicillin the temperature came down a couple of degrees, *i.e.*, from 102°F to 99.8°F and the patient snatched up a little more sleep, being less harassed by cough and foul expectoration, only to retract when the Penicillin effect was worn off. The X-ray picture showed an improved condition with the abscess cavity shrivelling up and the lung picture clearing up. During the 9th month of illness he had two bouts of severe hæmoptysis from which the patient recovered with great difficulty.

Unfortunately as the patient could not be prevailed upon for a surgical drainage of the abscess under able hands and follow up treatment with Penicillin the patient succumbed after an illness of ten months.

We could well justify the time and space taken up for this short discussion on chronic pneumonias if we have pleaded vehemently enough for a pause on the part of the medical profession to consider the possibility of this condition in a patient with fever and cough of some duration before dubbing the case as one of pulmonary tuberculosis or any other allied chronic disease. We would fain confess at this stage the extreme swing of the pendulum to this side, *i.e.*, where cases of pulmonary tuberculosis, for a time at least, have been mistaken by us for want of positive data as cases of chronic pneumonias.

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1. Beaumont, (1934)—*Medicine*, 135, 136.
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Cases and Comments

Psychic Treatment of Impotency

B. L. SHARMA,
C.M.O., Sitamau (C.I.).

ONCE a near relation of mine sent his son to me for treatment.

History.—Age 20, healthy and stalwart, well-to-do, docile, sober, accommodating, free from all bad habits, a teetotaller, pure vegetarian, married two years back. But the chief point was that the boy always avoided association with his wife and tried to remain aloof, gloomy, dejected, silent with downcast eyes, never daring a straight look, taking little interest in domestic life, in brief his life was minus pleasure and jolliness since marriage—and was completely otherwise the opposite party—a strong, healthy girl in the bloom of youth. His anxious father tried all sorts of treatment unsuccessfully and so at last sent the boy to me. For about one month and a half I too tried all sorts of aphrodisiacs, internal and external, but with no success.

One day I was put on the horns of a dilemma when I heard that the poor boy was tired of unhappy and wretched life and wished to end it. Under such circumstances of anxiety and disappointment I resolved to try the only remaining treatment of *Hypnotism*, and started the course at once. Luckily on the very first day and in the very first attempt I was successful in

putting the boy under and make him my subject. The first day I gave him the only suggestion, "You are now my subject and will follow my orders, advice and suggestions in full." Next day I gave him the suggestions, "You will now improve day by day and your weakness will commence abating every day and you will soon be alright and strong."

These suggestions I continued for a week, taking only ten minutes every day. To my great surprise and ecstasy on the eighth day the boy told me that he felt strong and cured totally and asked my permission to go home which I granted and he went away.

Since then he is leading a very happy and jolly domestic life with full command and control over his better-half and is father of 3 children.

My experience is that functional nervous defects, like impotency, hysteria, insomnia, etc., can successfully be treated with hypnotism and is worth a fair trial. Persons of *weak will* always brood over their ailments though insignificant and thus create a mountain out of the mole hill of ailment. They can be cured by making their *will* strong, and removing their old ideas under hypnotic strong contrary suggestions.

Opinions, suggestions and experience of other professional brethren are solicited.

Insanity following Metoquine Medication

S. N. DAS, L.M.F. (Bengal),

M.O., Sowra U. B. Ch. Dispensary, and Formerly M.O., M.I.M. Ch. Dispensary, the Sowra Drug Stores, Sowra P.O., Hooghly Dist. (Bengal).

THE ætiology and psychopathology of mental diseases are varied and many and are quite interesting. A mental disease (excitement and depression) is sum total of very many conditions and is the end-result of a long chain of processes. There is never in a given case one single causative factor but always a combination of many. These multifarious causes can be grouped under four heads, viz., hereditary and constitutional causes, failure to meet with physical and mental strains and stresses in certain stages of life, factors grossly physical in type, of nervous origin, and psychological causes.

A doctor friend of mine (26), a busy practitioner, having no rest and with supreme disregard for health took only 10 tablets of Metoquine (trade name for Winthrop's Atabrine in India) and developed mental excitement (insanity) and was treated with perfect rest, both physical and mental, hydrotherapy and sedative drugs (including Calci-Bronat, Luminal, Somninal (Roche), Bromide-Belladonna and a host of other drugs) and was cured within a couple of months. Vitamin B complex invariably does hasten recovery (as a sedative).

The patient was unfortunately put in a lunatic asylum against my advice and was completely cured soon after he fled away to lead a normal life.

One particular point I like to stress here, that one should never be afraid to use Metoquine or its equivalent preparations but be always cautious (taking usual precautions) to use the drug.

My thanks are due to Drs. B. DUTTA and B. LAHARI of Sibpur, Howrah, for their kind advice to treat the case.

A case of Dysentery

RAJMAL NANDECHA, L.M.P. (C.P.),

Physician and Surgeon, Residency Hospital, Indore (C.I.).

I was called in to see a young Muslim child of 2 years with the following complaints:—

(1) Loose motions containing mucous and blood about 50 in number in 24 hours—duration $1\frac{1}{2}$ months; (2) irregular fever—duration $1\frac{1}{2}$ months; (3) cough without expectoration—15 days; (4) swelling on ankles and feet and eyelids—3 days; and (5) anuria—1 day.

Physical examination.—Child was pale and anæmic, œdema on eyelids; tongue clean but red at tip and sides, pulse 100, Resp. 22, Temp. 100°F .

Chest—Occasional few rales at left base.

Abdomen—Sunken, slight fullness in hypogastrium, which is dull on percussion (suggestive of full bladder), liver and spleen not palpable.

Stool examination.—More of mucous and blood with slight fœcal matter, reaction alkaline.

Microscopic—Red blood cells and pus cells. No entamœba histolytica or cysts found.

Urine examination.—Albumin + +. No casts.

Treatment.—(1) Rest in bed; (2) Diet:—Barley water, pomegranate juice, lime whey, apples; (3) Medicines.

Sulph. Guanidin	... Tabs. 6
Redoxon	... Tabs. 3
Calcii Gluconate	... gr. xx
Sodii Bi Carb.	... gr. xxx
Mitt. Pulv.	1/3 every 3rd hour.

This was repeated for four days, but no definite improvement was noticed and hence I started giving him Penicillin 10,000 units I.M. every 3rd hour for 1 day. I found that his œdema had disappeared and urine flow was normal, the number of stools were reduced to 8 or 10 in 24 hours and the colour was yellow without blood or mucous.

I then put him on Mist. Bismuth et Pepsin Co. and Ext. Kurchi Liq. and in addition Liver Soup.

The patient was gradually coming round and on the fourth day of the Penicillin treatment, the relatives of the patient came and told me that the child has again passed blood in the stool and is causing anxiety.

I went and saw and examined the stool and found that this time the reaction was acid through no entamœba histolytica or cysts could yet be found.

I suggested a course of Emetine, gr. $\frac{1}{4}$ daily, for six days. After the sixth injection the number of motions was reduced to four in 24 hours. After one week's rest Enterovioform Tab. $\frac{1}{2}$ t.d.s. for ten days and again rest for a week and then Stovarsol Tab. $\frac{1}{2}$ B.D. for ten days.

During this period of Emetine, Enterovioform and Stovarsol, Ext. Kurchi Liq m x with Carminative mixture was also given.

The patient made recovery with the above treatment and then he was put on Poly-vit-Hepar $\frac{1}{2}$ teaspoonful t.d.s.

It appears the patient was suffering from combined infection of bacillary and amœbic nature.

A case of Tropical Eosinophilia

DR. MANORANJAN CHANDA,
Manikganj, Dacca.

A MOSLEM gentleman of about 60 years of age, healthy and active, connected with many important public activities, had to work hard during the last Assembly election. For the last 2 months after that, he felt great weakness and palpitation. He became very pale in his general outlook. His main symptoms were constipation, occasional dysentery-like stools, slight fever in the evening but no cough, palpitation, weakness and no energy for work. He had also complained of pain in the right side of his head. Liver was slightly tender, tongue was coated, appetite was not good.

Family history.—Was of no importance except that two of his sons died of T.B. about 5 years back.

At first it was diagnosed as a case of chronic dysentery with blood pressure.

Stool was examined and no protozoa was detected. *Ascaris Lumbricoides* ova were found and after Santonin one worm was expelled.

Blood pressure, systolic 180 m.m. H.G.; Diastolic 100 m.m. H.G.; blood urea 0.017%.

Urine contained no sugar, albumen.

Usual treatment for blood pressure, etc., was given.

Later, blood pressure was systolic 168 m.m. H.G.; Diastolic, 110 m.m. H.G.

Sigmoidoscopy was done but nothing pathological was seen, mucus present in the lumen was examined for protozoa but nothing was found; Haemoglobin was 90%.

Blood was examined for differential count of leucocytes. Leucocytosis was present. Neutrophils 31 per cent; lymphocytes, 17 per cent; monocytes, 5 per cent; eosinophils, 47 per cent.

It was diagnosed as a case of tropical eosinophilia.

Acetylarsan (M & B) 3 c. c. was injected upto 6 injections and a general tonic was prescribed.

Diet was regulated accordingly. The case was improved to a considerable extent when he had to leave the place.

After five months he developed gout (the joint of right big toe was inflamed with fever) which was diminished after treatment. He is now apparently healthy. His present blood-pressure is systolic 160 m.m. H.G. Diastolic, 108 m.m. H.G.

Gangrene of the Scrotum

MAHADEV CHOUDHURY, M.B.,
*C. M. O., Pal-Lahara State, E.S.A., P.O. Pal-Lahara, B.N.Ry.,
District Sambalpur, Orissa.*

A HINDU male, aged 65 years, much debilitated, came to the hospital with much pain and huge swelling of the scrotum, duration 9 days.

Past history.—Nothing very particular.

Present history.—About nine days back he had an itching sensation on the scrotum at night and rubbed it with a piece of rough cloth. Next morning he noticed some red ants collected there and that portion of the

scrotum was red, a bit swollen, painful and tender, which gradually increased.

Next day the whole scrotum was swollen, tender, red, and the patient had high temperature, vomiting and delirium. Then he was treated by a local Ayurvedic doctor who prescribed a local application.

On the 9th day he came to the hospital with the following signs and symptoms: Patient appeared much exhausted, anæmic, extremely toxæmic and delirious. Tongue—coated and dry. Respiration, 34, rapid and shallow. Response to question not good, temperature 104°F, pulse 132, feeble, legs and feet oedematous.

Local examination:—Scrotum—offensive odour, practically whole of the scrotum was waxy-white in colour and cold and the remaining 1/16th of the scrotum near its base on the posterior part was more or less normal with signs of inflammation. The middle 1/3rd of the penis was also gangrenous, and yellowish, sanguinous pus was coming out at the line of demarcation between the healthy and gangrenous portions. Inguinal glands—threatened suppuration.

Spleen:—Four fingers below the costal margin.

Liver:—Two fingers below the costal margin.

Urine:—Albumen slightly positive. Sugar—nil.

Blood:—Hb 55%. R.B.C.—3.3 millions.

M. P. negative. Leucocyte count—12,000, Poly 75%.

Pus on Gram's staining—strepto, staphylo and diplococcus.

Treatment.—Alkaline mixture and Sulphathiozole tablets—4 times daily and the scrotum was washed and dressed with Lysol and supported.

On the 10th day of his illness as his condition was not improved, he was given 100,000 units of Penicillin I.M. in six divided doses within 24 hours.

On the 11th day, the whole gangrenous portion of the scrotum and penis came out in a single mass and both the testes with their spermatic cords covered with the tunica vaginalis were hanging and remained bare. But the general condition of the patient was not improved. The testes were bandaged with Sulphanilamide ointment, and he was given the above mixtures and tablets orally and Glucose solution 25% 25 c.c. I.V. + Coramine 1 m.

After 5 days, temperature came down to normal and the bare testes were healthy and we thought of plastic surgery, but as reported by Mr. SAMANA, we waited for the regeneration of the scrotum with daily washing and dressing. Within 3 weeks, both the testes were encased quite normally with a little scar tissue by the remaining 1/16th of the healthy scrotum which was at its base.

Summary.—Points of interest in this particular case are that the remarkable capacity of the regeneration of the scrotal tissue was noted and no plastic surgery was required for the bare testes.

A Case Report

NANDLAL B. VANI, M.B., B.S.,
Nandurbar, (India).

I AM staying in a malarial place. In our neighbourhood is the 'hyper-endemic malarial' area. I have been practising this side for the last 18 years. During all these years, I treated malarial cases of all sorts—cerebral, etc

I gave Quinine gr. xx in three doses for 4 to 6 days. It answers well. In some cases only one injection of gr. x Q. Bi-Hyd. is given. On very rare occasions I am required to give two injections of Q. Bi-Hyd. gr. x to any single patient. If temperature after this treatment does not become normal, I revise the diagnosis. Temperature has not to be brought down forcibly by Quinine injections on every day. Quinine is poisonous to the heart muscles. It gives shock and in some cases leads to the failure of the heart. Only in charitable and free hospitals and dispensaries such heroic and callous treatment may be given. These methods require to be discouraged.

The case under treatment has run the fever course from 1st to 7th of July. It seems to belong to typhoid paratyphoid group. This side we get every year a lot of typhoid cases. Some are continuous, some intermittent and some are remittent.

I had such a case of typhoid—intermittent. Patient, aged 18, son of a civil judge. For about first 12 days he had been under the treatment of one of my friends. He had been given 2 injections of Quinine Bi-Hyd. each gr. x on alternate days without in any way affecting the course of the fever. The temperature used to be normal in the morning up to 11 a. m. After that it used to rise slowly; and by 5 or 5-30 p. m. it used to touch 105°F. I treated the case symptomatically from the 13th day. The temperature after the 14th day began to reduce. On the 21st day it was normal, morning and evening.

Reference :

E. Manual, "Clinical Malaria" (A Case Report), Antiseptic, Sep. '46, p. 598.

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* Wakeley, C.P.G. (1942)
The Practitioner, 149, 50.

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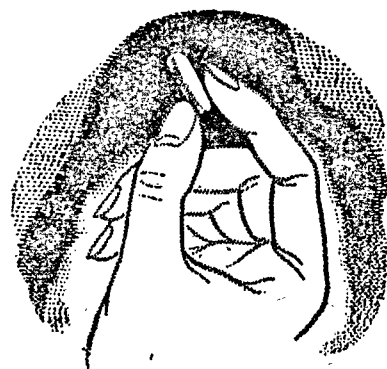
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"A nation's health is perhaps the most potent single factor in determining the character and extent of its development and progress."

—The Bhore Committee.

Labouring under the serious handicap of insecurity of tenure of his office as Minister for Public Health in the Central Government, for reasons too well known and which it is unnecessary for us to detail here, the Hon. Sir SHAFAT AHMAD KHAN confined himself in his presidential address at the Conference of Public Health Ministers held in Delhi recently, to a cursory review of some of the problems of public health, leaving the major problems for consideration and decision at a latter conference. He suggested two priorities—Sanitation and Malaria, and added a third to it, namely, the provision of health services in rural areas. The present position may be easily summarised. The mortality rate is high, sickness and disease are rampant everywhere, and the hospitals and health services are hopelessly inadequate to meet the requirements. If one goes to town or to village the hopeless sanitary condition stares us in the face.

Such a state of things was allowed to continue, due to the feeling in high quarters for long that health was largely the concern of the individual and that the State had nothing to do with it. But in recent times there has been, as Sir SHAFAT pointed out, a growth of social consciousness, of democratic ideals, and of a new conception of social welfare and of the rights and duties of the individual and of the responsibilities of the State. It has been accepted by all civilized nations that health is one of the goods of life to which man has a right. The same has been put in a different way by President Truman, viz., that United States can afford many things, but ill-health is one thing it cannot afford. The reasons are obvious. A disease-ridden community cannot be a prosperous community. India is a shining example of the truism of this statement. The quotation from the report of the Bhore Committee which we have given at the top of this article, the statement of President Truman, and similar declarations made by responsible heads of administration in various countries, all these imply that the State is responsible for maintaining the health of the people at the highest level, and in actual practice the governments in other countries are doing everything to keep public health at the highest level.

The days of *laissez faire* has therefore gone, never to return again, and the Government of India has to accept the responsibility in this behalf. This Sir SHAFAT has done; he has stated that it is the duty of the State to create those conditions of living in which health could be achieved by the people and maintained at that level, and when they are ill to provide the medical treatment necessary for their recovery. To put it in a nutshell, health, like education must therefore be the function of the State. The objective of the State must be, as he said, to create the conditions for healthy living, to provide as complete a health service as possible and to include within its scope the largest proportion of the community. He has very rightly stressed on the need for avoiding the "means test" and accepted the liability to make the medical service accessible to all without any distinction. But it is idle to talk of health when the cereal ration is far below the standard necessary to maintain normal health and vigour, or when they live 10 or 12 in a room in a slum tenement, or when owing to poor income and high cost of living they are unable to obtain the essential necessities of life, or when they are un-educated and unaware of even the elementary principles of hygiene and healthy living. As Sir SHAFAT AHMED put it, health is indeed affected by the whole of man's environment, by the conditions in his home, at school, and at his place of work, by his economic conditions and security of employment. It follows therefore that the responsibility of the State extends far beyond the hospitals, and it is necessary to so order things that all activities, governmental or social, are directed with this aim in view.

Public health is therefore a national problem. In spite of the fact that public health administration is under the control of the Provincial Governments, it is an all-India problem. Diseases which are prevalent in one Province can easily spread from that Province to another and thus spread all over the country. They know no boundaries. That is why the Hon'ble Pandit JAWAHARLAL NEHRU stressed the need for co-ordination in the activities of the various Provinces. But the cost involved, even according to the Bhore Committee, to carry out the short and long term plans it has recommended for adoption, is huge and beyond the capacity of the Provinces to bear. We therefore expected that the Central Government which, according to the present scheme of things keeps for itself many increasing sources of revenue, will come forward to share the cost with the Provinces. While in one place Sir SHAFAT has given the assurance that the Centre is prepared to take an active part to promote, what he himself stated should be the objective of the State with the help and co-operation of Provinces, he has towards the end of his speech restricted the scope of the help the Interim Government can give. They would, he said, set up very shortly a small committee to advise the Government on the scheme for the establishment of an all-India Institute with up-to-date facilities for training and research of the highest standard; they would provide facilities at Calcutta for medical licentiates from all parts of India to enable them to take the M.B., B.S. degree and for this purpose they have taken over the surplus American buildings and hospital equipment; they would help to send at least 50 persons a year to foreign countries for post-graduate training; they would arrange to send some specialists from here to foreign countries for short periods to make contacts with scientific workers there and study first-hand recent scientific developments; they would expand the staff and accommodation of Malaria Institute of India to enable it to play

its part in the drive against malaria; in the field of research they would give far greater assistance than in the past; they would continue to assist in the higher training of future nursing administrators and specialists by the establishment of a Nursing College providing a course for a University degree in nursing as well as shorter specialized courses; they would pursue legislative proposals for the regulation of the pharmacy profession; they would introduce similar legislation for dental and nursing professions; they would bring into force the drug control legislation from first April next; and they would develop the advice and information services. These, no doubt, are essential if the problem of public health is to be tackled satisfactorily. But the help from the Central Government in these directions alone is not sufficient. Till such time as a scheme for independent India is drawn up, allocating the sources of revenue equitably between the Centre and the Provinces and it comes into force, the Central Government must, in accordance with the recommendation of the Bhore Committee, increase their expenditure on public health to at least 15% of their total expenditure for the carrying out of the objectives to which they have already committed themselves and for affording financial assistance to the Provinces. And this is only a flea-bite compared with the expenditure incurred by other countries for the maintenance and improvement of public health. Besides, it is only an investment which would bring a substantial return to the Central exchequer. We are not sure if this aspect of the matter was stressed by the Health Ministers at the Conference. But if it has not been done, it is time they press this unanimously without any delay.

"If there is," as Sir SHAFAT said, "a question of priorities—and planning means priority—I think you will agree that an active programme for the improvement of water supply and sanitation in our towns and villages is one of the most urgent of our needs." The Bhore Committee has suggested the development of a district health organisation with a primary health centre for every 40,000 people, a 30-bed hospital for every 200,000 and a secondary centre with 200-bed hospital for each district. This is not, as Sir SHAFAT admitted, an extravagant programme and is the minimum necessary to provide a reasonably effective, curative and preventive health service. But as the Committee itself has pointed out in another place any health organisation can attain its objective only with the co-operation of the people. True it is that the people themselves must take an active part in the protection of their own health in rural and urban areas. But how can this co-operation be forthcoming when they are steeped in ignorance of even the elementary principles of hygiene and healthful living? We have, therefore, to face the factors of ignorance, and of indifference. These are the problems not only of the poor; they are problems of all classes, and to organise them with a view to make them co-operate whole-heartedly with the health organisation, the whole country shall have to be aroused to a sense of private and public duty in the matter of health. In the words of the Rt. Hon'ble Lord WOOLTON, "Let us get fit and keep fit" must be made the slogan which should reverberate from one end of the country to the other. This can be achieved only by imparting health education in order that every citizen may be educated in his duties, rights and responsibilities as a citizen, and in his duties and responsibilities as an individual, as a parent, and as a neighbour. The means adopted should not be, as Lord WOOLTON has said, a diadectic propaganda but a truly educational one. We must

see that the people do the right things not in a purely automatic way merely because they were told to do so by some persons in authority, but with a clear understanding and appreciation of these things. A short term education should be carried out to deal as speedily as possible with important public health problems, always aiming at a long term policy of creating a public which has been health-educated in the fullest sense of the term from infancy onwards. In the short term work we can reach the existing adult and adolescent population by films, lectures, broadcasts, exhibitions, posters, leaflets, advertisements and articles in the press. The long term policy must be directed to the systematic training of the parent, school-child, young persons, engaged persons and married persons in matters relating to their well being, and the well being of their children.

What about the personnel? We have at present only 47,000 qualified doctors in the country. The Bhore Committee has estimated that for the first 5 years of their scheme an additional 15,000 medical men and women will be required. We will also require for an adequate maternity service something like 100,000 nurses. Rome was not built in a day, and so also medicoes cannot be prepared overnight. It requires a long number of years to train the required personnel. This, we think, must be the reason which has induced the Conference to recommend the utilisation of the services of those trained in the indigenous systems of medicine as well. The immediate needs of the situation should not blind us to the fact that many of them are not properly equipped and trained in the field of public health. We trust, this matter will receive due consideration in time.

We have not before us the full text of the proceedings of the Conference, and have therefore to proceed on the basis of the reports published in the press. We congratulate the Conference on the unanimous decision it has arrived at, that members of the Indian Medical Service should be reserved entirely for military service and should not be assigned duties in the civil side. This is a reform which has been insisted upon by the public and the profession for a long time, and we trust that now that the Health Ministers have come to an unanimous decision in the matter, it will be implemented without any delay. On the question of the amalgamation of the Medical and Public Health Departments, there appears to have been, very naturally, a difference of opinion in the Conference.

As we pointed out at the outset the Hon'ble Sir SHAFIAT has left many major problems for consideration at a latter Conference. These include tuberculosis, venereal diseases, leprosy, etc. True it is, that an improvement in the environmental conditions will go a great way to minimise the incidence of tuberculosis. But the problem of present day patients and their contacts for a long number of years will still remain, giving room to the spread of the disease far and wide, unless tackled side by side with other problems. The wartime increase in tuberculosis has become most apparent in the industrial areas of the country, and with the prospect of large scale industrialisation that is in the offing, the problem has to be faced squarely, especially when it is now known that tuberculosis control is neither a baffling nor a complex phenomenon. And we have before us certain great landmarks in the development of our knowledge of methods to control tuberculosis. As a result of the adoption of suitable methods we are told that there has been an 80 per cent improvement in tuberculosis death rate in the past fifty years in the U.S. We have only to apply the knowledge

gained by years of experience by other countries, and the results are bound to be equally gratifying. The control of leprosy and venereal diseases is equally important. We trust therefore that the Hon'ble GHAFAR ALI KHAN, the new Health Minister, will lose no time in convening another Conference to discuss the incidence of these major diseases and decide upon the effective steps to control them. They are also problems of public health and as such they should be tackled side by side with others.

Gleanings From Medical Press

MEDICINE and THERAPEUTICS

Disappearance of peptic ulcer after feeding of normal gastric juice.—Morrison (*Am. J. Digestive Diseases*, Oct. 1945), removed gastric juice from normal subjects and fed it to patients with peptic ulcer. Normal gastric juice was obtained from 6 volunteer subjects. The juice was rendered neutral by sodium hydroxide, filtered and rendered bacteriologically sterile by 0.3 per cent tioresol as a preservative. Ten patients with uncomplicated peptic ulcer, roentgenologically demonstrable as a niche, a crater or an ulcer defect, in addition to the associated x-ray findings such as spasm, increased emptying time and local pain to palpation under fluoroscopic guidance, were placed on a well-balanced diet. One-half ounce of normal gastric juice, diluted with 2 ounces of tap water was fed to each patient every hour during waking hours. No other medication was given. Eight of the 10 patients responded in from twenty-four to forty-eight hours to the feeding of normal gastric juice by becoming free from ulcer symptoms. No ulcer recurrences have occurred in these 8 patients during a three-year follow-up period. Of the 2 patients who showed no improvement, one had had ulcer symptoms for nineteen years and the other intermittently for twenty-five years. The author concludes that a "protective principle" is elaborated within the gastric and duodenal mucous membranes and is secreted into the gastric juice. This protective principle may be lacking or impaired in patients with peptic ulcer, but it can be fed to them, causing the ulcers and symptoms to disappear.—*General Practitioner*.

Sudden arterial occlusion.—Some principles of treatment of arterial occlusion, unless it is high and massive, when the case is surgical and requires removal of the clot within four hours are:—

1. Sedation with 100 or 200 mgm. of demerol or pontopon, grain 1/3 hypodermically, for relief of pain and repeated p.r.n. Some give papaverine hydrochloride, grain 1/4, either hypodermically or intravenously.
2. Lumbar sympathetic block done by a competent man within eight hours after the occlusion.
3. Elevation of the head of the bed.

4. Keep the extremity cool and not warm with the best temperature around 60°F. Keeping such an extremity warm will only increase the metabolism and increase the breakdown of tissue with a deficient circulation. Such an extremity should not be refrigerated unless one intends to amputate. The cool atmosphere may be maintained by placing ice around the edge within a cradle and blowing air with an electric fan over the ice and leg.

5. One must next consider the feasibility of the use of the heparin and dicoumarol, since these drugs, too, are most effective when given within the first eight hours after the occlusion. It is highly probable that the anticoagulants do not dissolve clots already formed, but do prevent propagation of the same. Since these drugs can be dangerous, it is well to have a coagulation time and prothrombin time done and reported before institution of therapy. It is also advisable to have a control test done to make sure of the laboratory materials and technique. This is particularly true in the case of dicoumarol. One may give 200 mgm. of dicoumarol by mouth and start heparin as an intravenous drip for the first twenty-four to forty-eight hours until the action of dicoumarol becomes effective. It is best to add twenty mg. of sodium heparin to each 1,000 c.c. of normal saline solution and use approximately 2,000 c.c. in twenty-four hours. The clotting time should be taken four hours later and the rate of flow regulated by the clotting time, which should be taken every four hours until the dicoumarol becomes effective. The normal clotting time is five to ten minutes and an increase of the time to fifteen to twenty minutes with heparin is often quite adequate. If after twenty-four hours to forty-eight hours, the prothrombin time is increased one-half, the heparin is stopped. A normal of twenty-two seconds is given by most laboratories using the Quick method, while others use eighteen seconds as the normal. A prothrombin time of thirty-two to thirty-five seconds is usually considered an optimal level when using dicoumarol. It is best, however, for each laboratory to establish its own normal and use controls because frequently difficulty in the use of this drug is due to faulty laboratory technique. If the prothrombin time is not at the desired level after two or three

hundred milligrams of dicoumarol, then 100 milligrams may be added daily and daily determinations of the prothrombin time taken while the drug is still effective. Discontinuing heparin will stop its effect within two to four hours, but the action of dicoumarol will last for seven to ten days. One must be ever alert to the possibility of hemorrhage with dicoumarol and fresh plasma and preferably fresh blood should be available when one is using it.

6. The use of medication by mouth, such as vasodilators, which are probably the least important element in the treatment, includes alcohol given as brandy, bourbon or Scotch, one or two ounces twice daily. Papaverine hydrochloride may be given by mouth, as grain one every two hours, if the patient can tolerate the same. Acetylsalicylic acid, grains ten, with sodium bicarbonate, may be given every three or four hours if tolerated.

7. If one suspects any infectious process in the resulting thrombosis, sulfa drugs and penicillin are indicated.—Dwight T. Bonham, M.D.—*Medical Times, Aug. 1946.*

Salicylate therapy in rheumatic fever in children. Leo M. Taran and Martin H. Jacobs, *J. Pediat.* 27: 59 (July) 1945.

It is generally agreed by clinicians that the favourable effects of salicylates on the course of acute rheumatic polyarthritis is striking and often dramatic enough to give the impression that salicylates may have a specific therapeutic effect on the rheumatic process. To date no evidence has been presented to show that other manifestations of rheumatic disease such as chorea, carditis, rheumatic nodules and other cutaneous manifestations are favorably modified by salicylate therapy. The contention of Coburn that massive salicylate therapy may modify "the sterile inflammatory reaction which occurs during activity of the rheumatic process and inhibit the development of cardiac disease" has once more opened the question of the specificity of salicylates as therapeutic agents for rheumatic disease.

In this paper observations are presented on the effect of massive doses of sodium salicylate on the course of rheumatic polyarthritis and acute carditis in children 6 to 14 years of age. The intravenous and oral routes of administration are compared in regard to blood plasma levels, effects on rheumatic activity and the possible untoward effects or hazards.

The observations suggest that large doses of salicylates sufficient to raise the plasma salicylate level to 350 to 450 micrograms per cubic centimeter produce prompt and effective subsidence of all clinical and laboratory evidence of rheumatic polyarthritis. The oral route of administration is as effective as the intravenous.

The authors' observations further suggest that massive doses of salicylates in acute rheumatic carditis are equally effective in promptly suppressing all clinical and laboratory evidence of rheumatic activity. The intravenous route of administration in this group of cases seems to be hazardous.

It is further observed that the usual small doses of salicylates have no therapeutic value in rheumatic carditis in children.

While it cannot be definitely stated from the authors' observations that massive salicylate therapy unequivocally suppresses the rheumatic process and prevents the stigmata of heart disease, it is clear that this form of treatment makes the patient symptom free. It is not, however, clear whether this form of therapy simply suppresses the symptoms or indeed breaks the chain of processes operative in rheumatic activity.

The experience with intravenous use of massive salicylate therapy indicates clearly that more fundamental data must be presented to show the effect of a rapid rise of plasma salicylate level on hepatic metabolism and its possible injurious effects before the method is proposed for use generally.—A.J.D.C.

A study of the type of lesion of tuberculosis in the course of reinfection in the child. Miguel A. Valiente, Carlos Amador and Pedro G. Hoyos: *Bol. Soc. cubana de pediat.* 17: 131 (April) 1945.

The authors studied 2,100 patients with active tuberculosis lesions in the Calmette Dispensary, Habana, Cuba. They discuss particularly the secondary infiltrations, as established by Redeker, as well as the tertiary or adult type of reaction. They sum up their observations as follows:

The secondary infiltration, called also "postprimary," is the most frequent form of the infection in infancy. The tertiary lesions of the adult type were almost never encountered in children and observed with any frequency only in puberty and adolescence.

In this study of 5,000 clinical histories and roentgenograms of children with positive reactions to the Mantoux test and of a total of 2,100 patients with active tuberculosis, some 300 patients (14 per cent) showed secondary infiltration, and only 41 (2 per cent) tertiary lesions.

The clinical symptoms which point to reinfection of a secondary type are varied. Only the positive reaction to the tuberculin test and the roentgenograms give any evidence of the pulmonary process. Other insidious symptoms are slight fever, asthenia, pallor, anorexia, loss of weight with cough and slight pulmonary signs. A few patients have high fever and signs of pulmonary consolidation. Hemoptysis was not observed.

The seat of the lesion is usually perihilar with a distinct roentgenographic picture. It may have a triangular form (Sluka) or the appearance of a transverse band or may be a mass which invades one or more lobules.

The course of these infiltrations is benign in almost all cases, and the condition clears up in one or two years. In rare cases caseation has occurred (secondary phthisis) with cavity formation.

Other secondary manifestations occur such

as pleurisy, peripheral adenitis, phlyctenular conjunctivitis, tuberculous peritonitis and granuloma.

The tertiary (adult type) infiltration is established by a new infection which can appear in a lung free of lesions or in an area previously infected.

The clinical symptoms are usually indefinite in the early stages. Only in one third of the cases are there acute symptoms, for example, fever and respiratory involvement, almost always nonspecific.

If the symptoms are insidious at the beginning in the majority of cases, this is not so when the infiltration begins to break down. There are then intense symptoms, elevated temperature, cough, fatigue, anorexia, rapid loss of weight, pain in the chest and bloody sputum. On physical examination there are stertorous rales which soon become the type heard with cavitation.

The site of the lesion at the beginning is frequently intracavicular although it can settle in other regions of the lung. The roentgenographic aspect is that of a round or oval shadow of rather thin density about the size of a coin of 10 or 20 centavos with a great deal of density at the edges.

The evolution of the tertiary infiltration is generally malignant, producing progressive clinical stages to caseation, softening, cavitation and dissemination of the lesion. Without doubt at any moment the process can regress toward cure or remain stationary for a considerable time.

A number of cases of osteoarticular tuberculosis which, according to many authors, constitutes tertiary lesions, have been observed in children who were affected or not affected with the pulmonary process. They observed 1 case of laryngeal tuberculosis and 1 other of renal tuberculosis, both connected with ulcerocaseous tuberculosis.

The secondary infiltrations, as much as the tertiary infiltrations, are of the type of reinfection recognized as being of exogenous-aerogenous origin. The possibility that the reinfection can have also an endogenous origin is admitted by all authors, giving it an origin from some reservoir still active or from some other infected organ. But in either case, it is to be admitted that reinfection is produced only when certain favorable circumstances exist, e.g., the kind of life, faulty hygiene, food deficiencies and intercurrent infections.

The bases of the diagnosis of these infiltrations of reinfection are the possibility of contagion, the physical examination, the tuberculin test, the erythrocyte sedimentation rate, the hemogram, the search for the tubercle bacillus in the sputum and the roentgenographic examination. Of all these the most important are the history, the tuberculin test, the appearance of bacilli and the roentgenogram.

The differential diagnosis between secondary infiltrations and the primary infection is difficult when one does not know the history of the child or his tuberculin test

has not been previously made. At times there are in the roentgenogram the remains of primary infection with the secondary infection around it, but there is no doubt that in a considerable number of cases it is impossible to determine with certainty whether a primary infection somewhat delayed is being treated or an early secondary lesion.

The differential diagnosis is easier between the tertiary infiltrations and the primo-secondary. The greater age of the child, the circumstances of his early life in tuberculous surroundings, the knowledge of a positive reaction to a tuberculin test in previous years, the site of a new lesion, the primary calcified complex and the rapid evolution of the lesion (generally to caseation), with the early finding of the tubercle bacilli in the sputum, are all valuable data. In some cases the authors met with considerable difficulty in establishing a definite diagnosis between primo-secondary and tertiary disease. At times only the study of the anatomic lesions at necropsy could clear this up.—A.J.D.C.

Amino acid feeding in stomach ulcers.—A treatment for stomach ulcers that provides relief from pain in 1 to 2 days and disappearance of the ulcers on x-ray films in 2 to 3 weeks has been reported from the experimental surgery laboratory of the New York University College of Medicine. The treatment involves frequent feedings with protein hydrolysate (predigested proteins) now widely used in treating cases of severe malnutrition, extensive burns, and surgical convalescence; while not a "cure," it is described as "efficacious in promptly bringing acute peptic ulcers to a state of quiescence."

The value of the treatment in ulcer cases was first suspected during studies of the use of high amino acid feedings preceding stomach operations. Four patients in poor physical condition, waiting for operations for stomach ulcers, were given what the researchers call the "hyperalimentation" or "high-feeding" treatment, primarily to prepare them for the operation. All four experienced relief in 24 hours and all gained an average of a pound a day for the first 8 to 10 days. One patient was so improved that he left the hospital, refusing operation.

The other three patients underwent operations. In one case the ulcer was completely healed over and only slight scars remained of what had been a serious stomach ulcer condition. In the other two cases the ulcers were still present, but both were healing rapidly and marked improvement was evident.

Encouraged by this success, the researchers have since tried the treatment in 26 other cases over the past year, and in all cases the results have been similarly successful. The hydrolysate was mixed with dextrimaltose, and given, carefully measured, every two hours.

The investigators assign two reasons to

the beneficial action of amino acids in ulcers; (1) amino acids neutralize the hyperacidity which accompanies ulcers and thus abolish the digestive action of the stomach enzyme, pepsin, which requires a high degree of acidity for the action; (2) amino acids are a rich nutriment, and enable the body to heal the ulcer defect, and at the same time replace the protein deficiency often accompanying ulcer condition.—*General Practitioner*.

Chemoprophylaxis.—Chemotherapeutical agents cannot produce immunity in the restricted sense of that word; they are therefore of no general value in preventive medicine. There has never been the slightest reason to believe, or to hope, otherwise, if what is held to be their methods of action is not fiction. In special circumstances where protection is needed for a brief period, their preventive value is unquestionable. Here they are in similar case to the antitoxins, but with the important difference that they are much less specific. Their use in curative medicine does not concern us here, nor their almost equally important function of aborting infection when this is a probability; but their use when infection is a possibility rather than a probability; and for the clearance of passive carriers, calls for our earnest consideration as to any remote results they may produce. So far as is known, penicillin and agents of a similar character which have been discovered, or may be discovered, do not have any permanent influence on the host. Penicillin itself is without toxic action, though a few cases have been recorded in which unpleasant phenomena have been caused by it; but these are so rare that they can be ignored. The sulphonamides and quinine are poisonous; both interfere with leucocytosis and it is not yet certain whether or not they do any permanent damage in this direction. A course of a sulphonamide to prevent the development of acute rheumatism may succeed in its object yet leave the patient impaired to react to some future infection. The action of sulphonamides, and possibly of all chemotherapeutical agents, in favouring the survival of resistant strains of parasites is well known, but its explanation is not clear.—*Medical Officer*, 31st Aug. 1946.

Congestive heart failure.—(Leevy, E. & Acl.—*J.A.M.A.*, Jan. 31, 1946).

A study of 123 patients with congestive heart failure was conducted specifically to evaluate the relative merits of restricting fluids, allowing fluids *ad libitum* and forcing fluids. Essential therapy in congestive failure is the judicious employment of bed rest, digitalis, diuretics and sedatives, with an acid fast salt poor diet providing sufficient calories, minerals and vitamins. With restricted sodium intake, restriction of water is unnecessary in treating cardiac decompensation, increases the discomfort of the patient and may prove deleterious. In most decompensated cardiac patients for-

cing fluids will neither retard nor facilitate compensation when congestive failure is complicated by sepsis requiring chemotherapy anotemia or dehydration in associated medical or surgical conditions fluids should be forced to obtain optimum therapeutic results. As in health, the average patient with congestive heart failure should be allowed to drink water as it is desired, consuming enough to maintain a daily minimum urinary output. Water intake should be increased to prevent dehydration where there is intrinsically impaired renal function, sepsis, excessive skin or urinary water loss.

Medical treatment of peptic ulcer.—Ihre states that examination of the gastric secretion with histamine and continuous aspiration in 264 ulcer cases showed hypersecretion in 39 per cent of the cases, more often in men than in women, more often in duodenal than in gastric ulcer, equally often in duodenal ulcer of brief and of longer duration. X-ray examination of the stomach does not afford reliable information as to hypersecretion. The indications for blood transfusion have been widened. In anemia and hypoproteinemia healing of the ulcer is retarded. When the hemoglobin value is below 60 per cent, transfusion is indicated. Prompt correction of the anemia is particularly important in older patients. The treatment is supplemented with iron and vitamin C. When massive gastro-intestinal hemorrhage occurs with symptoms of acute collapse and fall of blood pressure, transfusion of 800 to 1,200 c.c. should be given, followed immediately by x-ray examination of the esophagus, stomach and bulb to find the source of the bleeding. In repeated massive hemorrhage, when a typical ulcer niche has been demonstrated and the patient is over 40, blood transfusion and immediate operation are indicated. The degree of deformity, particularly of the bulb, is more important in prognosis than the size of the niche. Hourglass bulb is a relative indication for operation. In chronic gastric ulcers the indications for operation are considerably wider than in chronic duodenal ulcer because of the greater tendency to malignant degeneration. The absence of symptoms during and after treatment and even reduction of the niche during treatment do not exclude malignant degeneration. The importance is stressed of satisfactory early internal treatment continued sufficiently long to attain healing (x-ray control after treatment) and of after-treatment with attention not only to diet but to etiologic factors of the psychic, social and economic kind. A schedule of regular and frequent meals, eventually supplemented with antacids, sedatives and antispasmodics, should be followed for at least a year in cases in which there is healing with no or little deformity, for three years in other cases.—*J.A.M.A.*

Glycerine jelly base for penicillin.—Special advantages and superior action are obtained when penicillin is applied on a

greasy glycerine jelly, according to a report by J. Spencer, E. J. Bishop and Ricks (*Lancet* 1:127, 1946). The jelly is made by gradually mixing 110 c.c. of glycerine with 8 gm. of powdered tragacanth in a mortar and pouring the mixture slowly into a jar containing 332 c.c. of an 0.25 per cent solution of methyl-parahydroxybenzoate (Nipagin M). It is placed then in autoclave and allowed to steam for ten minutes, after which it is sterilized at 10 pounds pressure for 30 minutes. When cool, 50,000 units of penicillin, dissolved in enough sterile distilled water (about 25 c.c.), is added to make a total weight of 500 gm. of jelly.

Conservative treatment of human bite infections.—Henry (*Military Surg.*, 97, 1945) gives in the following lines a routine procedure in the treatment of all human bites:

- (1) All wounds should be immediately cleansed well with soap and water, following by gentle debridement.
- (2) Culture all such wounds. (Dark field examinations and ten-day anaerobic cultures are diagnostic aids).
- (3) Tetanus antitoxin or booster shot for human bites, dog, cat, or horse bites.
- (4) Irrigate wound with hydrogen peroxide and Dakin's solution. If these are not available, use warm saline.
- (5) Never suture or repair these wounds regardless of time interval. This is the most common serious error!
- (6) Leave wound wide open and sprinkle wound with sulpha crystals.
- (7) Hot $MgSO_4$ or boric soaks to extremity once daily for one week.
- (8) Check Wassermann-Kahn test on patient and repeat test in one month from time of bite.
- (9) Avoid amputation in presence of acute infection. Treat conservatively and allow nature to wall off process.
- (10) Check with X-ray for bone involvement at time of inquiry and again later for any complication because of the tendency of these cases to develop slowly into deep undermining wounds and with extension to bone.
- (11) Splint the extremity between treatments because rest to the part aids in the healing process.
- (12) Penicillin has very slight, if any, effect on certain mixed infections. However, a ten-day treatment with penicillin would be indicated, using 100,000 units each day. Since penicillin is not a specific cure in mixed infections and in order to save any possible man hour loss, it is felt that penicillin should be used in addition to conservative surgical debridement, irrigation and adequate drainage of the anaerobic wound. Both reported patients in this paper, however, only received sulpha crystals locally in wound, but no sulpha or penicillin treatment orally or parenterally.
- (13) All human bite injuries should be well written up in the health record, treated conservatively, and observed carefully for

Spencer, Bishop and Ricks claim the following advantages for the jelly: (1) It infiltrates damaged and diseased tissue readily and easily; (2) the ingredients are readily and cheaply available; (3) the presence of glycerine, which is hygroscopic, has a dehydrating effect in inflammatory conditions and increases the penetrative action of the drugs held in solution; and, (4) it is easy to manipulate by spreading or pouring on skin lesions, wounds, sinuses or open cavities. The consistency of the jelly may be varied by regulating the amount of tragacanth.—*Jour. Med. Soc., New Jersey*, Aug. 1946.

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complication. Emphasis should be placed on adequate drainage and an attempt to produce a state of aerobiasis in wound.—*General Practitioner*.

Mal-descent of the testicle.—Stephen Power, M.S., F.R.C.S.

The incidence of the mal-descent in the testis is about four per cent. Normally both glands should be in the scrotum at least by the end of the first year. A large number of testes reach the scrotum between the ages of eleven and fourteen; after that, all are agreed that there is no hope of improvement without operation, and not much with it.

A mal-descended testis is liable to give trouble in a variety of ways, quite apart from the fact that it does not produce spermatozoa. It may

1. Undergo torsion.
2. Become inflamed
3. Become malignant
4. Be associated with a hernia
5. Start a neurosis

But most important of all is its failure to do its job in a proper way. The failure is not complete because the interstitial cells survive, and even in bilateral cases the patient develops along male lines, although his external genitalia may not be anything to boast of. Nevertheless the absence of external secretion is a serious matter. It is caused by defective growth of the germinal epithelium, which first becomes noticeable about the age of ten; until then the microscopic appearances of a descended and an undescended testis are much the same; this must be remembered when the treatment is being considered. After that degeneration proceeds apace, but it is not safe to put a term to it, and say, at such and such an age there is nothing left.

Many errors in diagnosis have been made because the patient was examined in a chilly consulting room. Under such conditions it is quite easy to mistake a retracted testis for an undescended one, or to miss it altogether, for it is a most elusive organ. Probably the best method of identifying it, when any difficulty arises, is to massage the inguinal region downwards and inwards with the tips of the fingers until it is felt to

slip under them. Once identified an effort should be made to slide the testis on over the bar of the pubis. If this succeeds there need be no concern about its future progress; it will descend of its own account. If, on the other hand, it is held up above the pubis, a mechanical impediment to further advance may be present, and operation will be required. Obviously the same argument applies to the ectopic testis, which has gone astray and come to rest in the perineum, thigh or abdominal wall. This too must be operated on. What of the testis that cannot be felt at all? The chances are that it has never emerged from the inguinal canal, but it may never have engaged in it, and be still an abdominal viscus. In these cases again operation is indicated.

A word may be said here about endocrine therapy. Certain endocrines, notably pregnyl, have the reputation of promoting descent of the testis. It is evident that they cannot be of any use when the delay is due to mechanical causes, and this must often be the case with unilateral cryptorchism. When the condition is bilateral and is accompanied by other signs of endocrine deficiency, then there is more hope that the testis will respond by descending and developing, or developing and descending, whichever may be the correct sequence. But the general feeling lately is that though pregnyl may accelerate descent, it does not determine it. In other words, a testis which comes down with pregnyl will come down by itself if given a chance. Another fact to be remembered is that pregnyl may produce such a reaction in the testis within its inelastic tunica as to interfere with its future efficiency. The dose is 500 rat units given intramuscularly twice weekly, for six weeks, and the course should not be started before the age of ten, because it sometimes produces a premature appearance of secondary sex traits.

Ten is about the right age for operation too, that being the time when the germinal epithelium normally starts to proliferate. Adequate lengthening of the cord, so that the testis can be placed in the scrotum, is the main aim of the surgeon, and he usually achieves it, even when he is faced with an abdominal retention. But that is not the end of his task. Even when the testis comes down quite easily he must arrange for some kind of traction on it; otherwise it will slip up again before a few months have elapsed. —*Medical World, Sept. 6, 1946.*

The diagnosis and treatment of acute pancreatitis.—The most severe cases of acute pancreatitis, particularly in men, simulate perforated peptic ulcer; the less severe, acute cholecystitis. If laparotomy is performed because of doubt or mistaken diagnosis, the least possible intra-abdominal interference should take place.

Godfrey recommends the following procedure when the diagnosis of acute pancreatitis is a possibility. First consider whether it may be a perforated peptic ulcer, and if reasonable doubt exists laparotomy

must be performed. If at operation acute pancreatitis is found, the most that should be done is decompression of the biliary system by means of cholecystostomy, and drainage of any large collection of fluid in the lesser sac. Acute pancreatitis is associated with gall stones in a high proportion of cases. If there is an impacted stone at the neck of the gall-bladder cholecystostomy is useless unless the stone can be removed. Cholecystostomy should be performed if the general condition allows it. Gastro-intestinal suction should be used in all cases, and whether treated conservatively or by operation.

If the diagnosis of perforated peptic ulcer or any other condition requiring urgent intervention can be eliminated, conservative treatment should be adopted. Conservative treatment means careful periodic examination of the patient, with an hourly record of the pulse rate, continuous gastro-intestinal suction, intravenous therapy (probably plasma) and an estimation as soon as possible of the blood or urinary diastase. At a later date a radiological examination of the gall bladder should be performed, and if a stone or non-function of the gall-bladder is demonstrated, operation must be undertaken. —*Clinical Journal, Sep.-Oct. 1946.*

Aspects of arterio-venous and cirroid aneurysms.—J. Thompson Fathi, M.S. F.R.C.S.

Arterio-venous and cirroid aneurysms may be defined as permanent communications between artery and vein apart from the normal capillary bed.

THE ACQUIRED FORMS OF ARTERIO-VEINUS ANEURYSM are usually due to trauma in the form of penetrating, perforating or contused wounds. Fractures of the skull account for some of the cases occurring in the cavernous sinus. Other surgical causes of interest are those following amputations. Contusions are a frequent cause where the vessels of the scalp are involved. Spontaneous or pathological causes are rare. They have been recorded in association with aortic aneurysms which have ruptured into the superior vena cava or pulmonary artery. In bacterial endocarditis mycotic aneurysms have been known to establish arterio-venous aneurysm.

CIRROID ANEURYSMS may also be due to injury. In these cases there may have been single or repeated slight injuries. Trauma may also act as a contributory cause in the congenital varieties. Spontaneous forms have been recognized.

Congenital arterio-venous aneurysm is relatively rare.

Varieties of Vascular Anomaly:—

I. *Arterio-venous Aneurysm.*

1. Congenital (rare).
2. Acquired—(a) Traumatic (commonest). (b) Pathological or Spontaneous.

II. *Cirroid Aneurysm.*

1. Congenital or neoplastic.
2. Acquired (traumatic and pathological).

Phlebarteriectasia. (Diffuse dilation of an artery and vein.)

Phlebectasia. (Diffuse dilation of a vein alone.)

Angiomata.

1. Benign.
2. Malignant.

PATHOLOGY.—Most authorities agree that congenital arterio-venous aneurysms arise in embryological malformation of vessels which lead to the formation of a fistula. The pathology of cirroids, however, and their close relationship to the angiomata has led to considerable controversy as to their true nature.

From the investigations the following conclusions may be drawn:—

- (1) If a vascular communication persists from the stage of the primitive embryonic vascular net, a cirroid will result;
- (2) If development is arrested in the posttubular or reticular stage, Phlebarteriectasia will occur; and
- (3) If a communication persists later in the definitive stem a congenital arterio-venous aneurysm will result.

THE MORBID ANATOMY of this interesting condition is well known. Pathological changes are to be found not only in and around the fistulous communication or communications and in the neighbouring bone and soft tissues, but also in the heart and great veins.

A constant feature is the development of large and numerous collateral channels which may convert the surrounding tissues into a sponge-like texture.

Increase in the size and length of the limb has also been recorded. Mention has already been made to perforation of bone by collateral channels. Spontaneous fracture was recorded in a case by Dean Lewis. Ulceration and gangrene also occur as a complication of both congenital and acquired arterio-venous aneurysms, when the condition affects one of the extremities.

The heart is frequently dilated and hypertrophied.

The microscopical findings are not on record in most cases, and when present vary considerably at different sites.

Clinical features.—An interesting feature of the condition is its widespread effect on the whole cardio-vascular system.

The onset of symptoms of arterio-venous aneurysms and cirroids is usually insidious. Frequently there is a history of trauma or, in the case of cirroids, the existence of a naevus. Subjective warmth or buzzing are often the phenomena noticed by the patient. When the scalp, head or neck are affected, a continuous bruit is often extremely troublesome and may prevent sleep. The appearance of a pulsating swelling occurs later and may increase rapidly in size. Blueness of the skin with the appearance of large pulsating vessels beneath occurs, and ulcerating vessels beneath occurs, and ulceration, swelling of the limb and gangrene are known complications. Increase in length and size of a limb in congenital forms and traumatic cases before union of epiphyses is

complete, have already been noted. Loss of power in the limb, either due to perforation of muscles by collateral vessels, spontaneous fracture, or pressure on nerves, also occurs. Brisk hæmorrhages due to minor traumata are a feature of cirroids, and proptosis when the region of the orbit is affected has frequently been described.

General symptoms of the condition appear after a variable period. There may be inability to perform hard manual work, with attacks of giddiness, palpitation and fainting. There is swelling of the feet, and enlargement of the abdomen due to ascites, in cases with severe cardiac affection.

The signs of arterio-venous aneurysm and cirroids are usually classical and leave no doubt in the mind of the surgeon as to the diagnosis. A naevus or scar is often found. A readily compressible pulsating swelling with a well-marked systolic thrill is present; pulsation in venous tributaries also occurs. Cirroids present a characteristic appearance which was likened by Virchow to pulsating earthworms beneath the skin. On auscultation, a characteristic continuous murmur is heard with systolic intensification and wide propagation along the vessels involved. Both these phenomena disappear on compression of the afferent artery in the case of arterio-venous aneurysms, but only partially in the case of cirroids. The main artery is usually palpably enlarged proximal to the fistula and diminished beyond, where the peripheral pulse is absent in many cases. The main vein is also increased in size and pulsates. Increase in skin temperature in the region of the fistula, with lowering of the temperature of the limb beyond the fistula, is present. When one of the extremities is affected, the inherent vascular balance is upset, the limb may be blue and congested and on elevation of the limb a "play of colours" may be observed, as described by Holman. Radiographic appearances such as calcification of the fistula, increased porosity of bone or erosion of the skull may be present. Increase in length and diameter of an adjacent long bone and spontaneous fracture are occasionally seen.

Capillary pulsation on compression of the lip or nail and a "Corrigan" pulse in unaffected limbs are present in many cases with cardiac involvement.

The general signs of arterio-venous fistulae are of the greatest interest. Although these are present in a large proportion of cases, there may be a latency of signs as of symptoms. Of great interest in these cases is Makin's murmur, a systolic bruit heard over the base of the heart, which rarely is the only sign found. It should always lead to a narrow scrutiny of all suspicious scars and swellings. (Other cases may be reduced to a state of chronic invalidism.)

Branham's bradycardiac reaction, a slowing of the pulse rate on compression of the swelling or its afferent artery, is also a classical sign. The blood-pressure shows low diastolic and high pulse pressures; on occlusion of the fistula or its arterial stem there is a slight rise of systolic pressure, a

marked rise of diastolic pressure and a pronounced fall of the pulse pressure. Where heart failure is present, these changes may be accompanied by signs of syncope. Cardioscopy may show dilatation and hypertrophy of the heart. On compression of the fistula further broadening of the heart shadow is observed, but for a short period only. Electro-cardiography demonstrates no marked changes on compression of the fistula, the slowing of the heart-beat being shown on the tracing.

Diagnosis.—The diagnosis of arterio-venous fistulae as a rule presents no difficulties. It must not be forgotten, however, that latent forms occur, and the presence of Makin's murmur in these cases is of value. Early diagnosis is of the greatest importance as the spread of cirroids is particularly rapid in some circumstances, and may render their complete removal impossible or extremely hazardous.

The differential diagnosis is from simple aneurysm, varicose veins under abnormal tension and pulsating tumours, primary or secondary in origin, and should present no difficulties. It should be remembered that the bruit in cases of simple aneurysm is phasic. In the case of cirroids, meningoceles, pulsating dermoids and intracranial aneurysm also have to be excluded. The value of x-ray of the skull has already been mentioned in these cases and arteriography may also be of assistance.

COURSE AND PROGNOSIS IN ARTERIO-VEINUS FISTULAE.—When the main vessels of a limb are affected, oedema, ulceration and gangrene are well known complications. Terminal heart failure is the eventual result in large untreated fistulae, and alarming hemorrhages often occur in cirroids.

Treatment.—The management of these conditions may present a complex surgical problem. Knowledge that a grossly dilated heart, with marked systemic vascular changes, will return to normal in a relatively short time, is one of the main incentives to surgical intervention. Two outstanding features are evident in accounts of operation on the limbs, the frequency of gangrene following proximal ligation of the artery alone, and the frequency with which amputation is the final treatment.

The timing of operation is important, and in cirroids this should be at the earliest opportunity owing to their tendency to rapid spread. In traumatic arterio-venous aneurysms delay of from two to six months is advisable, with certain exceptions. This interval will enable oedema to subside and, in some cases, will allow natural repair to occur. Where a large arterial hæmatoma is present, and its pressure on the collateral circulation is endangering the life of the limb, early operation is indicated.

Stringent aseptic precautions should be employed to minimize the danger of secondary hemorrhage. The use of local infiltration anæsthesia and of regional nerve block is of value, especially in cases with cardiovascular involvement. Blood-transfusion before, during, and after operation has been

instrumental in saving both the life of the patient and that of the limb. Adequate supplies of blood must therefore be readily available.

The surgical procedure indicated will depend on the site, size, and the nature of the abnormal vascular communication in arterio-venous aneurysm. Proximal ligation of the artery alone, when applied to the limbs, is followed by gangrene, as the fistula drains blood from the collateral circulation. It is still employed in some cases of carotico-cavernous aneurysms. Proximal and distal ligation of the artery may be adequate in aneurysmal varix; but in varicose aneurysm the sac may have large vascular tributaries, which render the operation ineffective.

Occlusion of artery and vein above and below the fistula, the so-called quadruple ligature, is usually successful. It is commonly employed, particularly in varicose aneurysm, where there is a large sac closely related to important surrounding structures. Occasionally it is possible to pass an additional ligature around the sac, the so-called quintuple ligature. Wherever excision of the sac is possible, however, it should be performed.

In aneurysmal varix it may be possible to ligature the abnormal communication alone. The ideal treatment in large communications would be complete excision of the affected segment with axial anastomosis of the vessels.

Wherever possible the incision must be planned to give control of the artery above the fistula, either by tapes or with arterial clamps; a failure to take this precaution may lead to alarming and even fatal hemorrhage.

In the case of cirroids, early and complete excision of the affected area is indicated. Where this is not feasible, ligation of the feeding vessels may arrest the progress of the condition; but recurrence or extension is a common outcome. Injection of sclerosing agents such as quinine and urethane, or sodium morrhuate, may increase the effect of peripheral ligation, but is liable to cause necrosis of the skin and hemorrhage. Pre- and post-operative irradiation by radium or x-ray may be of value in causing a diminution in the size of the vessels, thus facilitating operation and producing a later diminution in size.—*The London Hospital Gazette.*

The surgical management of acute massive hemorrhage from peptic ulcer.—Carleton Mathewson, Jr., M.D., San Francisco, Calif. and Roland D., Pinkham, M.D., Seattle, Wash.

A review of the literature on the subject impresses one with the fact that statistics regarding the life-saving success of various types of treatment are rarely based upon similar criteria as to age groups, severity of hemorrhage or other factors influencing the ultimate mortality. When all factors are considered, there can be little doubt that the conservative medical management is followed by a lower mortality than surgical treatment.

It is important to state at this point that surgery is applicable to two distinct groups of bleeding ulcers: (1) massive hemorrhage that requires an emergency operation to save life; and (2) repeated persistent bleeding over a long period of time not controlled by conservative medical management.

Unfortunately, there are no criteria upon which one can positively base a fatal prognosis in any given patient. However, the following factors are important when considering the indications for immediate surgery:

Age of patient.—This is the most important factor. In patients under forty-five years of age death seldom occurs from a single hemorrhage and the risk to life, even of repeated massive hemorrhages, is less than one per cent. Only rarely does a patient in this age group require an emergency operation. However, after the age of forty-five, deaths from hemorrhage increase rapidly.

Severity of hemorrhage.—A large number of patients with peptic ulcer show evidence of occult blood in the stool, blood-stained or coffee-ground vomitus, or persistent secondary anemia. We are not concerned with that group here, even though their persistent bleeding may eventually lead to surgery.

In gross hemorrhage from peptic ulcer requiring an emergency operation there is vomiting of bright red or dark blood or grossly bloody or tarry stools, accompanied by a secondary anemia sufficient to produce weakness, pallor, dyspnea, rapid pulse and a marked fall in blood pressure. In estimating the extent of the hemorrhage, one is guided best in the early stages by the blood pressure and pulse. A persistently low blood pressure and rapid pulse usually mean continued bleeding. If after the use of transfusions the blood pressure remains below 90 and the pulse rate over 130, there is adequate reason to become alarmed.

The existence of generalized arteriosclerosis points toward the possibility of continued bleeding, and is, therefore, one of the most important indications for surgery. Severe, persistent bleeding in elderly people, showing signs of extensive arteriosclerosis, should be followed carefully from hour to hour and should be operated upon, if the bleeding gains headway in spite of transfusion.

The number of hemorrhages previously experienced deserves most serious consideration, always remembering that the first hemorrhage occasionally proves to be the fatal one. Studies indicate that the danger of fatal hemorrhage increases with each episode, particularly if the intervals are great and the patient eventually reaches the dangerous age.

Unfortunately, in these patients it is often impossible to localize the lesion during the active stage of bleeding. If, however, previous studies have revealed the type and location of the ulcer, this information may be helpful in determining the correct therapeutic procedure. Although fatal hemorrhages do occur from gastric or duodenal ulcers, from superficial or deep

ulceration, the largest number result from erosion of a large vessel in penetrating ulcers of the posterior wall of the duodenum. Hence, in case of gross hemorrhage, patients who have chronic penetrating ulcers in this location are likely candidates for immediate surgery.

It is significant, as pointed out by Meyer, Sorter and Necheles, that a great many of these patients past 45 show evidence of coronary sclerosis, arteriosclerosis, hypertension or other complicating disease which, when accompanied by a severe secondary anemia, make them poor operative risks. A profound, unrelieved secondary anemia, resulting in tissue anoxia, chloride and urea retention and hypoproteinemia, is more apt to lead to an unfavorable end than is an operation which will terminate the source of bleeding.

There is still some controversy as to the advisability of blood transfusions during the acute hemorrhagic stage. Blood transfusions are certainly the best means to combat shock, due to the reduction in total blood volume, and, moreover, the response to repeated transfusions may be a definite guide to the therapy to be followed. The patient, who does not respond to repeated blood transfusions, very probably is bleeding from a large eroded vessel and will continue to bleed unless operated upon.

One finds repeated reference in the literature to the need for absolute accuracy in determining the cause of the hemorrhage before surgery is undertaken, since only bleeding from a chronic ulcer justifies urgent surgery. Obviously, every effort should be made to exclude all other sources of hemorrhage, but in view of the large number of fatalities following the first hemorrhage in patients over 45 years of age, one is justified in considering this type of patient a potential surgical emergency, if he does not respond promptly to medical management. Since gross hemorrhage is not infrequently the first and only symptom, there is no history to aid in the diagnosis, and such measures as gastroscopy and roentgen examination are out of the question. Certain patients will prove not to have an ulcer and others might have survived the initial hemorrhage, but it is both difficult and hazardous to predict the outcome. Necessarily, therefore, operation may occasionally be performed in the absence of ulcer or upon patients who might have survived without operation.

Faced with the problem of an emergency operation upon a patient who is necessarily a poor operative risk, the surgeon must be capable of carrying out a major procedure under difficult circumstances. In author's experience palliative procedures such as ligation of vessels leading to the ulcer, simple gastroenterostomy, or placing of ligatures in the friable ulcer bed usually fail either from loss of blood on the table or from secondary necrosis and subsequent hemorrhage. When one considers the type of ulcer most apt to lead to uncontrollable hemorrhage (erosion of a large vessel), it becomes evident that the first undertaking

at operation should be exposure of the ulcer bed and immediate control of bleeding by direct pressure. Once the hemorrhage has stopped, replacement of the depleted blood volume by transfusion usually leads to marked improvement in the patients' general condition, and one should proceed with a subtotal gastric resection rather than temporize with what may seem to be a less formidable procedure.

Ulcers penetrating into the pancreas' are best left in situ after freeing the duodenal wall from the margins of the ulcer, closing the duodenal stump distally, and resecting the proximal stomach and duodenum. In order to accomplish the resection, the vessels leading to the ulcer crater are necessarily ligated.

Gastric ulcers penetrating into the neighbouring viscera, are best treated in the manner just described for penetrating duodenal ulcer. As a general rule gastric ulcers are less apt to be fixed and may be dissected free and resected entirely. In such cases the vessels leading to the ulcer crater are ligated at the beginning of the procedure, thus controlling the gross hemorrhage, while the remainder of the operation may be carried out in a routine manner.

One is tempted, in gastric ulcer, to resort to a two-stage procedure, inasmuch as the vessels involved in the hemorrhage are more accessible to ligation than is usually the case in duodenal ulcer. With hemostasis assured it is the feeling of some that secondary operation for persistent ulcer is best carried out some four to six weeks later. Unless there are definite contraindications, it is best to proceed with a gastric resection as the first and only contemplated procedure. An initial resection is usually tolera-

ted well, whereas secondary operations, even though the patients' general condition may be improved, are more difficult and as a rule are not well tolerated.

The immediate postoperative management of these patients is of paramount importance. Because of their profound anemia, whole blood transfusions are necessary before, during and following operation. Because of the number of transfusions necessary, it is important to watch the Rh factor carefully to prevent severe transfusion reactions.

Hypoproteinemia is common and necessitates not only frequent estimations of the total plasma proteins but also of the component albumin and globulin fractions. A reversal of the normal albumin-globulin ratio increases the likelihood of transfusion reaction. The re-establishment of a normal plasma protein level is imperative, also, to insure proper wound healing and to prevent infection. This is best accomplished in these patients by early administration of amino acids and plasma by vein. Early postoperative ingestion of protein and carbohydrates by mouth is indicated. Feeding by mouth can be safely started as soon as normal peristalsis in the gastrointestinal tract is re-established.

The infusion of 5 per cent dextrose in addition to blood transfusions is necessary to maintain proper water balance. A fluid intake of three liters daily is sufficient and should be administered very slowly to prevent an overload on the heart.

Vitamin K and C deficiencies are common and should be corrected preoperatively when possible and routinely in the immediate postoperative period.—*North West Medicine*, Vol. 45, No. 8, Aug. 1946.

OPHTHALMOLOGY

Ophthalmia neonatorum.—Arnold Sorsby, F.R.C.S.

The view generally held that ophthalmia neonatorum is synonymous with gonococcal ophthalmia is erroneous. Though there are differences in detail, most series of cases of ophthalmia neonatorum show that the affection is produced by a great variety of organisms, and in many series the gonococcus is not the predominant causal organism.

Recent series, like the older series, contain some ten to twenty per cent of cases in which no micro-organism can be found in the smear or culture. Most of these "negative" cases represent not faulty bacteriological examination, as was once held, but are examples of ophthalmia neonatorum due to a virus infection. This virus has not been isolated in culture, but its existence has been demonstrated by animal inoculation, and by the presence of inclusion bodies in the conjunctival epithelium—a finding responsible for the designation of inclusion ophthalmia neonatorum, or inclusion blenor-rhea. Inclusion blenor-rhea is part of a clear cut venereal disease. In the mother of the affected baby a scraping of the epithelial

cells taken from the transitional lining at the os generally also shows inclusion bodies. To complement ophthalmia neonatorum in the baby and inclusion cervicitis in the mother there is the non-specific urethritis in men where inclusion bodies can also be demonstrated in epithelial scrapings. This virus infection appears to be fairly widespread in the community, it gives minimal clinical symptoms, and not infrequently is sub-clinical.

Prophylaxis ophthalmia neonatorum.—The essential measure of prophylaxis in ophthalmia neonatorum is the treatment of maternal infection during pregnancy.

The more immediate method of prophylaxis associated with the name of Crede is immensely valuable, but has distinct limitations. The mechanical part of the procedure—the cleansing of the lids as soon as the head is born and before the baby is allowed to open its eyes, and the care taken to prevent any contaminated bath water reaching the baby's eyes—is now part of the routine of delivery, and is consistent with the principles of asepsis. The chemical component of the procedure—the instillation of

silver, or some other disinfectant into the eye—is of doubtful value and is a relic of Listerian antiseptics. It is a moot point whether an infected conjunctival sac will be disinfected by the application of one drop of an antiseptic. There seems to be no reason for using silver nitrate, as this is far from being a foolproof agent. There is nothing to indicate that it is superior to the organic silver preparations, which at any rate are innocuous. If anything is to be put into the baby's eyes it is best to put in two or three drops of 20 per cent argyrol, rather than 1 per cent silver nitrate. There is nothing to be said for drops of sodium sulphacetamide ("albugid"), they are largely ineffective locally. Nothing as yet is known of the value of penicillin as a disinfectant of a presumably infected surface.

Treatment of ophthalmia neonatorum.—The classical methods of treatment have no place in the treatment of ophthalmia neonatorum to-day.

The modern methods of treatment deal with the infection primarily. Two alternative procedures are available.

1. **Sulphonamide therapy.**—Employed locally the sulphonamides are useless in ophthalmia neonatorum as they are inactivated by pus and break down products of the tissues. Given by mouth they are highly effective. The eyes are then irrigated with bland lotion, such as half-normal saline solution at room temperature. *Cuttæ atropinæ sulphas* 1 per cent and drops of medicinal paraffin are instilled as a routine measure, and half a tablet of sulphamezathine (0.25 g.) crushed into powder is given by mouth in a teaspoonful of water or milk. Sulphamezathine administration is continued in doses of 0.125 g. every four hours, day and night, until 48 hours after a clinical cure is obtained. Local treatment consists of three-hourly irrigation with saline solution during the first day in cases with profuse discharge; as a rule there is no need for further irrigation on the subsequent days. After irrigation medicinal paraffin is instilled as a precaution against the sticking together of the lids. Atropine is instilled three times daily in cases with corneal haze or ulceration.

With this treatment swelling of the lids generally subsides within 12 hours after admission; purulent discharge disappears within 24 hours, so that a threatening purulent ophthalmia becomes a simple conjunctivitis giving no anxiety. The eyes are either dry or very nearly so within 72 hours.

The dreaded corneal complications of ophthalmia neonatorum do not develop. Some 40 per cent of all babies show complete clinical cure within three days, and 90 per cent are cured within eight days. Such cases as are resistant to treatment are only relative failures with a somewhat prolonged course, which, however, does not give rise to anxiety, as there is conjunctivitis rather than purulent ophthalmia. Isolated cases of complete resistance to sulphonamides have however been observed.

Babies tolerate oral sulphonamide well. Nothing is to be gained by using doses smaller than those indicated, and it is impor-

tant to continue the sulphonamides for 48 hours after clinical cure, as the too early suspension of treatment may lead to a relapse.

2. **Penicillin treatment.**—Unlike the sulphonamides penicillin remains effective in the presence of pus. It can, therefore, be used as a local agent, and has one other advantage over the sulphonamides in that cure is even more rapid and dramatic. For the present, however, treatment is rather exacting, and it is not as yet as standardised as oral sulphonamide therapy.

In the use of penicillin, concentration and frequency are all important. Though some cases of ophthalmia neonatorum clear up readily on the instillation of penicillin drops 500 units per c.c. at hourly intervals, more fail to respond. Better results are obtained with a concentration of 1,000 units, and better still with one of 1,500 units per c.c. There are only occasional failures when a concentration of 2,500 units per c.c. is employed. As drops in such a concentration are well tolerated, nothing is gained by using lower strengths. A concentration of 2,500 units per c.c. must therefore be regarded as the standard preparation for the present.

With increasing frequency of application the course of the affection is cut down considerably. Distinctly better results are obtained when drops are put in at half hourly instead of hourly intervals, whilst results are better still when the instillations are made every five minutes. With penicillin in a concentration of 2,500 units per c.c. instilled at intervals of 5 minutes all pus is suppressed within a matter of a few hours, and occasionally even within an hour. But even intervals of five minutes are too long for penicillin drops are rapidly washed out from the conjunctival sac. Instilled at intervals of one minute all tendency to pus formation is generally suppressed within half an hour, though the swelling of the lids will persist for several hours.

A striking feature of both sulphonamide and penicillin treatment is their efficacy over the whole range of causal organism including the virus of ophthalmia neonatorum. Gonococcal cases respond rather more quickly than non-gonococcal cases to oral sulphonamide treatment, and it is possible that those due to diphtheroids respond rather less readily to local penicillin therapy than the cases due to other organisms. These, however, are minor differences and do not materially affect the dramatic and gratifying response of ophthalmia neonatorum to the modern methods of treatment.—*Medical Officer*, 3, Aug. '46.

Oral penicillin in ocular inflammations.—P. J. Leinfelder and W. D. Paul (*American Journal of Ophthalmology*, 29:450-51, April 1946) have found that many patients with acute ocular inflammations are benefited by the parenteral administration of penicillin, but the local ocular condition is not always sufficiently severe to warrant hospitalization for intramuscular injections. Local applications may be effective in these cases,

but patients have difficulty with the correct application of ointments and the use of solutions is not always successful because of the rapid deterioration of penicillin in such media. Oral administration of penicillin in combination with aluminum dihydroxy amino-acetate (glycillin), as described by Paul and his associates, has been tried in 15 cases of ocular inflammation, including conjunctivitis, blepharoconjunctivitis, hordeolum externum and internum and uveitis. The dosage of penicillin employed varied, but the optimum dosage was found to be 20,000 units given every hour for four doses; in some severe cases 200,000 units may be given the first day. The dosage on successive days is determined by the res-

ponse to the preceding day's dosage. Marked improvement, and, in acute cases, complete healing, was obtained within two to three days in 9 cases. One patient with acute blepharitis showed improvement in 24 hours but developed a dermatitis considered to be due to the penicillin, because of which treatment was stopped. No improvement was obtained in 5 cases, which included 3 cases of uveitis, and one case each of chronic blepharoconjunctivitis and chalazion. In most of the cases in which treatment was successful, some improvement was noted within six hours, and in all these cases there was definite improvement in twenty-four hours.—*The Medical Times*, June, 1946.

Correspondence

A Call to Action.

To The Editors, THE ANTISEPTIC, Madras.
Dear Sirs,

In these days when there is much free flow of money and when almost every man has an opportunity to earn, no unqualified man should be encouraged to practise medicine. Control in this profession except on those who are registered in the Medical Council has been long neglected.

If all duly qualified and registered medical men and women are to maintain professional dignity and a standard of efficiency they should all be protected by the Medical Council if need be by appropriate legislative enactment.

Now there has grown up a group of compounders who carry on private practice in different parts of the town with impunity. Those of them in service, Government or municipal, have become so daring that they carry on practice using their hospital influence with utter disregard to service regulations. These men go about from door to door canvassing and practising after hospital hours and thus prevent a large portion of the patients going either to their doctors or to attend hospitals. They do so because chemicals and patent drugs are available to them. As giving injections brings ready money, they unhesitatingly begin treatment, sometimes with two injections on their first visit to the patient. The ignorant patients do not differentiate between the doctor and compounders. This act of theirs has the effect of pulling down the dignity and the earning of the medical practitioners in general and junior practitioners in particular.

Long stay in one station without frequent transfers as there used to be before the war, has given them a standing in the locality. So it becomes very difficult to expose their indulgences. It is in the interest of the profession and for the discipline in the service, that they are transferred after a short period of service in one station.

While the Medical Council forbids advertisement and canvassing, by disciplinary action, how does it protect its members against this group of men who snatch away their daily bread from their mouths?

Will the profession rise against this as one man and stop all encroachment into their legitimate field of activity and weed out all undesirable trespassers? Will they also press for the enactment of Pharmacy Act and enforce it?

Ammamet Main } Yours faithfully,
Road, } S. PADMANABHA PILLAI,
Salem, 5-8-46. } L.M.P., L.O.

Typhoid or Enteric Fever.

To The Editors, THE ANTISEPTIC, Madras.

Dear Sirs,

With reference to the article "Typhoid or Enteric fever" by Dr. P. L. Gupta, M.B., Ch.B. (Scotland) in your August edition, he has been very particular about the restricted diet to the patient during and after the disease to check relapses. He says, "Strict orders should be given and absolutely nothing but fruit juices and milk should be given for ten days to check relapses."

It is seen that relapses are so common after typhoid fever and every clinician attributes one or the other cause for it, and generally blames the patient for his irregularity in diet. In my clinical experience patients who are well fed even during the disease and particularly after the temperature has come to normal have got less chances of relapses than those who are under-fed due to such strict orders of their physicians. Relapses in my opinion are not due to any irregularity in diet as they occur in patients who keep very regulated diet. I think relapses are due to the activity of typhoid bacillus which reappear into circulation from organs like spleen, etc., caused by the physical exertion of the patient. So if a patient of typhoid after the temperature has come to normal takes good diet but confines himself to bed to avoid any physical exertion, he will have very little or no chance of recurrence of fever.

I request the readers to give their own experiences and opinions about this in the columns of the next issue.

M.O. I/C
The G. S. Dispy., } Yours faithfully,
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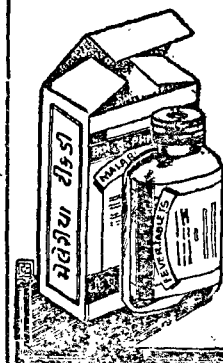
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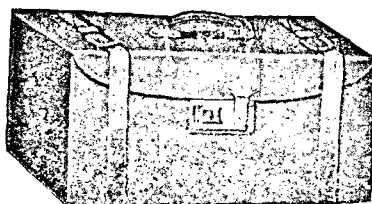
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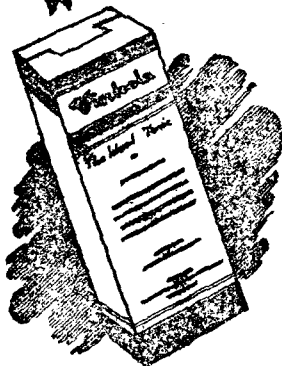
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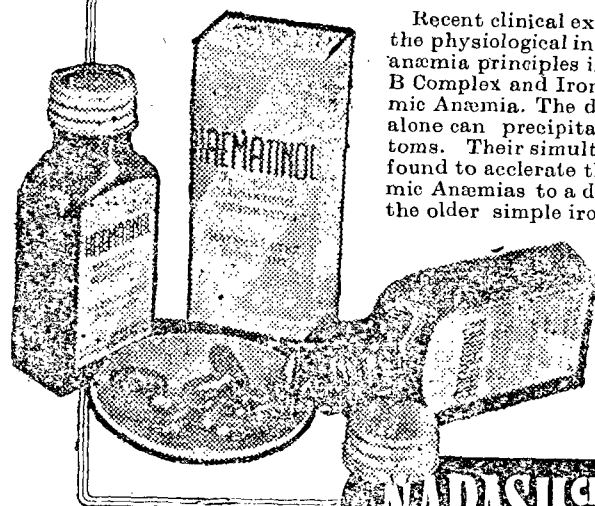


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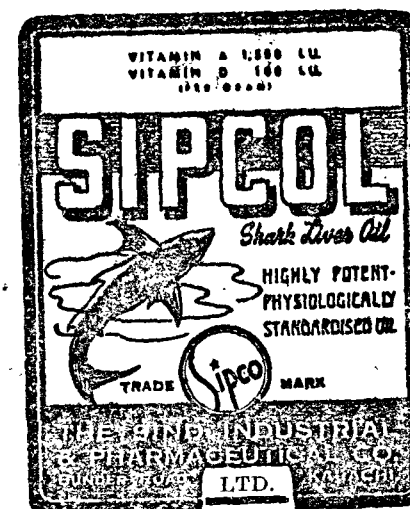
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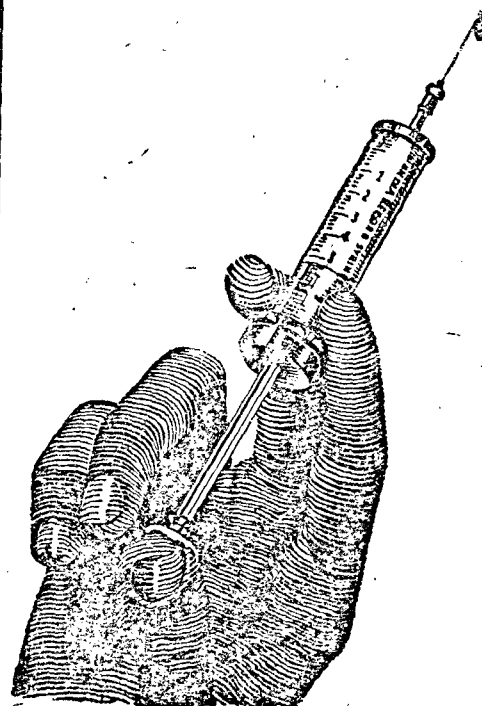
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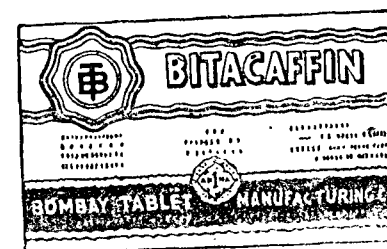
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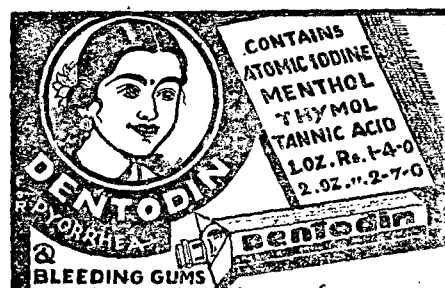
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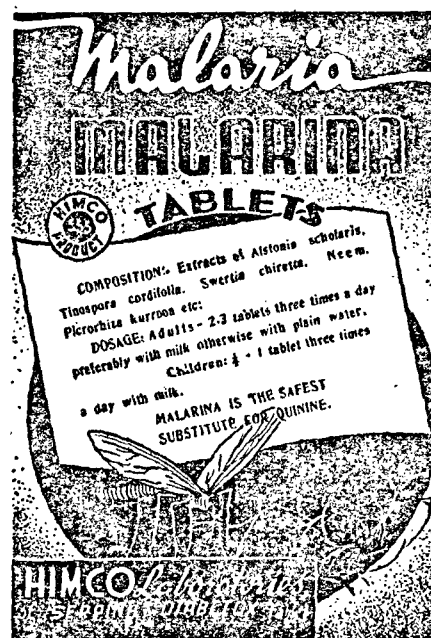
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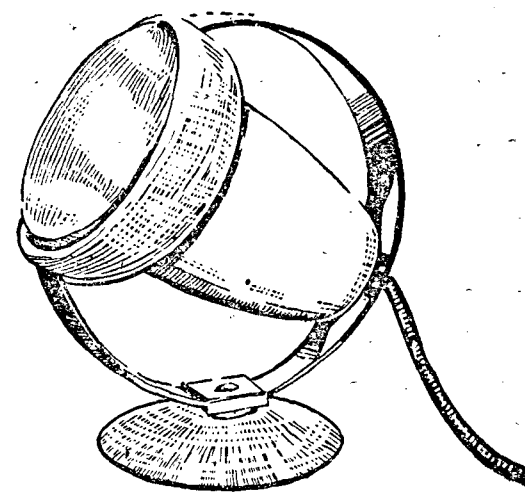
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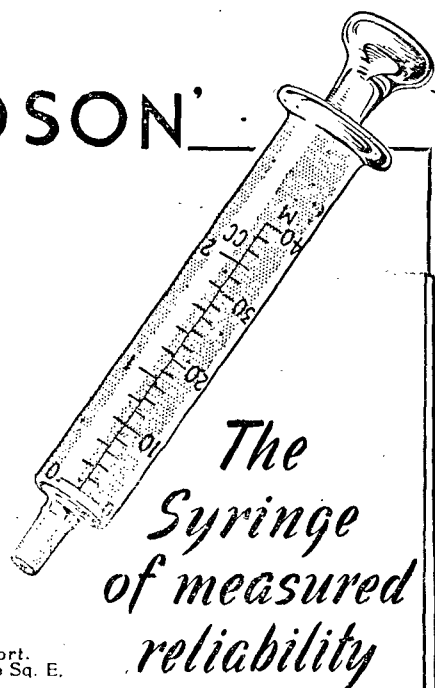
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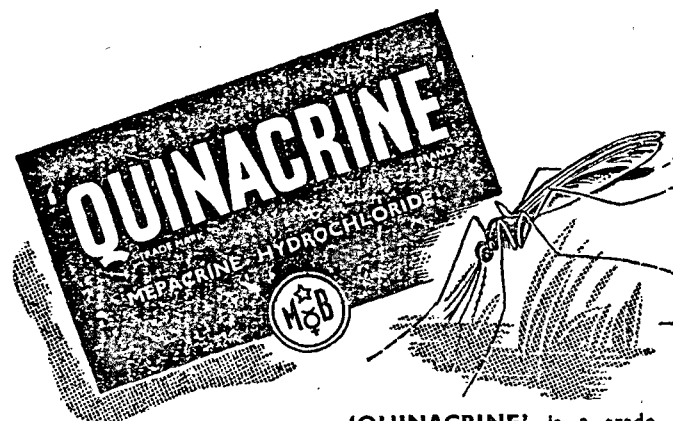
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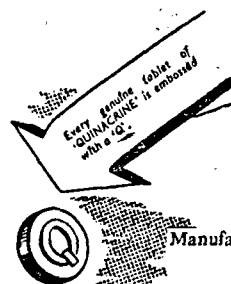
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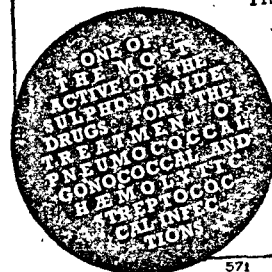
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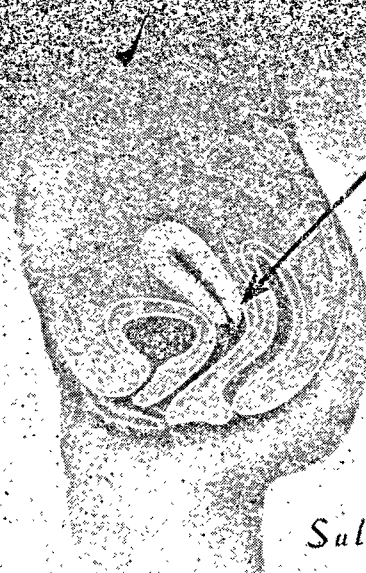
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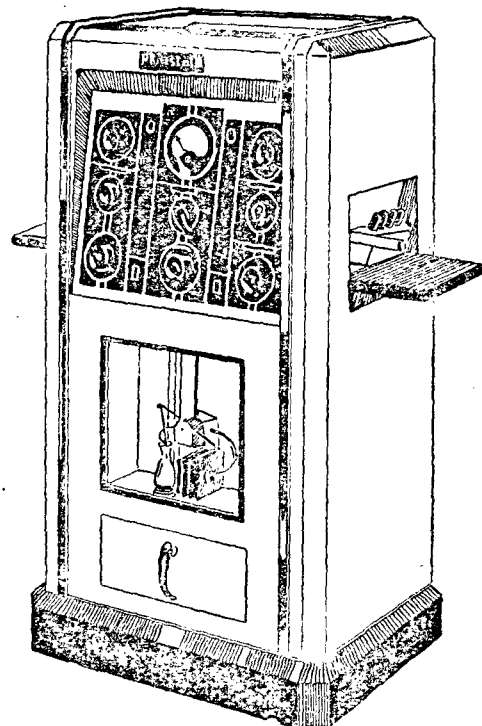
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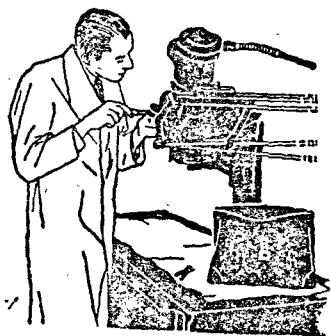
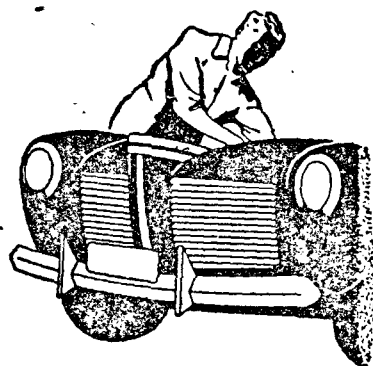
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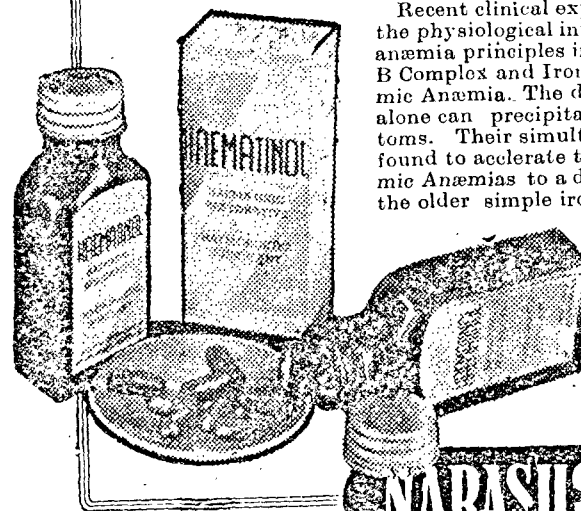


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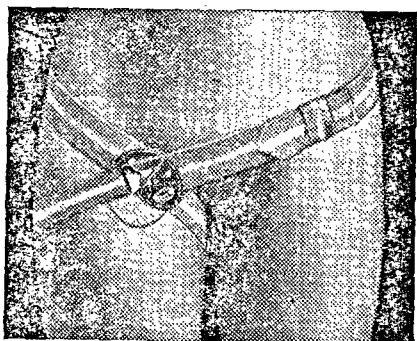
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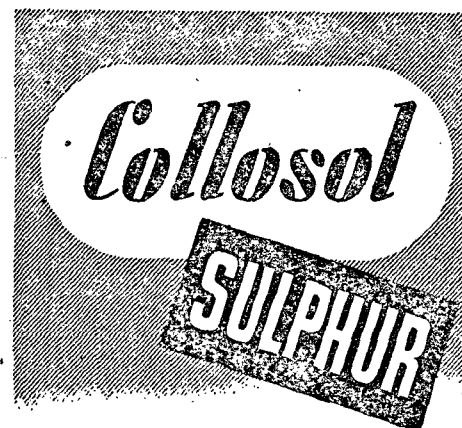
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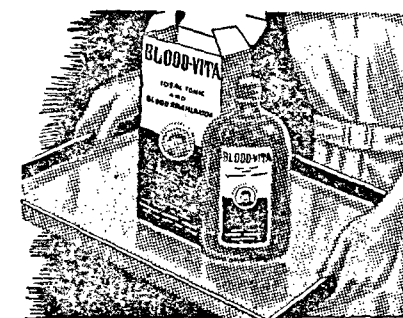
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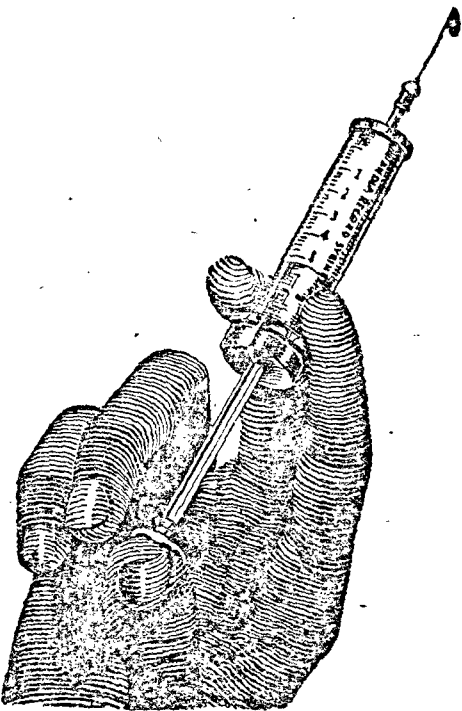
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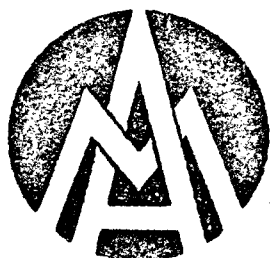
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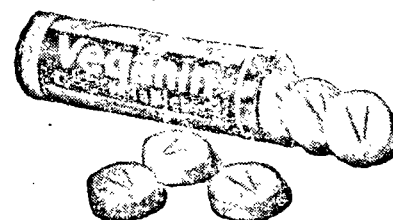
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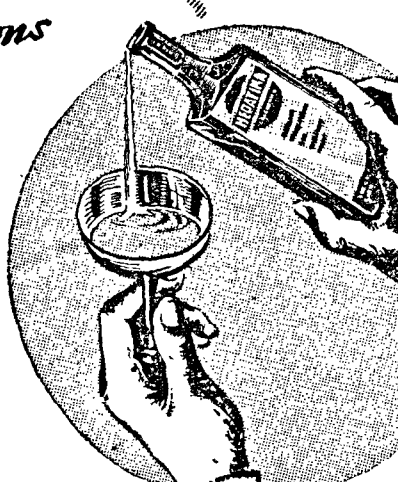
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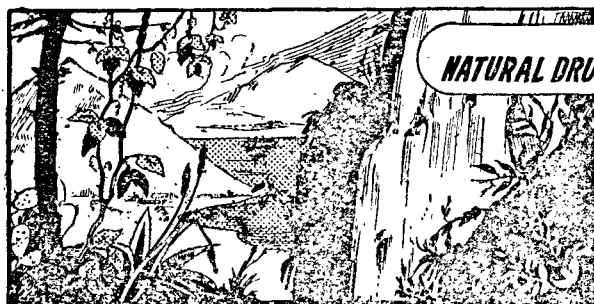
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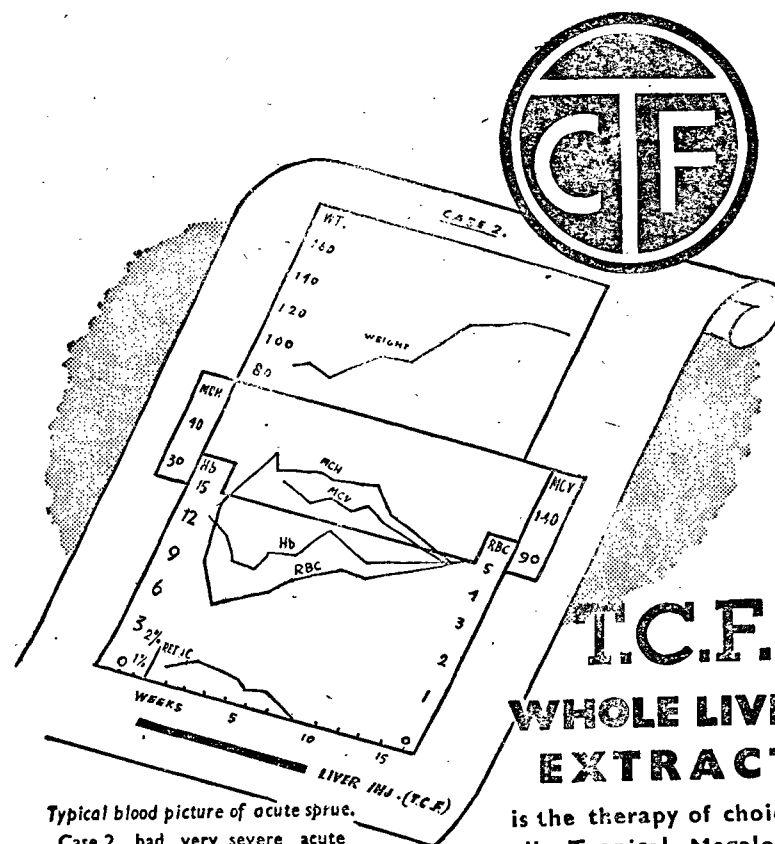
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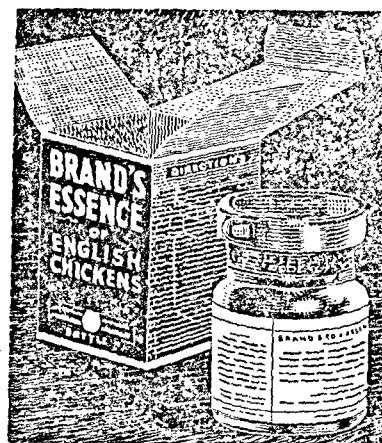
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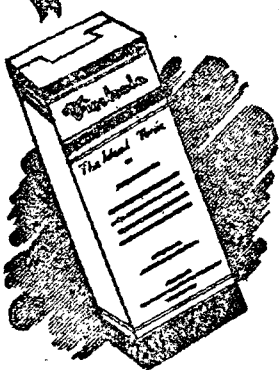
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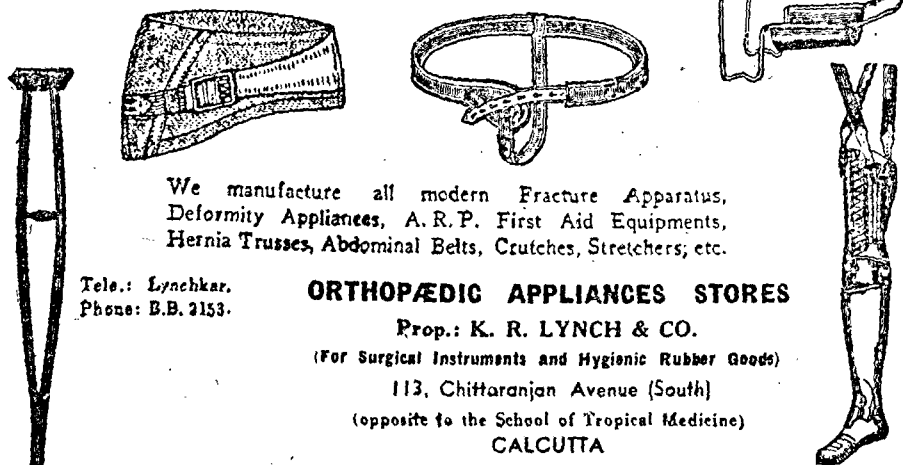
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Original Articles

Modern Treatment of Pulmonary Tuberculosis*

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IN modern warfare, scientific advance has rendered, tried and trusted tools of the past obsolete and ineffective, by the introduction of more killing and devastating missiles; yet the fundamental strategy such as swiftness, surprise, attack and counter-attack, brilliance in retreat, has altered little since ancient times. So in the campaign against tuberculosis, scientific progress has provided new and better equipment; nevertheless the fundamental strategy in the control and eradication of the obstinate and the most adaptable infection remains unchanged. This strategy includes early discovery, segregation, rest and intensification of the body defences.

Treatment of pulmonary tuberculosis has been influenced from time to time by the advances in the different fields of medicine, viz. bacteriology, pathology, epidemiology, immunology, radiology and surgery. Several high spots present themselves as one thinks of the development of our knowledge which influenced the treatment of tuberculosis. VILLEMEN established for certain that the disease is communicable. Soon after, KOCH confirmed the finding by his epoch-making discovery of the tubercle bacillus. PIRQUET introduced the tuberculin test and showed that the tuberculosis infection is widespread though the affection may be found in only the clinically ill. Roentgen's discovery of the X-rays has not only made a great advance in the early diagnosis of tuberculosis but has also made the scheme of modern treatment possible.

A review of the treatment of tuberculosis before the recent advances may be interesting. HIPPOCRATES treated the 'hectics' with diets, drugs, concoctions and probably resorted to induction of pneumothorax by means of pig's bladder. GALEN established a cure place at Palermo. PARACELUS treated consumption with quicksilver. Since very ancient times sea voyage and horseback riding have been recommended.

Until nearly the end of the last century medical authorities were agreed that there was little hope of cure once the diagnosis of tuberculosis

* Specially contributed to THE ANTISEPTIC.

is made. Wise physicians admitted that when recovery did occur, it was more due to chance than to any method of treatment employed. The diagnosis was withheld as long as possible from the patient as it was equivalent to pronouncing the death sentence on him. Treatment did little more than 'smoothing the pillow of the patient dying of consumption.' The accepted treatment of tuberculosis then was 'Creosote or Colorado.'

The modern treatment of tuberculosis can be reviewed under the following heads:—

- (1) Institutional treatment.
- (2) Drug treatment including chemotherapy.
- (3) Immunological treatment.
- (4) Collapse treatment.

It no longer suffices to get the patient clinically well after tuberculosis. A clinically asymptomatic patient may still be spitting out a few bacilli occasionally. It would then be dangerous to allow him to move freely in the public for fear of spreading the infection. Such a patient is a problem. He may be clinically free from tuberculosis but may be so weak that he becomes a burden to his family. He may prefer death to living such a dependent life. These and many similar problems shall remain to be tackled, though the problem of treatment of tuberculosis may perchance be solved. It is true that a good deal of human wreckage left in the wake of tuberculosis is beyond redemption but a good deal of it is redeemable. This is possible only by After Care Societies and Rehabilitation Centres. It is necessary to create Tuberculous Colonies for the sputum positive cases which are clinically well. Such an ideal colony is founded at Papworth in England where such cases are able to earn their living and thus live in economic independence. Thus may be solved the problem of the physical derelict whose tuberculosis has made him a respiratory cripple. He cannot recover; yet he has so adjusted to his respiratory limitations that he may live for years, giving off tubercle bacilli all the while.

Even when he has completely recovered from tuberculosis, the patient finds difficulty in securing a job because he had the stigma of tuberculosis. He is treated as an outcast in his social relationships. Thus he falls a prey to the community superstition. The care of such persons is a responsibility that rests on all of us, the physician and the layman alike.

Prophylaxis which is often included in the treatment is so vast a subject by itself that it will be justifiable to exclude it from the present short resume.

Institutional treatment.—This consists of rest, open air, graduated exercises and nourishing food. The first hint that rest might bring the disease under control came from Bodington. In 1859, HERMANN BREHMER established the first sanatorium in the world. Here the patients were made to walk, climb uphill and rest according to a scheduled programme. But the treatment was based on a wrong principle. The theory then was that tuberculosis developed because of small heart which delivered inadequate amount of blood to the lungs. Graduated exercise was calculated to enlarge the heart and thus to increase the blood supply to the pulmonary tissue.

DETTWEILER, an associate of BREHMER, appreciated the value of rest and endeavoured to keep his patients on a rest regimen. This consisted

of six weeks of absolute bed rest followed by rest and moderate exercise for about six months more at the end of which patients were discharged. The results were fairly satisfactory and attracted a great deal of attention.

The bed rest was sometimes reinforced by putting the patient in a plaster cast as is done for tuberculosis of the spine, and in addition keeping weights like sand bags on the affected side of the chest. Modern collapse therapy is also based on the principle of rest to the affected part. Prolonged rest treatment may result in complete disappearance of tuberculous lesion in the lungs even in the advanced cases.

Though the value of bed rest is greatly appreciated, that of open air is not often understood, or is minimized, in the treatment of tuberculosis. Open air has stimulating effect on all the systems, and there is voluntary immobilization on the part of the patient to keep warm. There is also less effort to exercise the lungs by chatting. Open air tends to raise the spirits and hence has a psychotherapeutic value. High altitudes are suitable for early afebrile cases or advanced quiescent cases; but is contraindicated for recent hæmoptysis, active disease with fever, extensive fibrotic lesions. The advantages of high altitude consist in stillness, purity and rarefaction of air. Sea resorts are suitable for advanced and active cases. Sea voyages are contraindicated for all except completely arrested cases.

Absolute rest in bed is necessary as long as there is fever. As the patient gradually gets afebrile, for more and more part of the day he may be allowed to sit up for varying periods. If apyrexial for 24 hours, walking may be allowed first on surface and then up a slope, and lastly that with weight. The system is based on the principle that muscular exercise leads to the discharge of tubercle toxins from pulmonary focus and by liberating these in gradually increasing doses, a condition of active immunity is induced. A careful watch should be kept during this controlled process of auto-intoxication to prevent excessive dose of toxin being discharged. This is indicated by increase in temperature and pulse rate, cough, expectoration, and headache. The patient should take to bed again if any of these appear.

Nourishing diet always takes an important place in the treatment of tuberculosis particularly because wasting and loss of weight are important signs of the disease. Recently it has been found that adult males with active tuberculosis are deficient in Ascorbic Acid, Vitamin A, Hæmoglobin, Serum Albumin and Serum Calcium. The diet should be adjusted to make up for the deficiency and thus to restore the weight. But all ideas of enforced overfeeding should be deprecated. Large quantities of milk, eggs meat, butter and cream should be allowed. Malnutrition has certainly something to do with the development of tuberculosis. It was natural therefore that when the treatment of tuberculosis was first put on the scientific basis, increased food intake was an integral part of the regimen. And the results seemed to justify the treatment. Experience soon proved that fattening a patient may only give a false appearance of improvement. The lesion may temporarily appear to be quiescent but as soon as it resumes activity the extra weight falls away and leaves exposed the original bad state of nutrition.

Value of climate.—Climate is the first thought in the minds of the patient when tuberculosis is declared. In the mind of the physician

accustomed to the treatment of such patient's climate is often considered matter of little moment. The patient puts the methods of treatment according to their importance in the following order:—(1) Climate, (2) medicine, and (3) diet. The physician puts them as (1) rest, (2) diet, (3) open air, and (4) medicine. The patient is disposed to go to a climate and let the climate do everything. This is the heart of the whole treatment in his opinion if the patient would observe the essential rules—rest, fresh air and nourishment when under the influence of the covetable climate, the physician would be very willing to assent to the change. But if the patient has to work for the advantage of a special climate, he is worse off than if he stayed at home and took the ideal rest. Usually an average patient can more easily make arrangements to rest and be fed in his own home than in a strange place. The decision as to the climate is an economic one; if the patient can financially afford to go to a favourable climate, and rest in bed under proper medical supervision with extra food for a sufficiently long period, then the advice would be in favour of climate. But if the patient, depending entirely on the climate to arrest the disease, uses all his resources to go to some favoured locality, and hopes to live there by finding some job or otherwise under constant mental stress for want of sufficient funds or adequate arrangements, he had much better stay at home and take the more important part of the treatment in the open air of his own back yard. It has been found by statistics that climate has a 1% benefit for incipient and a little more for moderately and far advanced cases; but it is certainly not worth while to go after this one percent. benefit by neglecting the very elements of treatment.

Drugs.—These have been used for the so-called specific effect and for the symptomatic relief. As no real specific for tuberculosis has yet been found, numerous drugs have been tried and discarded. Though not proved as specific, some of them are of considerable value as adjuncts in the treatment.

1. *Codliver oil*:—This is remedy of very long standing and holds its sway even to-day. It has a rich content of vitamin A and D. It is also believed that it helps in dissolving the capsule of the tubercle bacillus and thus facilitates its disintegration. Dose is dr. ii three times a day. Its great drawback is its nauseous smell and that it upsets the digestion, and may cause diarrhoea in intestinal tuberculosis. For these reasons, concentrated vitamins A and D have been in use, like Abidol, Haliverol, Advitol, etc. Sharkliver oil prepared locally has greatly displaced Codliver oil at present due to war exigency.

Inj. Sod. Morrhuate is almost out of use for this condition as it is painful and without much effect. Inj. Copper Morrhuate like Gadusan, Tubersan, etc., is used at present on a large scale but is also unsatisfactory.

2. *Creosote*:—First introduced in 1830, was considered as a specific at the time on account of the rapid improvement shown by the patient. It deodorizes sputum and in small doses improves appetite. It is administered in 1–2 drop doses in a capsule. Its drawback is that it has a bad smell and is likely to irritate the gastric mucosa. Its use in large doses has brought it into disrepute. It was also used for inhalation, with a view to disinfect the sputum and bring out expectoration. It was found very irritant to the respiratory mucosa and is almost out of use.

3. *The hypophosphites*:—These have been used on the theory that tuberculosis is a manifestation of mineral starvation. They are harmless and their tonic effect is unquestionable.

4. *Calcium*:—Calcium is in vogue for the treatment of tuberculosis from the days of Ayurved. Since the post mortems disclosed that the tubercle foci heal by calcification, it has found its use in modern medicine. It is now widely used in this disease with the idea of increasing the calcium content of the blood to facilitate the calcification of the tuberculous lesions. Calcium Gluconate or Lactate with or without Parathyroid has been used orally. Inj. of Cal. Gluconate and Cal. Chloride have been used, and are very popular. They seem to have some effect on the temperature, toxæmia and the exudative tendency of the lesions. Colloidal Calcium with vitamin D has been given intramuscularly as well as intravenously. The curative value of calcium is doubtful.

5. *Gold*:—Though gold compounds have been recommended for pulmonary tuberculosis in Ayurved and have been used from very ancient times in India, it is MOLLGARD who introduced them to modern medicine in the year 1912. He used Sodium Thiosulphate of gold. It was first used intravenously but later an oily suspension was prepared which could be given intramuscularly. Though no direct action of gold salts on the tubercle bacillus has been demonstrated, it is clear that it has some beneficial action on the tuberculous process probably through the reticulo-endothelial system. The gold salts are used even to-day with some success. Gold is likely to cause albuminuria and dermatitis and hence require caution during administration.

6. *New chemotherapeutic drugs*:—Sulphonamides have been tried and found to be useful in clearing the secondary sepsis. They have no action on the tuberculous process.

Promin and Prominozole have been found to influence favourably the course of pulmonary tuberculosis. They tend to stabilize the exudative processes. There are certain toxic reactions amongst which a moderate hemolytic anæmia is one. Promin can be considered to have opened a new avenue in the chemotherapy of mycobacterial diseases. It is hoped that further synthesis of sulpha compounds may produce a substance which will succeed in saving countless lives.

Stilbæstrol has been recently experimented with for tuberculosis but has not yet been tried clinically.

Penicillin is found to have no action in tuberculosis.

Immuno-therapy.—Various attempts have been made from time to time to take advantage of immunological reactions in the treatment of tuberculosis. Introduction of tuberculin was the first step in this direction. The remedy was first held as a specific weapon but it has not fulfilled the high hopes held out on its introduction by KOCH. It was inconstant in its results and sometimes gave fulminant reactions. Though it is now discarded by a large majority still a few have still got a soft corner for it and, in selected cases, it seems to act favourably.

Later anti-toxic sera were used and MARMOREK (1903) claimed good results with it in pulmonary tuberculosis and tuberculous pleurisy. The serum was tried by other observers with divergent results. Thus, ULLMAN, SCHENKER and MONOD believed the serum to be superior to all other

methods of treatment; on the other hands KRAUSE, MANN and others found the serum to be of no use in pulmonary tuberculosis.

SPENGLER in 1908 prepared I.K. (Immune Korper) from the red blood corpuscles of immunized animals but it was found to be useless by various workers.

'Contratoxin' prepared by MENHARTO was supposed to be specific but met with the same fate.

Anti-streptococcal Serum was employed on the plea that much of the destruction of the pulmonary tissue in phthisis is due to secondary infection by pyogenic organisms, especially streptococci. The results reported were favourable as far as the secondary infection was concerned.

Taking advantage of these observations attempts have been made to treat the disease by introducing anti-bodies in the whole blood to supplement other modern methods of treatment and the measure has been found to be of distinct value. 200-400 c.c. of citrated blood is transfused every week for 4-6 times. The temperature is seen to come down. Sedimentation rate falls and the patient feels generally well.

The collapse therapy has inflicted a decisive blow to further efforts at the elucidation and isolation of specific antibody and there is no justification for this lack of interest which has not materially lost its importance in our fight against tuberculosis.

Collapse therapy.—Collapse therapy is an important advance in the treatment of tuberculosis since the introduction of the sanatorium. This has made it possible for a number of tuberculous patients with cavitations to get completely well. With the advent of Collapse Therapy has dawned the era of hope following decades of dark disappointment, resignation and false optimism regarding the curability of the active cavernous pulmonary tuberculosis during the years when sanatorium regimen was the only weapon. Before the use of surgery for pulmonary tuberculosis, sanatorium has cured a large number of patients by stimulation of their general resistance to tuberculosis. In advanced cavitating lesions the latter is easily overcome by the toxæmia of the disease processes with the ultimate fatal issue. Here surgery comes to the help of the sanatorium by collapsing the cavities and thus facilitating their healing. But it must be remembered that sanatorium will remain as the indispensable foundation on which surgical treatment will rest. The sanatorium is as necessary to the success of surgery as surgery is to the success of the sanatorium. They are inseparable in the modern treatment of tuberculosis. Sanatorium may succeed independently in patients whose lesions are early and not extensive and whose cavities are thin walled and small. A very small percentage of the cases in the sanatorium are encountered in this stage. A large majority by the time they reach the sanatorium are in the advanced stage with thick walled single or multiple cavities. Hence naturally the death rate in a sanatorium where surgery is not adopted is shockingly high.

The term Collapse Therapy is used to denote all procedures that cause a reduction of the volume of the lung.

This may be achieved :

(1) Without interfering with the integrity of the thoracic wall *e.g.*, pneumothorax, oleothorax, intrapleural and extrapleural pneumolysis with filling.

(2) By paralyzing respiratory muscles *e.g.*, phrenic nerve interruption and intercostal neurectomy.

(3) By cutting respiratory muscle *e.g.*, scaliniectomy.

(4) By reducing the size of the bony thoracic cage, *e.g.*, thoracoplasty, or by combination of some of these methods.

Amongst all the procedures of the Collapse Therapy, Artificial Pneumothorax is the simplest and most useful procedure. If A.P. is complicated or inadequate due to adhesions, intra-pleural pneumolysis may be thought of. This operation aims at cauterizing the adhesions under direct vision of the Thoracoscope. Cavities which are not affected by A.P. as a result of adhesions are found to close after an intra-pleural pneumolysis. The operation is simple but requires great patience, experience and skill. If even then the cavities do not close, greater relaxation of the lung may be brought about by the operation of phrenic interruption. Temporary phrenic paralysis produced by the revocable operation of crushing the phrenic nerve is preferable to the permanent paralysis produced by avulsion of the nerve. If at the end of about two months there is no evidence of closure of a cavity and the sputum is still positive, a Thoracoplasty is thought of which aims at bringing about closure of the cavities by reducing the volume of the thoracic cage.

Greater skill is required to deal with bilateral affection of the lungs. These lesions also are gradually proving amenable to patient and cautious surgery.

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Collapse Therapy*

VINAYAKARAO BAPAT, L.A.M.S.,

Ag. Vidwan, P.O. Talaguppa Dt., Shimoga.

COLLAPSE therapy is claimed to be the best known treatment for pulmonary tuberculosis. The advocates of this method usually base their opinion on the modern advance in surgery. But if one is to observe impartially in detail, the cases treated by these methods one is sure to be impressed that the disease is not completely cured in a great majority of cases, and that a large number of cases run into various complications. The aim of treatment—both medical and surgical—is to assist Nature, without giving room to any ill effects or complications. If by any treatment any particular disease is checked or cured, but at the same time gives room to any fresh complication or disease, then that method of treatment cannot be called 'Real Medical Aid'. Of course when no other better procedure is known we will have to compare the ill effects of this treatment with the fatal result of the disease, when left untreated. But at the same time the ultimate goal should be to find out a better method which does not produce any ill effects. It is no good to do any amount of research, on the same procedure, which produces various complications. Collapse therapy is an example to

* Specially contributed to THE ANTISEPTIC.

this. There has been much advance in the technique of the different methods of collapse therapy, but still they are not free from complications. Moreover, even with the latest advancement, it cannot be claimed that pulmonary tuberculosis can be cured completely. This naturally leads a research worker to suspect about the soundness of the theory behind. In this article an attempt has been made to discuss this subject, upon the findings of research workers in the field.

Collapse therapy not a short cut nor a desperate resort.—ALEXANDER says that collapse therapy should not be regarded either as a short cut to cure pulmonary tuberculosis or as a final or desperate resort when all other forms of treatment have failed. It should be emphasised that it is not a substitute for the general methods of treatment. He further says that the various methods of collapse therapy are merely accessories in a fight which is the concern of the resistance of the body, and general methods designed to increase this natural resistance are just as important in patients receiving collapse treatment, as in those treated by conservative methods.

Does collapse treatment assist Nature or resistance of body?—It is the general opinion that the various methods of collapse therapy assist the natural resistance of the body in a combat against pulmonary tuberculosis. We shall try to see how far this is true. Here an attempt is made in general to show that the above belief is not true. In the succeeding pages detailed stress will be laid on the different methods of collapse therapy.

In all conditions, where the resistance of the body is called to fight out any disease, foreign body, or infection, whether it be local or general, we see that the circulation is increased. The increased blood flow helps the reorganisation. This specially holds good in cases of local infection. Pulmonary tuberculosis is a localised disease of the lungs, as a result of which generalised symptoms are also seen. As soon as the infection takes place the blood circulation is increased and the fight to expel the foe is begun. When the foe gains the upper hand the lung tissues are gradually eaten by the bacilli, and the tissues are now unable to combat the disease and thus the other symptoms develop.

The method of assisting Nature or the natural resistive power of the body, lies in the various methods which increase the general resistive power and help the easy and better circulation of blood and lymph to the affected parts. Is this factor fulfilled by collapsing the lung?

"In a state of normal expiration the lungs are in a relatively collapsed state. By a variety of methods and on different species of animals it has been found that the pulmonary circulation is more active in inspiration than in expiration and more so in an expanded than in a collapsed lung." (OLKAN and JOANNIDES, DALY, HOCHREIN and KELLER, TIEMAN, TIEMAN and RØEDER). FINE and DRINKER, SICILIANO and BUONAMICI, found in post mortem studies that the blood content of the collapsed lung was comparatively less. Some of these authors state specifically that the blood content decreases with the increasing duration of pneumothorax.

Both direct and indirect evidence as observed by ALEXANDER led him to the conclusion that a lung that is collapsed for a long time or to a marked degree, or in a lung that is partly immobilised both respiration and circulation are diminished. As a result of the diminished circulation the affected

parts are not properly nourished and the tissues are unable to fight out the foe any more, and so the disease gradually gains the upper hand. Due to the diminished respiration the impurities of the body are not properly purified in this lung, and the partly purified blood is again sent back to the heart from where it is circulated throughout the body. Thus due to the circulation of partly impure blood, the natural immunity to various diseases is lost or diminished. Hence it is clear that the collapse of the lung does not in this respect fulfil the natural requirements of the body. We shall study this question from the other standpoints also.

How pulmonary collapse enhances healing?—Regarding the curative effects of pulmonary collapse many different theories are put forward and are held to day. In this respect ALEXANDER says:—

"The problem of what are the important factors in the healing of tuberculous lesions under collapse therapy seems still far from settled. All that can be done in the present state of our knowledge is to enumerate those factors that seem to contribute to the curative effects, without venturing any dogmatic statement".

The following are the accepted hypothesis which are held to day to explain the theory of healing of lesions under pulmonary collapse:

1. *Rest.*—Many surgeons believe even now that a collapsed lung is at absolute rest. It is believed also that this rest to the affected lung helps the tissues to fight out the bacilli with double vigour. We shall now discuss the validity of this belief. It had been approved that it is not within our reach to achieve selective collapse by any known method. Taking it for granted for the sake of argument that a selective collapse is achieved, or the whole lung is collapsed, can it be said that the lung enjoys complete rest? It is obvious for the simple reason that this is not true. LILIENTHAL and AMBERSON, BENDAVE, and many others have produced several roentgenograms to prove that a collapsed lung expands and contracts at each inspiration and expiration. That means the collapsed lung is not in a state of absolute rest. It may be advocated that the collapse lung is enjoying comparatively more rest. But at the same time it should be remembered that it is pressed down on all sides and it has to bear all along the continuous tension which is really an extra burden to the already tired lung. If this extra unnatural burden that it is to be borne by the diseased lung which is now collapsed, is to be considered, then we will have to accept that the collapsed lung is really forced to do double work.

Moreover the degree of collapse and of pulmonary rest differs greatly with the type of the collapse method used. ALEXANDER says—

"In pneumothorax with subatmospheric pressure, which is usually used now-a-days, there is little or no pulmonary rest. In phrenic operation where the diaphragm of the affected side is paralysed, only the up and down movements of the diaphragm is lost. But this is largely compensated by the lateral expansion of the thoracic cage and by the increased movements of the upper ribs. Thus the factor of rest is slight. In thoracoplasty the thoracic motions are much decreased and the pulmonary ventilation must be much reduced. How much collapse is obtained depends entirely on the operative method."

In conclusion ALEXANDER opines that no collapse measure with the possible exception of high pressure pneumothorax, oleothorax, and certain

thoracoplasties cause complete pulmonary rest. Here by the term 'rest' it is meant, the cessation of normal function of ventilation—inspiration and expiration. Though complete rest of this type is not obtained by any collapse measure it can be seen in a lung that is collapsed for a long time or to a marked degree that respiration is diminished. Here it should not be mistaken that the number of respirations per minute is lessened. Only the quantity of intake and output of air is minimised, for the obvious reason—due to the compression of the lung (by air from all sides) and the capacity is decreased. Thus a collapsed lung does not enjoy complete rest as claimed.

2. *Hyperemia and blood stasis*:—"Another alleged curative factor is hyperemia and blood stasis. Neither hyperemia nor blood stasis exist in the chronically collapsed lung."—ALEXANDER.

3. *Increase in carbondioxide*:—"It has been said that both the respiration and circulation are diminished or entirely suppressed in a collapsed lung. This diminished ventilation has been claimed to be a curative factor for the reason, that the increased carbondioxide in the collapsed lung, acts as unfavourable or even bactericidal to tuberculous bacilli. Novy and SOULE in their classical study of the respiration of the tuberculous bacillus, conclude that, "Growth continues until the last atom of oxygen is consumed". It is not proved that collapse therapy establishes complete lack of oxygen in any tissues. If it were so, along with the death of the bacilli, even the tissue would have undergone necrosis. According to Novy and SOULE, the tuberculous bacilli flourish in an atmosphere containing 10 to 50 per cent of carbondioxide, and it has also been said that they flourish till the last atom of oxygen is utilised. So it cannot be claimed that the increased carbondioxide in a collapsed lung is inhibitory to the growth of T. B. bacilli.

Mechanism of healing.—A cavity in a tuberculous lung is held open by the centrifugal tension of the surrounding pulmonary tissue. Thus the walls of the cavity are separated away. If this tension is removed the walls come very near and the healing takes place. A satisfactory collapse releases the elastic pull round the cavity, thereby bringing the walls close to each other. This is the supposed theory of healing. But this still seems to be far from settled.

Now the question arises if the healing of an infected cavity takes place by simply bringing their walls close to each other? Both in theory and in practice it can be found that this does not hold good.

We shall just consider the treatment aspect of a gaping infective ulcer in any part of the body. The treatment first aims at asepsis and proper drainage. Medical science does not allow to bring the walls into apposition by suturing, when there is infection. It is only when the ulcer is healthy that sutures are put in, to accelerate the healing process. A pulmonary tuberculous cavity may also be considered as an infective ulcer. Since the cavity is not within easy reach, no drastic treatment could be carried out. So bringing their walls close to each other by collapse measures, along with the conservative methods of treatment, is all what the present knowledge suggests. I feel for various other reasons also that it is for this reason that no other better methods are available that collapse therapy is being advocated.

Defective theory of collapse therapy.—The only objective of various methods of collapse therapy is to bring the walls of a cavity very close to each other, in case of a cavity, or the walls of the affected lung very near each other in case of diffused lesions. This is supposed to assist in the healing of the lesions. "In spite of an anatomically satisfactory collapse healing does not always occur. The tuberculous process may spread in spite of collapse."—ALEXANDER. In order that a lesion or a cavity is to be healed by collapse measure, it is necessary that the collapse (by pneumothorax) is to be continuously maintained for months together, or years together, and sometimes, as ALEXANDER says, for ever. If this long period of treatment could not effect any improvement could it be claimed that the treatment is successful? On the other hand, could this be called a treatment at all? In this way are we assisting nature in the natural fight of the body against the disease? These are the questions to be earnestly considered by the medical world.

In conclusion the drawbacks of collapse therapy may be tabulated as follows:—In the first place, satisfactory collapse is not under our control. Secondly, the healthy portion of the affected lung is also collapsed, usually the healthy part is better collapsed, thereby decreasing the circulation of blood and lymph and also respiration. By the diminished flow of blood and lymph the tissues are handicapped to fight out the bacilli; and by the diminished ventilation, the impure blood is not properly purified in the lung. As a result the contra lateral lung is made to bear the burden of the collapsed lung. Thirdly, unluckily, when one lung is collapsed, the infection invariably spreads to the other lung. Sometimes this contra lateral spread acts as a cause of death, also ROLLAND, who studied by post mortem examination 25 patients with pneumothorax, found bilateralization as the cause of death in 20. Fourthly, sometimes the tuberculous process develops entirely uninfluenced by collapse. Fifthly, the collapse lung is constantly under a sort of continuous compressed state which is another burden to the already tired lung. In pneumothorax—one of the collapse methods—the lung is continuously pressed on all sides by the injected air. Sixthly, pleural effusion, empyema, dyspnoea, rupture of the lung, mediastinal shifting and other complications occur as a result of collapse. Seventhly, "extra pulmonary foci develop at times as a result of collapse. It is impossible to know whether they are exacerbations of old lesions, new focalisation from some other extra pulmonary focus, or whether they arise from a focus in the collapsed lung."—(ALEXANDER) When the lung is collapsed the toxin from the infected lesion is squeezed into the blood stream and it is very likely that the infection spreads to any other part of the body. Lastly, some patients receiving collapse treatment die of severe toxic symptoms (massive toxæmia) due to the squeezing into circulation of toxic products from the collapsed lung and from respiratory failure, due to mediastinal flutter, with paradoxical breathing.

Strictly speaking the criterion of any treatment should be to achieve, as far as possible, the utmost relief of symptoms without any bad or after effects. Collapse therapy is to be considered in this light. Here the result is poor and at the same time the percentage of complication is very high. In spite of the latest modern advancement this holds good. Should not this fact lead one to think that there must be some grave mistake in the theory behind collapse therapy? Any research, or development on a wrong basis is bound to be futile.

It may be advocated that there are many patients benefited by collapse treatment. I do not gainsay it. But before admitting it, it should be remembered that there are even more number of patients or at least an equal number, benefited by only sanatorium rest. As such, could this be a claim for the good results of collapse treatment? This is another point to be considered. Moreover, there are some fallacies in recording the results of collapse treatment, the chief being that the advocates do not take into consideration the complications or the after effects of collapse treatment. In early cases, where collapse measure has given good results, it has also been claimed that only sanatorium regimen would have given a similar result during the same period. This cannot be overlooked since we see that sometimes many patients improve both clinically and radiologically by ordinary rest and conservative treatment, and their sputum becomes negative.

Three collapse measures.—Artificial pneumothorax, phrenic nerve paralysis, and thoracoplasty are the tripods of collapse therapy. Oleothorax, is also supposed to be an additional measure. But this is used very rarely. Among the first three, thoracoplasty is the most drastic one. Artificial pneumothorax is largely used. Recently phrenic paralysis is becoming more common. This is supposed to be "Poor man's treatment." Though there are specific indications for each, it cannot be expected that any particular method definitely proves to be useful, especially the first two—pneumothorax and phrenic paralysis. This fact is in an indirect way established by ALEXANDER. He has given diagrams of 84 different types of unilateral and bilateral pulmonary lesions, which are representations of roentgenograms, wherein the particular collapse measure is indicated. A few suggested modes of treatment are given below as examples. In almost all types of cases he has advised to try the different operations, *one after another, when the former fails*. From this it would be clear, how futile are the first two operations. The last one does, of course, collapse the lung. But this is a very drastic and a major operation which has its own disadvantages and complications.

1. Tuberculous bacilli in the sputum; doubtful cavity. Use temporary phrenic paralysis. If lesions progress add pneumothorax and if unsatisfactory, on account of indivisible adhesions, add thoracoplasty.

2. Use pneumothorax. If it fails, try temporary phrenic paralysis, maintaining the pneumothorax. If cavities remain open, perform partial thoracoplasty.

3. Perform very extensive thoracoplasty, including transverse processes of the vertebræ; anterior thoracoplasty stage if necessary. Permanent phrenic paralysis may be used after or before thoracoplasty, etc.

The collapse measures suggested above would indicate, how ineffective they are, and how one after another method should be tried. These operative measures never assist the tissues in the natural defence. Moreover by the different operative processes, the already atrophied tissues are very much damaged and the extra use of the reserve bodily energy is called for to combat the surgical damage. Along with these disadvantages the usual complications of the different procedures set in and add insult to injury.

Closure of cavities by Sanatorium treatment only.—It should not be forgotten that fairly good percentage of cases of pulmonary cavities heal up spontaneously by sanatorium treatment only, unaided by collapse

therapy. The approximate percentage of such recovery as estimated by ALEXANDER is 10 to 30 per cent, depending chiefly upon the size of the cavity, the character of the surrounding lesions and the duration of strict bed rest or at least restricted physical activity. HEISE reports 27 per cent of his 410 patients, as of healed cavities. FALES and BEAUDET have found in 120 cases that in 40 per cent the cavities became closed spontaneously. From these figures it may be roughly estimated that about 33 per cent of the cavities are spontaneously healed by only sanatorium regimen. ALEXANDER while describing the choice of operation of collapse therapy, warns, "many patients—especially those in the minimal and moderately advanced stages of tuberculosis—whose lesions and symptoms show continuous regression, will become well, without collapse therapy, although it is impossible to predict with assurance which patients will do so".

Of all the collapse measures scalenectomy has the poorest results upon the lung. Next in order comes, phrenic paralysis, multiple intercostal neurectomy, combined with phrenic paralysis. Scalenectomy only immobilises the lungs but does not collapse it. Extra pleural pneumonolysis gives great and localised collapse at least as great as a partial thoracoplasty of equal extent. Artificial pneumothorax, if it is not obstructed by any adhesions, does collapse the lung. But if the tuberculous lesion is stiffened by fibrous tissue formation no collapse occurs. In an extensively infiltrated lung even positive pressure pneumothorax fails to collapse it. Oleothorax is supposed to produce a greater collapse than pneumothorax, but total oleothorax is rarely used. Thoracoplasty does collapse the lung upto the extent it is used—usually the upper two lobes. But even this operation does not collapse the soft lung as much as is produced by pneumothorax, because the liver and other upper abdominal viscera prevent the collapse of the lower thoracic wall. Similarly the fixed portion of the sternum and the spine prevent the anterolateral collapse of the medial part of the lung.

Of the various collapse operations, pneumothorax, phrenic nerve paralysis, and thoracoplasty are commonly used. We shall now discuss the results, drawbacks, complications etc., regarding these three only.

Artificial pneumothorax:—The theory of this treatment is to introduce air between the two pleural layers. Since the parietal pleura is adherent to the thoracic wall, the visceral pleura is compressed inwards by the air injected and along with it the lung collapses. According to this procedure the air will have to be injected repeatedly as it is absorbed by the tissue.

Control of hæmoptysis:—It has been claimed that hæmoptysis is sometimes checked by A. P. But this is not always the case. Sometimes it is also aggravated, while at other times patients who hitherto had no hæmoptysis, begin to pass streaks of blood with the sputum, while they are receiving A.P. So it cannot be claimed that pneumothorax definitely controls hæmoptysis.

Relapse of the disease with A. P.:—ALLAN HURST and SOLOMAN SCHWARTZ (war surgeons) say that most of their cases showed relapses more than one year after discontinuance of pneumothorax. This is especially true in cases of homolateral breakdown where pneumothorax played a real part. They also say that ultimate result of A.P. is not as favourable as

immediate results. But it is also harmful if pneumothorax is terminated prematurely due to complication or unsuccessful results.

Collapsed lobes are not rested completely:—ALEXANDER says, that he has never seen a single lobe supporting respiration without dyspnoea. The other partially collapsed lobes are obliged to function actively and so no rest is obtained.

Unsatisfactory collapse is useless:—"The results of unsatisfactory collapse, no matter how long continued, are little better than those obtained without any collapse."

Collapse of healthy lobe is harmful:—A total collapse of the whole lung of course fulfils the requirements of satisfactory collapse. But here the healthy parts are also collapsed. This is really unnecessary and harmful. This at the same time also acts as a most potent source for various complications. It is a well known fact that selective collapse is beyond our control i.e. it is not a voluntary accomplishment.

Duration of pneumothorax:—When the satisfactory collapse of the affected part of the lung, is established, it should be understood that the curative phase has just begun. It is during the months or years that follow that the healing of the lesions takes place, *and never earlier*. During this period the collapse should be maintained by constant refills at regular intervals that may be fixed in each case.

Since a very long time is required for the healing under pneumothorax, the lung should not be allowed to expand until it is definitely thought that the lesions are completely healed. Because, if it is allowed to expand prematurely then it is very likely that the lesions hitherto healed temporarily may breakdown and the collapse so far maintained becomes practically useless. If the collapse is discontinued due to complication, poverty of the patient, or any other cause, the result is the same as said before.

There is much difference of opinion as to the duration of pneumothorax. According to AMBERSON and PACKARD the collapse should continuously be maintained for a minimum period of two years. According to ALEXANDER this period is not sufficient for the healing to take place. He says that it should be maintained for years together, perhaps for 7 to 8 years or perhaps for ever. According to him *if the lung is allowed to expand prematurely the disease may be reactivated in a way or in areas that even thoracoplasty cannot correct*.

The duration according to ALEXANDER may be estimated thus. Suppose the estimated period of pneumothorax for a case is two years. This should be calculated from the date a satisfactory collapse is obtained, even though it requires a year or more. But meanwhile, even after a satisfactory collapse is obtained, the symptoms of reopening of the cavity, like the presence of T.B. bacilli or elastic fibres in the sputum, hæmoptysis etc., were to occur, the date (of duration) should be recalculated to commence again from the re-establishment of satisfactory collapse. So as a rule the re-expansion should not be considered until the patient maintains good health for a minimum period of six months, with his routine exercise or work. Even slight disturbances or changes in health, like fatigue, anorexia, and other minor complaints should indicate that the A.P. should be continued.

Thus it has been shown that pneumothorax is a very tedious and costly procedure which the majority of patients cannot afford. Now we shall see how far this treatment is successful.

In order that healing takes place, a selective or satisfactory collapse is to be established. According to ALEXANDER, in about 20 per cent of all cases diffuse pleural adhesions prevent the satisfactory collapse. And in about 40 to 50 per cent of cases the adhesions allow only a partial collapse. According to ALLAN HURST and SOLOMAN SCHWARTZ in about 25 to 30 per cent (out of 1000 cases) satisfactory collapse was achieved.

High mortality with pneumothorax:—Patients in whom pneumothorax has been tried and failed have a very high mortality rate—(ALLAN HURST and SOLOMAN SCHWARTZ). PACKARD found a mortality rate of 60 per cent, at the end of two years, in whom pneumothorax has been tried unsuccessfully.

Complications of pneumothorax:—A large number of pneumothoraces will have to be abandoned as various complications set in during the treatment. Thus these unsuccessful cases come under the group stated in high mortality. The usual complications are:—Bilateralization, pleural effusion, empyema, chronic broncho-pleural fistula, pleurocutaneous sinus, and obliterative pleuritis.

Bilateralisation usually occurs by the squeezing (of the lung) and the liberation of the toxic products from the collapsed lung. The toxic material that is squeezed into the blood stream as a result of A.P. may reach any other part of the body and cause the disease there (extra-pulmonary lesion). Many observers agree that pleural effusion complicates the course of pneumothorax in about 50 per cent of cases. According to some (ZODEK and SONNENFELD) it goes up to even 60 per cent. Though effusion may in some cases get absorbed after a few aspirations, it persists to continue in a large number of cases; and this leads to various potential disadvantages. ALEXANDER has picturesquely tabulated these disadvantages in his book on 'Collapse Therapy in Tuberculosis' which is quoted below. Some advantages are claimed, by the pleural effusion, but these are outweighed by the disadvantages.

The following are the disadvantages of this (effusion) complication:—

- (1) Existing adhesions are thickened and shortened, thereby placing greater tension on the diseased pulmonary areas and sometimes resulting in reopening of the cavities.
- (2) The pleura becomes thickened, making eventual re-expansion of the lung more difficult.
- (3) Obliterative pleuritis may ensue.
- (4) The fluid that covers the pulmonary borders obscures the degree of collapse maintained. When the distance between the lung and thoracic wall is unknown the danger of wounding the lung with the needle is always present, and obliterative pleuritis may be well established before it is recognised.
- (5) The weight of the fluid depresses the diaphragm and may produce gastric symptoms. These may however be promptly treated.
- (6) The weight of the fluid collapses the lower part of the lung that may not be in need of collapse.
- (7) Friction between the fluid and the lobes bathed in the fluid decreases respiratory expansion of these lobes and therefore interferes with respiration when selective collapse is essential.

(8) Accumulating fluid raises the intrapleural pressures toward the positive side; the intrapleural pressures may raise to dangerous heights when, as frequently, the operator abandons a pneumothorax, and does not follow the changes in intrapleural pressures.

(9) The presence and absorption of pleural effusions, are often accompanied by toxic symptoms of varying degrees of severity, which may be relieved by withdrawing the fluid.

(10) If the effusion is not aspirated it may displace the mediastinum and fix it permanently in an abnormal and disadvantageous position.

(11) Finally most effusions complicating pneumothorax are infected with tuberculous bacilli, and form excellent culture media for the growth of any organism. When pneumothorax is abandoned in the presence of fluid, partial re-expansion often occurs, unobserved, because the fluid obscures the degree of collapse. The premature re-expansion may result in re-activation of subpleural lesions and these may ulcerate through the pleura.

Bad results of pneumothorax:—"The separation of the visceral from the parietal pleura deprives the patient of an important defensive mechanism, for the protection of the pleural cavity, against infection. When, however, the pleurae are separated by a pneumothorax, extension of infection from the lung to the visceral pleura, may precede to involve the entire pleural cavity, resulting in a tuberculous serous effusion, pure tuberculous empyema, or mixed tuberculous or pyogenic empyema."—ALEXANDER. Pneumothorax, which eliminates the massaging action of the pleurae, against one another, impedes pleural resorption —(NÄGELI).

Phrenic nerve paralysis.—Paralysing the phrenic nerve of the affected side causes the diaphragm to go upwards, which collapses the portion of the lung above it. Usually the nerve is crushed for about an inch and so it regains its original power within a period of six to ten months. Now-a-days this operation is becoming more common and this is claimed by some as 'Poor man's treatment'; for pulmonary tuberculosis. The base and the apex of the lung are usually collapsed by this method. How far this slight compression or collapse helps the healing of lesions is doubtful. There are extremes of opinions between surgeons as to the value or uselessness of this operation. According to ALEXANDER some of the excellent results attributed to phrenic nerve interruption, would undoubtedly have been obtained from unaided bed rest. According to him, "Our best results have been in limited lesions, that were relatively fresh, and that contained fibrous tissue, that was young enough to be still capable of considerable contraction. Our least satisfactory results have been in cases of extensive fibrotic lesions with large stiff walled cavities."

Of all the collapse measures phrenic nerve paralysis—temporary—is the least harmful. If at all it does any good it helps the healing of the lesions, if not the after effects are comparatively less.

Complications:—The main complication during the operation is that, nerves other than phrenic, may be damaged. But with proper technique and care this may be averted.

Dyspnoea:—Is the usual troubling complication which arises after phrenic paralysis. This is due to the high rise of the diaphragm and to the total or partial plugging of large or small bronchi by the bronchial secretions, since the patient is unable to cough out the sputum.

Effect on heart:—A high rise of diaphragm may cause some displacement of the heart to the other side. Symptoms like tachycardia, palpitation, dyspnoea may occur.

Gastro-intestinal symptoms:—BERARD, DUMAREST and many others have reported varying degrees of troublesome gastro-intestinal symptoms, as a result of phrenic paralysis. The common amongst them are: fullness and occasional pain in the stomach, gastric distension, accumulation of gas, regurgitation, etc. These symptoms may persist for a few days or weeks or they may remain permanent. It is said that these symptoms usually occur more, after left sided than right sided operations.

Thoracoplasty.—Of all the collapse measures thoracoplasty is the most drastic and dangerous operation. This is used only as a last resort, when all other measures fail. In this operation several ribs of varying lengths are resected. This naturally excludes from function a large portion of the lung, even after the lesions are healed. After this operation the patient is permanently handicapped and disabled to work. In India a large number of patients prefer to undergo the risk of the progress of the disease than undergoing the thoracoplasty operation. This is a major operation and will have to be repeated once, twice, or even thrice according to the nature of the cavity. A tuberculous patient is already atrophied and by the series of operations the patient is further more handicapped. Along with it, the operation has got its own operative and post-operative complications and risks. If at all the patient recovers after all the stages of the operation he requires a long time to pick up the previous health he had, just before the operation. A large number of patients are not mentally and physically fit for the subsequent stages of the operation, as they do not recover from the first stage, in time. Especially if any complication occurs after the first stage the patient is mentally unwilling to undergo the second stage. If all the estimated stages of the operation are not done, the first stage is practically useless. During this operation the tissues are greatly damaged. The operation looks like actual butchery.

Specific burden, as a result of thoracoplasty:—

- (1) Paradoxical breathing.
- (2) Permanent restriction of the amplitude of normal respiratory movement.
- (3) Direct pressure upon the heart and some greater mediastinal vessels, by the collapsed lung.
- (4) Pulmonary collapse increases the resistance of the flow of blood in the pulmonary circulation and therefore increases the load upon the right side of the heart.
- (5) The usual cardio-circulatory strain that may be expected after a major operation.

Complications:—*Shock*—ALEXANDER quotes certain cases and decides, "These cases illustrate that even when all the available pre-operative findings are carefully weighed, and when a presumably perfectly safe operation is performed, it is impossible to predict that shock will not occur."

Spread of infection:—Spread of tuberculous infection is the most often feared and the most frequent complication which may arise even in properly performed thoracoplasty, in a well selected patient. The spread may either be to the healthy part of the same lung or to the other lung. If it spreads

to the other lung it is usually the base that is affected most. But it may involve several areas also. In this way, with thoracoplasty there is always this danger of extension of the focus.

Psychosis:—"Post operative psychotic states range from hysteria, distinct mental depression, unwillingness to co-operate with the surgeon, to clinical insanity."—ALEXANDER. This is usually due to the mental or physical trauma.

Miscellaneous complications:—Symptoms of nephritis may appear or aggravate after thoracoplasty. Hæmoptysis may occur at any time till the lesions are healed completely. If hæmoptysis existed before the operation it may be aggravated. If intestines were affected before operation, now the symptoms are aggravated. Wound infection is a common, grave and annoying complication. If there is deep infection, and if it persists after efficient treatment there is a fear that the patient may gradually lose his resistive power when the disease spreads rapidly resulting in death. According to ALEXANDER about 25 per cent of wound infections end fatally in spite of efficient treatment. The percentage is really higher when it is not diagnosed early and the wound not packed wide open.

Results:—Good results are claimed by western surgeons. While recording these results special attention has been given to radiological and bacteriological findings but not so much to the ability of the patient to work after operation. As ALEXANDER also agrees, there are many tuberculous patients, with open cavities and positive sputum who are able to do much work, without receiving any treatment. But at the same time there are also many patients who have, as a result of thoracoplasty, closed cavities and negative sputum, but are unable to work, because of the disabling effects of the operation. It cannot be denied that there are some patients who are doing hard manual labour after thoracoplasty. But such cases are very few. Usually patients surviving after thoracoplasty are permanently disabled to work.

Allopathic medicines futile in tuberculosis:—Workers in tuberculosis have during their practice observed the futility of the allopathic medicines, even in checking the annoying symptoms, leaving the question of checking the diseases. But still to satisfy the curiosity of the readers the following quotation from, "Text Book of Medical Treatment" edited by Dr. D. M. DUNLOP, B.A., M.D., F.R.C.P., published in 1942, may be cited:

"The treatment of symptoms:—Cough":—Rest in fresh air which is free from dust is frequently all that is required to allay the unnecessary coughing.

"Haemoptysis":—Large number of drugs have been recommended from time to time for the treatment of tuberculous hæmoptysis. Emetine, Pituitrin, Congo Red, the Nitrites, Calcium, Adrenalin, Thromboplastin, and many others have had their advocates. It would be irrational to suppose that any of them could influence a severe pulmonary hæmorrhage, and in our opinion they are quite worthless in practice.

"Tuberculous enteritis":—Three therapeutic measures have been advocated recently, particularly from America, as specifics for this condition: (1) exposure of the abdomen to ultra-violet radiation from the mercury vapour lamp; (2) the administration of massive doses of cod-liver oil and tomato juice; and (3) the injection of oxygen into the peritoneal cavity. We have treated many patients by the former two methods without observing

any beneficial results. We have had no experience of treatment by means of pneumoperitoneum, but the published results are not impressive. Attempts at surgical resection of the ulcerated portion of bowel are almost invariably unsuccessful and frequently fatal.

"Fever":—Absolute rest in fresh air is the best treatment for fever. It is easy to reduce the temperature by means of anti-pyretic drugs, but this procedure usually serves no useful purpose. Indeed a helpful index of the progress of the disease is obscured, the tendency to sweating is increased and the temperature goes up again as soon as the drug is discontinued.

"Sweating":—Sweating during sleep is the symptom which yields most rapidly to fresh air treatment. Exceptionally, however, 'sleep sweating' persists in severely toxic patients in spite of proper physiological conditions. Such cases should be given a glass of milk and biscuit immediately before going to sleep and a similar feed may be left by their bedside to be taken should they wake during the night. The use of Atropin or any other drug is valueless in the control of sweating."

A few suggestions for research workers:—India is nearing independence and we shall now begin to work like an independent nation. We shall have our own ways of action. We shall stop waiting for the westerners to lead us. We shall maintain our speciality and shall begin to do research according to our own methods. We have, hitherto, due to the force of circumstances and various other reasons neglected our own Medical Science, and have been pitifully looking at the west to impart us knowledge. It has been shown till now that this knowledge in connection with tuberculosis is not useful to us. Though we have with us a valuable diamond, we, by our neglect, have put it aside, and have been appreciating with amaze a beautifully finished glass piece, which has come from the west.

The diamond (our medical science), due to our neglect is covered up by dust and has lost its glitter. We shall, at least now, take care of the precious stone, clean it well, and shall hold it high so that the whole world may see its brilliance. We should now look to our science with national spirit.

Though we have neglected our science it is our luck that it is not completely lost. Still there are many Ayurvedic physicians who can successfully cure tuberculosis, and they claim that the disease is curable. Some of the allopathic doctors who have been trying Ayurvedic medicines in their practice also share this view. The only drawback is that these medicines are not being experimented in a systematic and organised method. This we shall have to do now, with the help of the modern accessories, like radiological and bacteriological findings etc. Both the Allopaths and Ayurvedists should mutually co-operate and should go hand in hand. With this spirit if the Ayurvedic medicines are experimented in all the existing sanatoriums, we feel confident that we can, within a few years, show to the whole world, with statistics, that tuberculosis is really curable. Since the popular Government has come into power the question of reviving Indian Medicine has been taken up, by several Provincial Governments. We shall hope that the day will dawn soon.

NOTE.—The author is indebted to the writers, whose name have been mentioned in the text of the article, for the quotations and ideas that have been extracted from their writings; and to Dr. G.R. KOKATNUR, B.S., M.D., (Minnesota U.S.A.) Chief Medical Officer, Karnatak Health Institute, Hukeri Road, Belgaum, for the facilities he provided to me for both the theoretical and practical training in tuberculosis.

Nutritional Significance of Vitamin K With Special Reference to India*

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ANY attempt to review in the few minutes allotted to me, the vast and varied investigations on vitamin K carried out during the last 5 or 6 years may seem rash and over ambitious. One excuse for accepting the invitation of the President to undertake this responsibility is, the lack of interest in India in the studies relating to this particular vitamin which is also the latest to be discovered and hence a virgin field. Being interested in the subject for over 4 or 5 years, I had an opportunity of discussing the subject in its chemical, physiological and clinical aspects with chemists, physiologists and clinicians and became acutely aware of the many lacuna in our knowledge.

Though I have collected assiduously almost all the references in monographs and journals, both chemical and medical, due to difficulties of dollar exchange and non-availability of American publications in India, it is almost impossible to give a complete review of the work done, or of the problems that are raised in the course of various investigations. The review must necessarily be sketchy and in some parts incomplete.

At the outset, I may clarify and simplify the scope of my review. I cannot go into the fascinating story of the accidental discovery of the vitamin K by Dam and his collaborators in Copenhagen. I will only stress one scientific truth demonstrated once again that intensive pursuit of scientific investigations along certain lines may yield unexpected and more important trails and discoveries. I will also avoid mentioning the lists of the sources of this vitamin and the processes which led to the isolation of the vitamin K₁ from alfalfa and vitamin K₂ from putrified fish meal and the properties and constitution of vitamin K₁ and vitamin K₂ and the greatest achievement of all, the synthesis of vitamin K₁ by different groups of workers. I cannot also dilate here on the assay of vitamin K in detail mentioning the various procedures and their relative advantages and disadvantages, with a final comparative evaluation of the results. But it is necessary to indicate the two methods *viz.*, the biological assay and the physico-chemical estimation. The biological assay is based on the hæmorrhagic tendency which was determined, in early investigations, by estimating the blood clotting time and in recent work, by the estimation of prothrombin, which is one of the most essential factors necessary for coagulation and the factor, whose level is influenced by the variations in the quantity of vitamin K provided to the animal organism either in diet or by synthesis in the intestine.

Lastly, one has to go beyond the limits of the title of the discussion to give a list of conditions in which vitamin K has been given as therapeutic agent in the treatment of human disease. The rationale of these treatments, the exact indications in different clinical conditions and the different preparation in the market, the dosage and the duration of these

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treatments are all very important and interesting to medical practitioners but are nevertheless omitted in this contribution to the section of physiology.

Having thus limited the scope of the review, I will now proceed to indicate the essential facts so far established with regard to the physiological role and the nutritional significance of vitamin K in general and then take up the consideration of the nutritional significance of vitamin K with special reference to India.

As has been well known, the animal organism, at least the lower mammals and birds, require adequate amounts, probably varying proportions, of vitamin K supplies, to enable them to maintain their normal level of prothrombin in the circulating blood. The first impression based on the early experiments was that the vitamin was entirely supplied in the food and that the organism was therefore dependent entirely on the environment and the nature of the food. It was assumed that as long as rich sources of the vitamin, vegetables or animal, were ingested, the healthy animal will not suffer from a deficiency. It was however soon demonstrated that the absorption was as important as ingestion. Not only should the mucous membrane of the digestive tract be healthy and remain in contact, sufficiently long, with the products of digestion containing the vitamin, but there should also be adequate amounts of intestinal juices and, particularly, bile acids and bile salts, for the absorption of vitamin K. So, even if adequate quantities are ingested, there is a possibility of vitamin being unabsorbed from the gastro-intestinal tract. The recent successes in synthesising the vitamin K which is a water soluble form, opens up a new line and leaves us guessing whether such products also occur in nature, either outside the body or inside the body. A still more surprising observation led to the suggestion that the animal does not derive all the supplies of the vitamin necessary for the body entirely from the food. Even when diets deficient in vitamin K were given to certain species of animals and for a number of days, only a few, in some species, and none in some other species, in a series of experiments, showed signs of vitamin K deficiency. It was therefore inferred that the particular animal manufactures in its own body, certain quantity of vitamin K and this was later on demonstrated to depend on bacterial putrefaction in the large intestine and particularly in the cæcum. The administration of purgatives as a routine in the treatment of chronic constipation (by cathartics or liquid paraffin) may produce gradually a state of deficiency of vitamin K. The indiscriminate increase in use of "sulpha drugs" for various clinical conditions may also, similarly lead to deficiency of vitamin K by interfering with the normal growth of the intestinal bacteria and their role in the production of vitamin K. The actual role of vitamin K in the body and the mode of its utilisation, after absorption from the intestinal tract, appear to be the same, irrespective of the source from which it is derived, whether it is supplied in the food or synthesised in the body. A series of brilliant experiments has been recorded where the formation of prothrombin has been demonstrated to be dependent on the liver. Acute injury to the liver by various poisons and toxins which destroy the liver cells interfere with the formation of prothrombin. Chronic disease of the liver may or may not do it to such a marked degree but it is curious that the prothrombin is not considerably lower, until a very large extent of the liver is damaged. Extirpation experiments on the liver as

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well as the classical experiments, cutting out the liver from the path of circulation of blood, have yielded the same result, *viz.*, lowering the prothrombin level. If the vitamin K is inadequate in food or if the absorption of the intestinal tract is interfered with, there are now available, fat soluble vitamin K and the new synthetic compound (water-soluble) which can be injected into the body. But this injected vitamin can be effective only if the liver cells are active and functioning normally with regard to the formation of prothrombin. What the influence of various constituents of diets may be and what the influence of other physiological processes and reactions in the body may be on the actual metabolism and activity of the liver cells, with special reference to vitamin K, are still not clearly visualised. And in spite of many investigations one cannot clearly state the complete chain of events that occur from the time the vitamin K is absorbed and taken to the liver to the final appearance of prothrombin. Vitamin K appears to be in some way responsible for the formation of prothrombin. Evidence has been produced that the vitamin is stored. Vitamin must be given continuously to build up reserves. There is no accurate chemical method of assessing vitamin K reserves. The reserves may be depleted even with a normal prothrombin level. It is assumed that the vitamin K storage is in the liver. Damage to the liver may result in partial or total destruction of the substance or, it may be, that the vitamin is stored in a form in which the damaged liver cannot utilise it for the elaboration of prothrombin. Even after the deficiencies in food arise, fall of prothrombin is prevented to some extent and for some days, by the reserves. Complete loss of prothrombin, in some experiments, is in sharp contrast to the slow loss of prothrombin in disease. It would appear that prothrombin is actively destroyed *in vivo*, at least, when the liver is damaged or removed. The site of destruction is believed to be the lungs.

Though vitamin K has been chiefly studied in connection with coagulation, as the factor responsible for the production and the maintenance of the normal level of prothrombin in the circulating blood, it is not yet clear whether there is any endocrine disturbance or autonomous imbalance, as an intermediate mechanism or as an end result. A beginning has just been made to study in rabbits and in human beings the physiological changes relating to vitamin K and prothrombin levels, as influenced by age and sex. Apart from the physiological role of vitamin K in coagulation it may have other significant role or roles, in the animal organism, on the metabolism of fats in the liver, or on the structure and functions of central nervous tissues, or on the blood vessels, particularly, arterioles, and smooth muscle.

There is an urgent need to develop and perfect a physical or chemical method for the estimation of vitamin K, even in very minute quantities, so as to enable scientists to study directly, as they did, in the case of vitamin A or vitamin C, the sites, rate and factors affecting absorption, the levels of vitamin K in portal and peripheral blood, the vitamin content of various organs before and after absorption and the mechanism of excretion or destruction of vitamin K, under varying physiological conditions, in different ages and diseases.

As far as India is concerned, there is no reason to believe that the normal healthy people will suffer from deficiency of vitamin K, so long as they get an adequate and well balanced diet, with moderate quantities of vegetables and greens. As long as the mother is healthy and is taking a full and balanced diet, herself or her new-born infant, fed on mother's

breast-milk, may not suffer from a serious degree of deficiency. If the animal experiments on "vitamin K and hot environments" are confirmed and are proved to be applicable to human subjects, then, increased amounts of vitamin K may be necessary in the hotter months of summer or/and may have to be provided to people or at least to new-comers from the temperate regions, unacclimatised to the hot plains of India, as a safeguard against heat-stroke and sun-stroke.

The role of vitamin K in animal nutrition, particularly in cattle, has received much attention in America. Personal enquiries and questionnaire sent round to some of the Veterinary Institutions and cattle farms in India have not yielded any positive information. It is hoped that the experts on animal nutrition in India may throw additional light on the question.

The author's own experiments on the detection of vitamin K by chemical method and the estimation of Prothrombin level in different parts of the vascular system in the rabbit and dog, were briefly presented and the significance of the results discussed.

Short Notes on Scabies*

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THE human skin may be attacked by various animal parasites such as certain acarus, various insects, and a few worms. Some of these, such as mosquitoes, fleas and bugs are fully matured when they settle on the skin and come there by accident or in search of nourishment; others such as caterpillars and larvae of certain flies are deposited there in the larval stage, the human skin being the necessary habitat for them if they are to attain their full development. The majority remain on the surface but a few penetrate into the skin such as the acarus of scabies which burrows into the epidermis, and some other insects even make their way into the corium and subcutaneous tissue. The lesions also vary in type with the particular parasite responsible as erythematous or urticarial, as those caused by stings or bites and others being multiform such as those due to acarus of scabies. Some diseases are again non-contagious and some are contagious as the disease caused by acarus of scabies.

Scabies is one of the commonest skin diseases noticed among the soldiers in the army and also among the crowded civilian population.

Scabies is a contagious affection of the skin characterised by its dry papules, vesicles or pustules and peculiar lesions or cuniculous known as 'burrows' due to the burrowing into the epidermis of a female mite named the 'Sarcoptes scabii'.

The female of the species is the cause of the disease in that impregnated, it burrows into the stratum corium and even as far down as the junction of stratum lucidum or granulosum. The result is the typical funicular lesion in which eggs are deposited and hatched. The nymphs and embryos then make their way in skin surface and take refuge in hair follicles, micturition takes place, when sexes are differentiated, and the cycle repeated. The

* Specially contributed to THE ANTISEPTIC.

female-sarcoptes or *acarus scabies* measures about 0.3 m.m. in length when impregnated and is just visible to the naked eye as a minute greyish opaque speck. It is round or oval in shape and has four pairs of legs, the two anterior pairs are attached suckers, while the other two posterior pairs which are concealed beneath the body end in bristles.

The male *acarus* is about half the size of the female and is present on the skin only for a short time as it dies after copulation.

Histopathology.—A tunnel-like lesion runs obliquely downwards from stratum corneum to junction of the deeper part of that layer with stratum lucidum, or stratum granulosum. The tunnel or cuniculus contains as its closed end a female *acarus*, while the peripheral part is generally full of eggs and embryos of various stages of early development. The result is a good deal of debris on which the *acarus* feeds. There is generally some spongiosis and the underlying prickly cell layer with production of small vesicle in the region of closed end of the cuniculus which vesicle is noticeable on a skin surface which often becomes pustular owing to secondary pyogenic infection. In addition to all this, there may be mild folliculitis due to the presence in the follicles of nymphs and embryos, in severe and neglected cases, the histopathology of the disease due to vegetable parasites of the bacterial type (the pyococcal infection) is also to be found.

Scabies is usually transmitted by direct contact between an infected and a healthy subject, and for it to occur, the contact must be close and continuous as in sleeping in the same bed. It may also be spread indirectly by infected clothing sheets, blankets, etc.; as *acari* may live on them for several days apart from contact with the body, but Mallenbury's experiment does not lay much stress on this. It is rarely acquired during the day.

It has a universal distribution occurring in tropical as well as other zones. It is much more common among the poor than the well to do, as over-crowding, unhygienic surrounding and want of cleanliness are important factors in its dissemination. It is frequent among soldiers in the army, in unit barracks and camps due to overcrowding and also lack of water supply for baths to keep the bodies clean and also wherever large number of people are lying together in a restricted area. Scabies is met with in all ages and in both sexes.

Signs and symptoms.—Intensive itching definitely worse during nights and, when patient is warm, appearance of vesicular, papular and also pustular eruption. In severe cases the patient may be complaining of painful glandular swelling of various sites infected. Typical burrows or cunicular swelling or black wavy lines varying in length from $\frac{1}{4}$ " to $\frac{1}{2}$ " with a small vesicle are present on the skin of the various areas infected.

Site of infection.—Males:—Anterior corporeal folds, webs, between finger and toes, anterior axillary folds, sacral region, penial shaft and glans penis, medial surfaces of elbows, knees and ankles.

Females:—Same as the above except that the genitals are not usually involved while the nipple regions are usually affected.

In both males and females, there may be a mild and generalised and follicular eruption due to the presence of nymphs and embryos in the follicles. In very severe cases of scabies every part of the body may be

affected by one or other of above or both of the eruptions but in general the skin of face and scalp and the back between the shoulders are usually unaffected.

Complications.—Associated with scabies are many due mainly to secondary infection by pyogenic organisms causing secondary infection (e.g.), (a) *Impetigo contagiosa*; (b) *ecthyma*; (c) *folliculitis*; and (d) *furunculosis*. Albuminuria which may give rise to oedema may also arise as a systemic complication, apart from glandular enlargement. Local treatment of scabies with Balsam of Peru may also cause albuminuria. In susceptible people and in over doses of the drug used, a secondary urticarial lesion may be caused in patients with sensitised skin and are of the classical complications. They are *dermatitis medica mentosa* due to over treatment of sulphur preparations, not infrequently in persons predisposed to eczema definite eczematization of the skin may occur and add a further complication.

Differential diagnosis.—*Pediculosis corporis*:—Here the skin of shoulders, chest and sacral region are peripherally affected. There are no burrows and pediculi and ova are usually easily found. The diagnostic sign in pediculosis is, presence of excoriation in the interscapular areas.

Pediculosis pubis:—This may affect either sex but the itching is confined almost entirely to the hairy regions of the genital organs and does not affect the glans penis. There is no nocturnal periodicity about the itching and the ova of the parasite are easily recognised, attached to the pubic hairs, among which the pediculus itself may be seen stationery or crawling on the skin.

Eczema or dermatitis:—Here the itching is not definitely common, burrows are absent and the face is likely to be involved and the members of the family may similarly be infected. There is considerable difficulty to distinguish one from another, if one is dealing with secondary infected, eczematized scabies and when dermatitis is caused by over treatment.

Papular urticaria in children:—This can be distinguished by its attacking one member of the family usually. Couple of lesions can be seen on the face in the absence of burrows. Absence of lesions on the faces is one of the differentiating points and in all cases finding of *acarus* is a useful diagnostic point.

Dermatitis herpetiformis:—Continuous itching—burrows not present,—face and shoulders affected. Disease is recurrent—*acarus* not found and eosinophilia present in blood.

Prognosis.—Usually good, though it takes time in cases where there are complications.

Treatment.—The aim of treatment is the destruction of all the *sarcoptes* and all their eggs infesting the skin, and the complete disinfection of all articles of clothing or bed clothing that might have become contaminated. One must also pay attention to the complication of scabies and one often comes across in the army hospitals, cases—complicated often with *ecthymatous* sores, boils and few cases of *impetigo* which delay the cure and keep patients even for a month instead of 4 days to a week on an average.

All bed clothes and underclothing used by the patient be disinfected, cotton or linen articles by boiling, woollen and flannels by soaking for

24 hours in a strong solution of Cyllin and washing later in cold water, watch-straps, boots, sandals, and other accessories of the patient be disinfected by Formalin vapour baths.

Take 4-gallon or 5-gallon tin and cover the inside bottom of the tin with a lint or cotton and keep a porcelain jar with 40% Formalin, $\frac{3}{4}$ ths filled at the centre of the bottom of tin and then keep the boots, etc. on the sides vertically and horizontally and then cover the tin tightly without allowing any external air to get in; keep the tin for 48 hours in the room and then open and remove the articles which have been disinfected by Formalin vapour bath.

Drug treatment.—Many medicines will cure scabies but none has dispossessed Sulphur from the pride of place.

Sulphur therapy.—The patient should have tub bath for 30 minutes, including 5 minutes for scrubbing the lesions, to break open the burrows by the free use of a nail brush. After the bath, the patient should dry himself with a soft towel and then Sulphur ointment consisting of Sulphur and Lanolin or Aracus oil be painted neck to the toes. 5% Sulphur to be rubbed on to the body in complicated cases and 10% Sulphur in uncomplicated cases, paying special attention to hands and feet, which should be painted during the day when they were washed off for their routine use with water. New clothes to be given and worn by the patient. The treatment should be carried for 3 consecutive days, without further change of linen. On the 4th day patient should have a hot water flush bath and new clothes put on, leaving back the old clothes for disinfection.

Minor complications should be attended to and Lotio Calominae and Zinc paste be applied in cases if there is any slight irritation and swelling. If there is any doubt of the cure of the disease, scabies, repeat the course again with care observing for any chemical, (Sulphur) dermatitis.

Beta nepthal.—Is also used in scabies in 2 to 5% strength in Lanolin or oil. It is a useful form of therapy in view of 5% Sulphur in complicated cases, and repeat dosage with Sulphur if thought to be undesirable for more than a week for any reason. It is a good parasiticide and does not find to secondary irritate pyococcal and eczematized secondary lesion.

This drug is not supplied in the army hospitals and our experience of it here is nil, though cases have been treated in civil life.

Sulphur emulsion.—This is one of the most successful preparations in the treatment and cure of scabies with less complications:—

R	Sulphur	...	2%
	Acid Salicylic	...	2½%
	Lanolin or Aracus oil	...	3 1

Out of the 1,400 cases treated in this centre during the year, 1,000 cases have been treated with Sulphur Emulsion with much more beneficial results than the other drugs used in other cases.

Benzyle benzoate.—This is a distillation product of Balsam of Peru and has recently had a great value in the treatment of scabies in emulsion form with water and Lanolin wax in 25% strength. It is extraordinarily useful in the treatment of uncomplicated cases of scabies in unit lines.

Routine therapy.—The patient goes to treatment room removing all clothes after a usual bath, and then painted from neck to toes with

emulsion and after it is dried a further painting is given. The patient then puts on the same clothes and goes back to work or duty and the next day morning repeat the treatment again and in the evening give a warm bath and put on new clothes.

It is always advisable and essential that patients are thoroughly treated by a competent person, and there is a great field for prevention and prophylaxis if a unit M.O. carries out regular unit inspection, segregation and quickly attends on infected individuals and enforces proper and regular methods of body clothing and general cleanliness of barracks as far as possible even in the field and, if necessary, evacuates complicated cases to a dermatological centre.

Benzyle benzoate solution.—To make 80 ozs. or 5 lbs. :—

- (1) Shared 528 grains of Lanette Wax SX.
- (2) Boil 40 ozs. of water.
- (3) Remove the water from the source of heat and add Lanette Wax.
- (4) Dissolve the water by gentle solution.
- (5) Cool to about 40-C (104°F.) and pour into a Winchester quiet bath.
- (6) Add 20 ozs. Benzyle Benzoate.
- (7) Shake bottle vigorously.
- (8) Add 20 ozs. of water and shake the bottle again. Excellent emulsion will be produced and there is no need for prolonged shaking.
- (9) After 24 hours, shake the bottle.

Cases treated with Benzyle Benzoate were not successfully cured and in very many such cases Sulphur therapy had to be repeated.

Sulphur 5% and 10% was beneficial in some cases and not so in some others.

There are other drugs like Turpentine 15 to 20% solution, and Neem oil with Camphor have been also tried in some cases, but opinion cannot be given now without trying them here.

On the whole Sulphur emulsion with proper baths and change of linen and disinfection of articles gave much more beneficial results than the other drugs used.

It is advisable that every case should be kept under observation in the units for 10-20 days after treatment to detect any recurrence, and report to the nearest dermatological centre for further treatment in such complications.

In conclusion, it is advisable that every M.O. in charge of units, and also the Nursing Staff in hospitals should know the technique, diagnosis and treatment of a case of scabies.

Emetine in Amoebiasis*

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EMETINE is one of the alkaloids isolated from Ipecacuanha or the Brazil root centuries ago. Ipecacuanha was used in Brazil as a remedy for dysentery. In 1817 PELLETIER isolated this alkaloid and in 1829 in collaboration with Magendie, it was first used in the treatment of dysentery and hepatitis. In 1912, ROGERS demonstrated that Emetine could be injected subcutaneously and that it acted as a specific in amoebic dysentery and amoebic hepatitis.

Emetine is a white amorphous substance which darkens on exposure to light, gradually assuming a yellow colour. Its halogen salts and nitrates are crystalline, the sulphate and the acetate are amorphous. The Hydrochloride which is largely used is a white crystalline powder and is easily soluble in water and alcohol.

Pharmacological action.—*Local action*:—Acts as an irritant rubefacient and pustulant on the skin. Subcutaneous or intramuscular injection causes oedema and hyperæmia of tissues and extensive capillary hæmorrhages in the muscle fibres round the site of injection. When given by the mouth in small doses e.g., $\frac{1}{2}$ gr., causes nausea and vomiting followed by looseness and griping. Prolonged use causes what is known as emetine diarrhœa.

Circulation:—It has a markedly toxic effect on heart. It depresses the excitability and conductivity of the heart muscle and produces slowing and dilatation of the heart. The heart becomes irregular, auricular and ventricular dissociation may be produced and death may occur from ventricular fibrillation, the heart stopping in diastole. After an intravenous injection there is an appreciable fall of blood pressure. Various types of cardiac irregularities are seen after a series of injections and a characteristic emetine pulse which is weak, rapid, and compressible is noted.

Nervous system:—Produces neuritis and general depression.

Respiratory system:—In toxic doses there is tendency to cause pulmonary congestion or hæmorrhagic pneumonic consolidation.

Absorption and excretion:—Absorbed from the mucus membrane and the subcutaneous tissue and eliminated by the gastro-intestinal tract and by the kidney.

Toxic effects of emetine.—It is cumulative. The most dangerous and important effect is on the heart in which it produces myocardial degenerative changes and alterations in conductivity and acute dilatation as the result of any undue effort. Severe diarrhœa, abdominal pain, tenesmus and toxic delirium have been reported from $\frac{1}{2}$ gr. doses used for 4 days. It may cause acute mental depression, neuritis, myositis, changes in the skin and nails.

How emetine acts.—ROGERS had found that Emetine was a very active drug which attacked and killed *E. histolytica* in dilutions of 1 in 100,000. Later work by DOBELL and others cast doubt on the specific action of Emetine on amoebæ in vivo, and the present opinion is that its action is

indirect. There is thus some difficulty in assigning the success of the treatment to a directly poisonous action on the parasite.

Discussion.—From the pharmacological action of this drug on circulation and from its toxic effect one can conclude that it is a dangerous drug and should be used cautiously. Emetine, in spite of being such a poisonous drug, is at present the mainstay of the treatment of amoebiasis. It is the most useful and the only treatment in cases of acute amoebic dysentery. The point is that this drug should be given carefully and only after the stool of the patients have been examined and vegetative or cyst of *Ent. histolytica* found. Some abuse this drug and use it too frequently when it is not needed. The most disastrous consequences may result from the ill-advised administration of Emetine. These results are the more frequent and serious on account of the dramatic early favourable effects on the patients who are being poisoned.

Mode of administration.—Directly a diagnosis of amoebic dysentery has been made, a course of Emetine should be started without delay. The patient should be kept strictly in bed and made to use the bed-pan. During the whole time a patient is taking Emetine, he should be advised strict rest in bed. To an adult six injections of one grain each should be given during the first six days, after which an interval of three to six days should be allowed and three injections in the second course will be sufficient. With Emetine, Bismuth Carb. should be given in doses of 2 drachm four hourly. The Bismuth may be reduced when the main symptoms like pain and frequent stools subside and discontinued altogether when the first course of Emetine is complete.

During Emetine injections, the patient should be given a light fluid diet consisting mainly of low-fat content milk or milk preparation.

CHOPRA and others have shown that an extract of Kurchi bark, an ancient Indian remedy for dysentery, has a specific action in amoebic dysentery though distinctly less than that of Emetine. In treating a case of acute attack, liquid extract of Kurchi in doses of a drachm thrice daily should be given for at least a month. During this course of treatment care should be taken to avoid constipation. Meat, fish, food with much roughage, excess of fat, coarse vegetables, spices, condiments and pickles, very hot and cold substances, strong tea and coffee and alcohol should be avoided. Sometimes it is seen that patients are so strictly kept under restricted diet, that they eventually suffer from specific dietary deficiencies making them weak more and more. The diet must contain the full quotas of calories suitable for a person at rest and also all the vitamins and essential minerals. "Safgoal Bhoonsie" or Ispaghula has been found a good remedy for avoiding constipation and is very light and pleasant to taste. In all chronic and acute cases of dysentery a table-spoonful of this should be taken daily at bed-time to regulate bowels, and first thing the next morning, the patient should be advised to take *daki* or bulgaricized milk. Care should be taken to keep the intestinal flora alkaline.

In chronic amoebic dysentery the action of Emetine is very disappointing and it is questionable whether this drug should be employed at all. Altogether a different course of treatment will have to be adopted for treating a chronic case in which various synthetic drugs will have to be employed. I do not propose to give a detailed description of the treatment of chronic amoebic dysentery in this article.

* Specially contributed to THE ANTISEPTIC.

Amœbic hepatitis and liver abscess.—Emetine is of the greatest value in hepatic complications of amœbic dysentery. In amœbic liver abscess, the combined treatment of Emetine administration with aspiration is a very great advance on the previous method of open operation. It has been seen many a time that few injections of Emetine alone has controlled and eventually cured large liver abscess of amœbic origin.

Tropical liver.—Due to continued errors in diet, alcohol drinking, lack of exercise, parasitic infection, a condition of the nature of hepatitis which is termed as "tropical liver" may result in which the symptoms would be as follows:—loss of appetite, dirty tongue, malaise, feeling of weight below the diaphragm and so on. Emetine, here too, has a remarkable effect. A course of three daily injections of Emetine gr. i is needed and the patient must be warned from taking any exercise during the course of treatment and a few days afterwards.

Emetine, so we have seen, is a very valuable alkaloid, but at the same time it is a very dangerous drug when it is abused.

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Functions of the Eye*

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I. Act of seeing.—The action of the eye is to receive the images of the outside world and transmit them to the mind. This action of the eye is automatic, that is, it requires no effort to see the object. One may desire or not to see the objects, but when the eyes are open they receive the images of the objects. The act of seeing is passive. Things are seen, just as they are felt or heard or tested without effort or volition on the part of the subject. The eye with normal sight never tries to see.

When the image of the object reaches the mind, the mind interprets it in its own way. The object may be one thing and the mind's imagination about it may be a different thing. For example, a rope is sometimes mistaken for a snake or mirage for water. Therefore we see only what we think or imagine. In short, our sight is our imagination, and when the imagination is perfect, the sight is perfect. The following illustration is very interesting :

Take a Snellen Test Card and hold it at a distance from your eyes at which your sight is fairly good. Look at the white centre or the large 'O' and compare the whiteness of the centre of 'O' with the whiteness of the rest of the card. You may do it readily, but if not, use a screen, that is, a card with a small hole in it. With that card, cover over the black part of the letter 'O' and note the white centre of the letter which is exposed by the opening in the screen. Remove the screen and observe that there is a change in the appearance of the white, which appears to be whiter

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when the black part of the letter is exposed. When the black part of the letter is covered with a screen, the centre of the 'O' is of the same whiteness as the rest of the card. It is, therefore, possible to demonstrate that you do not see the white centre of the 'O' whiter than the rest of the card, because you are seeing something that is not there. When you see something that is not there, you do not really see it, you only imagine it. The whiter you imagine the centre of the 'O', the better becomes the vision for the letter 'O', and when the vision of the letter 'O' improves, the vision of all the letters on the test card improves. The perfect imagination of the white centre of the 'O' means perfect imagination of the black, because you cannot imagine the white perfectly, without imagining the black perfectly. When the mind is at perfect rest, the eye does its function normally.

II. Binocular vision.—We have two eyes, and both receive the images of the same object, but see only one image. This is because two images are fused into one by the mind. This is called binocular vision. Binocular vision is due to the harmony of action of the two eyes and the mind.

III. Expression.—The eyes express the inner feelings, personal magnetism, physical diseases and beauty of the face. The expression of the normal eye is calm, quiet and intense.

IV. Movements of the eye-ball.—The eye-ball moves in various directions by the action of the outside muscles. Usually they make short, gentle and rapid movements unconsciously and movement is not conspicuous, but by direct examination with the Ophthalmoscope it can always be demonstrated. If the vision is normal these movements are extremely rapid and unaccompanied by any appearance of effort. The movements of an eye with imperfect sight, on the contrary, are slower and jerky, their excursions are wider.

Normally the eyeballs move with the movement of the head, and any movement of the eye-balls, consciously or unconsciously, in the opposite direction of the head causes strain.

V. Central fixation.—The retina has a point of most acute vision. This point is called the macula lutea. When the eye looks at an object or a letter on the test card, it sees that object or letter best which it regards; other letters appear less distinct. This action of seeing the part regarded best is performed by the macula lutea, and is called central fixation. When the sight is normal the part seen best is extremely small. It is an invariable symptom of all eye troubles that this central fixation is lost. When the eye possesses central fixation, it not only possesses perfect sight but it is perfectly at rest and can be used indefinitely without fatigue.

Function of eye-lids.—(1) They act as a cover and protector.

(2) They make short and gentle movements all the time when one is awake. This function is performed unconsciously whatever one may be doing. This natural habit of eye-lids is called blinking. When the sight is normal, blinking is short, rapid and gentle; but when the eye is under strain or defective, blinking is not normal—it is long, slow, jerky and with effort.

(3) Movements of the eye-lids help the eyeball to move and assist in the proper circulation of blood.

(4) They keep the surface of the eyeball covered with a thin layer of tears, thus keeping the surface of the eye moist.

Normal eye.—1. An eye with perfect normal sight is rare; but for practical work a standard has been fixed. When the sight is normal for distance, one reads twenty feet line on the Snellen Eye Test Card at twenty feet distance, and it is recorded as 20/20. When the sight is normal for near work, one reads the fine print at nine to twelve inches.

2. The normal eye sees at small letter of the test card to be of the same size at 20 ft. as it does at one foot. The white centres of the letters on the test card are imagined to be whiter than other parts of the card.

3. When the sight is perfect, the letters of the test card seem to be perfectly black and perfectly distinct. The eye never tries to see them. The eye does not suffer from pain, discomfort or fatigue. The person is unconscious of his eyes.

4. When the normal eye regards a particular letter on the test card, the letter is seen better and blacker than all the rest, and it seems as if the letter makes a slow, short and easy swing.

5. When a person with normal sight closes the eyes and covers them with the palms of his hands avoiding any pressure upon the eye-balls, he experiences a perfect black before the eyes if he is in a perfectly dark room. This is because the retina of the eye reacts only to light and when there is no light it stops its function and one sees all perfectly black.

Cause and Prevention of Increasing Incidence of Secondary Infection in the Surgical Ward*

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I. Of course, the increasing incidence of secondary infection is direct reflection on the M.O. in-charge of the ward, and the management of the ward in general, but the causation may not be strictly restricted to the hospital itself and major part of it may depend upon the *transport facilities*, because the risk of serious post-traumatic infection is *directly proportional to the time interval* between the receipt of the injury and the surgical attention. Hence the development of the secondary infection may directly be responsible on the *time factor* and how far proper surgical attention was paid to the patient at the time of acceptance of the wound.

II. If we exclude the time factor, the cause of infection may be inside the hospital and its management and a keen observation and strict adherence to the fundamental principles of sterilisation and asepsis may eliminate all those factors. Of course the first and most important factor is to *attend with proper surgical skill* which includes:—

(1) *Cleansing*:—Thorough cleansing at the sight of the wound has been proved to be an essential of success. Choice of cleansing agents is also important, but much may depend upon the availability of the choicest

drugs. Simple Sodi Coconut or Sodi Recinoleat soap is sometimes more efficient than many of the non-caustic antiseptics, though staphylococcus is slightly resistant to these soaps. Ordinary hot *saline-water* cleansing and followed by *Sulphonamide* dusting has its place in cleansing. If much of fatty tissue is involved and thorough cleansing becomes a task "Ether" may play its part. Lotio Acriflavin 1 in 10,000 is time honoured. Whatever antiseptic or cleansing may be applied, the secret of the success lies in the thoroughness.

(2) *Excision of wounds*:—Sometimes, without proper excision of the wounds, they may be enclosed in plaster which may give rise to serious infection. No wound should be enclosed in plaster without proper excision. Excision should extend from deep to deeper to remove all dead or damaged tissue. Of course peritoneum should never be excised but those of muscles or fascia must be radical. (J. TRENTA, M.D.)

(3) *Drainage for recent wounds*:—Much importance should be laid on the provision of proper drainage to the recent wounds which may very well be accomplished by introducing dry sterile gauze of a very fine mesh. Immobilisation in Plaster of Paris is really the last stage of treatment of wounds after the above mentioned processes are properly satisfied and they actually mean the *reception of case*.

The next stage comes in the treatment by chemicals and Sulphonamide stands undoubtedly first. Absorption of Sulphonamide used locally is most satisfactory for prevention of infection in contaminated wounds for greater concentration at the site of potential infection. In case of abdominal wounds, intraperitoneal dusting or sprinkling is quite satisfactory. A very useful combination of Sulphonamide for moist application is Sulphonamide 30%, Cod-liver oil 60% and Bees Wax 10%.

Hospital dust.—At times it is quite possible that the infective organisms may remain in the hospital surroundings as CRUICKSHANK and THOMAS have demonstrated the presence of strepto hæmolyticus in hospital dust. WRIGHT and SHONE have found C. B. diphtheriæ in the isolation wards. Hence the hospital dust may play a very important part in infecting the wounds but this dust may be made innocuous by *dust laying oil*.

Treatment of bed-clothes with Liq. Paraffin reduces 95% of the infection. A very substantial step may be taken against hospital dust by not allowing to *make the beds* or *sweeping the floor* at least an hour before dressing the patients.

Nose and throat:—Unless mask is applied at the time of dressing the normal inhabitants of the nose (strepto) and throat (staphylo) may infect the wounds. This infection may be caused by the patients themselves in spite of the doctors, nurses or the dressers being careful.

Fingers:—One must be very careful—otherwise it is very likely that the wound may be infected by the infected fingers of the dresser. Either the fingers should be cleaned before every dressing or *rubber gloves may be used*. Here again, sterilisation of rubber gloves may sometimes be imperfect, but W. J. STUART, Surgeon, Royal Infirmary, Edinburgh advocates that the sterilisation by steam for 20 minutes under 5-7 lbs. of pressure is one of the best methods.

Care of the discharge (from patient) is very essential—all soiled dressings must be received in a bucket, preferably half-filled with some antiseptic lotions (1 in 20 Acid Carbolie) and again, of the *bed clothes*. It is

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not an over-statement to say that the bed-clothes of a patient suffering from a wound discharging hæmolytic-strepto may be just as dangerous as that from a case of scarlet fever but can be avoided by instrumental dressing or putting on gloves and properly disinfecting the clothes before further infection.

Baths:—It is quite possible that sometimes infection may spread from hospital baths which have already been used by patients having infected wounds. But the baths can easily be rendered sterile by scrubbing with 2 oz. of undiluted Lysol—though the crevices on the baths must be re-enamelled.

Plasters:—There may be more incidence of serious infection if plasters are not removed when soaked with pus, as the soaked outer surface might encourage bacterial growth. Incorporation of antiseptics inside the plaster is valueless. It must be a standing order to remove all plasters in the plaster-room but not inside the ward.

Instruments:—It is a popular fallacy that boiling blunts instruments provided the edges (sharp) are protected against bumping by wrapping in lint—and it is because of the simple process of sterilisation of instruments is sometimes not taken into consideration and the instruments are left unsterile or improperly sterile by some complicated procedures—which may not be thoroughly done. One of the simplest and perfect methods of sterilisation is by adding 2% Soda to water and boiling for 2 minutes—which is even capable of killing spore-bearing organisms. The use of spirit for keeping hollow needles and syringes is practically useless as the maximum effectiveness of spirit is at 70% dilution which will obviously rust the needle.

Malnutrition or defective metabolism:—May play a great part in keeping the infective condition of the wounds more potent though all surgical care is undertaken. Tissue vitality should be considered first to free the tissues from infection. Less nutrition, less vitality in the tissues—less chance of cure and even recurrence of infection in a debilitated or devitalised patient is quite possible. So all patients should be guarded against malnutrition.

Cheiro Pompholyx*

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Synonym.—Dysidrosis.

Definition.—It is a deep-seated, vesicular and bulbous eruption of the skin affecting the soles and palms chiefly.

Etiology.—1. Distribution—tropical Africa and India.

2. Season—summer.

3. Predisposing causes: (a) Exposure to sun; (b) emotional stress; (c) eczema; (d) prone to those whose hands perspire freely; (e) toxic eruption due to ringworm of toes; and (f) external irritants (after handling exploded aeroplane bombs).

Pathology.—Formerly it was thought that the condition was due to obstruction of the sweat ducts leading to the formation of the retention-cysts.

The sweat is retained in the form of cysts (subcutaneous vesicles) which are hardly larger than the boiled sago grains. As the superficial epidermis is cast off, these cysts reach the surface which cause scratching and ultimately irritation of the palms. These vesicles are usually deep-seated and appear like boiled sago grains which do not rupture first but later become purulent. The bullæ (into which these vesicles run to dry up into crusts) when removed reveal a surface which is red and exquisitely tender. Some vesicles which coalesce into bullæ rarely rupture but their contents get absorbed and exfoliation occurs.

The recent theory, however, is that exposure to the sun makes the skin more sodden due to excessive sweating and renders it susceptible to the attack of external irritants. Thus the secretion in the vesicles are believed to be inflammatory exudate and not retained sweat. This view is further supported by the fact that the condition ranks among the occupational dermatitis cases.

Clinical picture.—1. Onset—sudden (feet being affected simultaneously).

2. Site—Interdigital spaces of the hand, planter aspect of the feet, palmar and dorsal surfaces. Rarely forehead, chest and back.

3. Eruptions—deep-seated like boiled sago grains which cause great irritation of the palms.

Diagnostic points.—1. Appears in summer.

2. Boiled sago grains-like eruptions.

3. Sensitive skin.

4. Limited to hands and feet; unite to form bullæ which dry up.

5. Tendency to recovery.

6. Repeated recurrences.

Course.—The scratching releases the retained sweat and the condition improves rapidly though the desquamation lasts for several days. Recurrences are usual.

Treatment.—1. *General:*—(a) Rest in bed.

(b) Daily bath with Resorcin soap.

(c) Frequent cleaning and hot fomentations over the affected areas.

(d) Cotton gloves and socks to wear.

(e) Attend to general health.

(f) Removal of septic focii, e.g., pyorrhœa alveolaris and the tonsils.

(g) Avoid exercise, friction, perspiration, strong sunlight and introspection of fear.

2. *Medicinal:*—(a) To induce sleep and relieve itching—

R	Peacock's Bromide	...	3 p
	Chloral Hydras	...	gr. xv
	Syrup Simplex	...	3 i
	Aqua Mentha Pip ad	...	3 i

Mft. Mist. one:—one dose thrice daily after food.

(b) For intestinal fermentation—

R	Salol	...	gr. x
	Icthyol	...	℥ ii
	Menthol	...	gr. i

Pt. pulv. put up in capsules—one capsule thrice daily to be swallowed with water.

(c) To keep off constipation by—Agarol or Cremaffin—2 teaspoonfuls in a cup of lukewarm milk at bedtime daily.

*Specially contributed to THE ANTISEPTIC.

3. *Local*—(a) Paint the area twice daily with—

(i) Cheate's Malachite green.

R 2% Malachite green in 80% alcohol } equal parts.
 2% Mercuric chloride in 80% alcohol }

(ii) R Cignolin ... gr. x
 Chloroform Meth ad ... 3 i

(b) Apply any of the following lotions—

(i) R Calaminae ... 3 p }
 Zinc Oxide ... gr. xx } thrice daily.
 Glycerine ... 3 p
 Liq. Calcis ... 3 p

(ii) R Glycerinum Plumbi Subacetat ... 3 p
 Glycerine ... 3 p
 Aqua ad ... 3 p

(c) Apply any of the following ointments—

(i) Hg. Perchloride ... gr. i p
 Phenolis ... gr. xx
 Glycerine ... ℥ x
 Olive oil ... ℥ xl
 Ung. Zinci ... 3 p

(ii) Cignolin ... gr. v
 Icthyol ... 3 p
 Paraff. Moll ... 3 i

(iii) Liq. Carbonis detergens ... 3 p
 Cignolin ... gr. i p
 Acid Salicylic ... gr. iii
 Paraff. Moll ... 3 p

(iv) Cignolin ... gr. iv
 Zinc Oxide ... 3 p
 Olive oil ... ad 3 p

(v) Bismuth Subnitrates ... 3 p
 Paraff Duri ... 3 i p
 Paraff. Moll. ... ad 3 vii p

(vi) Calaminal ... gr. 35
 Liq. Calcis ... 3 p
 Olive oil ... 3 p

(vii) Cadojel (coal tar preparation) ... gm. 1
 Benzol ... gm. 10
 Cignolin ... gm. 0.1 to 0.2

(viii) Ol. Cadinum (deod.) ... ℥ xl
 Cignolin ... gr. iv
 Benzol Rect. ad ... 3 i

(ix) Coal tar ... 3 Parts
 Powdered charcoal ... 1 "
 Zinc Oxide ... 4 "
 Lanolin or Vaseline ... 12 "

4. *Physical* :—1/3rd of a Sabourand Pastille doses of X-rays repeated 3 to 4 times at weekly intervals locally.

5. *Diet* :—(i) Liberal nourishing diet: light diet, especially milk.
 (ii) Avoid alcohol, strong coffee and tea.

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Croup*

MAHADEV CHOUDHURI, M.B.,
 C.M.O., Pal-Lahara State, (E.S.A.)

It is a loud inspiratory crowing sound (inspiratory stridor:—stridor means harsh sound) due to obstruction of the air-entry through the larynx either due to the spasm of the laryngeal muscles or due to the oedema glottis accompanied by cyanosis and dyspnoea. It may be also caused mechanically as by laryngeal polyp or by a foreign body obstructing the rima glottis. Sometimes bilateral abductor paralysis may cause such an inspiratory crowing sound. It can be conveniently classified thus:—

- I. Inflammatory.**—(1) Acute simple laryngitis - cause—oedema glottis.
 (2) Membranous laryngitis - (diphtheritic) - cause - oedema glottis and mechanical obstruction by the formation of membrane.
- II. Spasmodic.**—(1) Laryngismus stridulus - cause—spasm of the laryngeal muscles.
 (2) Laryngitis stridulosa - cause—spasm of the laryngeal muscles.
- III. Mechanical observations.**—(1) Congenital laryngeal stridor - cause—congenital narrowing of the rima glottis.
 (2) Laryngeal polyp - cause—mechanical obstruction.
 (3) F.B. larynx - cause—mechanical obstruction.
 (4) Pressure on the larynx and trachea:—as in

(a) Retro-pharyngeal abscess—on larynx.	
(b) Congenital goitre.	
(c) Enlarged thymus.	} on trachea.
(d) Enlarged tubercular mediastinal gland.	

It is not a disease in itself but a sign, which may signify some underlying grave pathological disorder of infancy and childhood. It is alarming both to the attending physician and the relatives of the patient. Sometimes it becomes an emergency surgical case and necessitates tracheotomy to save the child.

Acute simple laryngitis.—With signs of acute naso-pharyngeal catarrh of the child, there are irritating cough, hoarseness of the voice and rise of temperature from 102°F. to 104°F. One night the child develops inspiratory crowing sound with cyanosis and dyspnoea and there is retraction of chest wall with each inspiration. The laryngeal obstruction is due to the swelling and oedema of the glottis with collection of thick secretion on it due to inflammation of the larynx.

TREATMENT.—1. Bowel should be moved by Calomel and Epsom Salt.

2. To relieve cough—

(a) Tinct. Opii Camphorata	...	℥ v
Tinct. Ipecac	...	℥ ii
Syr. Tolu et Bhakas	...	℥ v
Syr. Pruni Virginis	...	℥ iii
Glycerine	...	℥ v
Aq. ad	...	3 i

to be taken 6 hourly.

(b) Tr. Benzoin Co.	...	3 i	} Steam inhalation from a kettle containing the above.
Aqua	...	Pint i	

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3. To relieve laryngeal obstruction - the following steps should be taken in order :—

(a) Hot fomentation over the larynx externally.

(b) Inj. Atrophine Sulph. 1/400 gr. I.M.

(c) Cocaine Spray on the glottis and crucifixion.

(d) If all the above methods fail or there is much suffocation threatening impending death of the child, tracheotomy should be performed without delay.

Membranous laryngitis.—(Laryngeal diphtheria)—It is more common in children than in infants and of grave prognosis.

It may be the spread of the infection from the faucial diphtheria - when greyish-white patch is found on the fauces. Then the diagnosis presents no difficulty.

But often no membrane is seen on the fauces, when provisional diagnosis of laryngeal diphtheria is to be made depending on the following symptoms:—Sore throat, irritating cough, high toxæmia with high temperature, increasing pulse and respiration, and cardiac irregularities - provided the retropharyngeal abscess with visible bulging of the posterior pharyngeal wall which can be easily felt by the tip of the finger, is excluded. Anti-diphtheritic treatment will be at once started before the bacteriological diagnosis of the throat swab is made.

TREATMENT.—1. Generally big doses of anti-diphtheritic serum from 40,000 to 60,000 units are required, depending on the severity of symptoms.

2. Steam inhalation and hot fomentation over the throat to soothe the irritating cough and sore throat.

3. A dose of Rectal Bromide to control the restlessness and difficult respiration.

4. On increasing dyspnoea and cyanosis, tracheotomy to be performed immediately.

5. Other complications should be treated accordingly.

Laryngismus stridulus —(spasmophilia)—This is due to the spasmodic closure of the glottis and is a part of general spasmophilia - so laryngo-spasm, corpo-pedal spasm of tetany and general convulsions may be associated, and often it is found in rachitic children under 3 years, but common between the 4th and 12th month of life,—though a few children get such attack in dentition and intestinal worms.

The infant gets the sudden attack many times a day lasting for a few seconds when the child becomes dyspnoeic and cyanosed with inspiratory crowing sound.

TREATMENT.—Antirachitic treatment with vitamin 'D' with Calcium or irradiated Ergosterol will improve the condition.

As the laryngo-spasm lasts for a few seconds, no injection of Atrophine or Chloroform on lint applied on face is not required.

Laryngitis stridulosa.—Some authorities are of opinion that it is not a separate clinical entity and it is caused by the œdema of the glottis with a

thick collection of secretion on it due to acute simple laryngitis as noted above.

But this is not so; it is due to the spasm of the laryngeal muscles and is found in a child of nervous and excitable disposition between one and 10 years when there is no laryngitis, though slight fever and common cold in the child may be found.

This occurs mostly at night when a healthy child suddenly wakes up and struggles for breath. The attack is with dyspnoea, cyanosis, inspiratory stridor and lasts for a few minutes to two hours. After the attack passes away the child falls asleep and in the next morning nothing but slight bronchitis is found in the child.

TREATMENT.—During the attack:—(1) Hot fomentation over the throat.

(2) Tr. Ipecac. dr. 1. to produce vomiting which will relieve the spasm.

Prevention of attack.—As it is mainly due to nervous irritability of the laryngeal muscles, the following sedatives are helpful at bed-time.

Luminal gr. 1/4, Chloral gr. 3 or Phenozone gr. 5 or the following mixture :—

Phenozone	...	gr. ii	} at bed-time.
Sodi Brom.	...	gr. iii	
Vinum Ipecac	...	℥ iii	
Syr. Tolu et Bhakas	...	℥ xv	
Aqua ad	...	3 ii	

Mechanical.—1. *Congenital laryngeal stridor* :—This type of inspiratory stridor is due to the congenital narrowing of the rima glottis owing to the approximation of the aryteno-epiglottidian folds, so it will be noticed from birth.

TREATMENT.—No treatment will improve the condition immediately. As the child grows, necessary correction of the deformity takes place itself—only coughs and cold should be prevented by necessary measures as they aggravate the dyspnoea.

2. *Laryngeal polyp* :—Pedunculated papilloma may arise from the vocal cords of infants. It will obstruct the air passage, and cause hoarseness of voice, stridulous breathing, shortness of breath for a long time, which increase as the growths enlarge.

Diagnosis should be made by the history of gradual aggravation of the symptoms and by laryngoscopic examination.

TREATMENT.—Surgical removal of the growth.

3. *F. B. in the larynx* :—More common in children. Partial occlusion of the air passage will cause inspiratory stridor, breathlessness and cyanosis. Complete obstruction will cause immediate death until it is immediately relieved.

Rarer causes of stridor due to pressure on the larynx and trachea, as mentioned above, of which retropharyngeal abscess can be easily diagnosed by examining the post-pharyngeal wall when a bulging is seen and can be easily felt by the tip of the finger in a child with high temperature, breathlessness, cyanosis and other signs of toxæmia.

Paralytic.—Bilateral abductor paralysis may cause stridor as seen in hysteria which is functional.

TREATMENT:—As of hysteria.

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Senior Hony. M.O. in V.D., Medical College Hospital, Patna.

It has been realised by workers with vitamin that a diseased organism, owing to increased metabolism, utilises much more vitamin B, than one in good health, in order to assist the body in combating the infection and also counter the toxic effects of Arsphenamine in antisyphilitic treatment with arsenic.

The author has been carrying on investigation for the last eight years with the different adjuvants in arsenotherapy and Arseno-Bismuth-Mercury therapy for syphilis. Vitamin C subnutrition has been observed by the author in syphilitics and a further diminution of blood vitamin C has been estimated by the author in syphilitics undergoing treatment with heavy metals. Since blood vitamin C is the normal detoxicating agent in the body, vitamin C nutrition has been maintained in syphilitics undergoing treatment by oral and parenteral administration of vitamin C. But it has further been observed that some of these cases do develop liver damage as manifested by the development of jaundice which could be controlled by the administration of liver extract injections. In a large number of cases showing subclinical pallegria developing either during the course of anti-syphilotherapy with heavy metals or after have been treated with Vitamin B complex orally very successfully, it could be possible in some of the cases to continue the heavy metal therapy for syphilis in those developing intoxication.

The author has been using as a routine in mucocutaneous syphilis vitamin B complex together with heavy metal therapy or penicillin therapy and is convinced about the value of vitamin B complex. TISLOWITZ (1937) has observed that vitamin B has a restraining action on inflammation and has an influence on liver function which play an important part in the infection with *Treponema pallida*. BICKNELL and PRESSCOT (1942) think that vitamin B, relieves some of the toxic effects of arseno therapy.

Vitamin B complex should be given orally or intramuscularly during the course of treatment of syphilitics by either Arsenic, Bismuth, Mercury or Penicillin therapy.

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1. K. D. Lahiri—"Penicillin in V.D.", 1946, Himalaya Publications, Patna (Bihar).
2. K. D. Lahiri—"Common Skin and V. D. of India", 1945, U. N. Dhar & Sons, Ltd., College Street, Calcutta.

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*Santon Gilmour (1937) *Tubercle*, vol. 19, p. 105).

A rare case—admittedly: yet not without some bearing on problems in everyday practice.

For what can reasonably be concluded about the attributes of an antiseptic that could be so used, for so long, and with such a

result? Obviously it must have been highly bactericidal; it must have been non-toxic, even at full strength and even on prolonged contact with the pleura and the gastro-intestinal mucous membrane; it must also have been non-irritant and non-corrosive, for otherwise it would have increased the vulnerability of the tissues to the infection and inhibited the natural processes of healing.

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Prognosis of Lobar Pneumonia*

KISHORI LAL SACHAR, L.M.P. (C.P.),
M. O. in-charge Dispensary, Ahar, District Karnal, The Punjab.

WHENEVER a medical man is called upon to attend a case of lobar pneumonia the attendants of the patient are very impatient to know as to whether or not the patient will survive. So it becomes a difficult problem for a doctor to say definitely as regards the prognosis of a certain case. Never be too optimistic when all seems right, for a favourable case may take a serious turn in a short time and *vice versa*. So the prognosis of pneumonia is the most uncertain of diseases. However by careful examination and watching the progress of the case we can arrive at a definite prognosis. Observation of the case—

I. Examination of the heart.—1. *The initial stage:*—The first sound is well maintained and the second pulmonary sound may be accentuated.

2. *In severe attack:*—The first sound becomes feeble, rate more rapid, and accentuation of the second pulmonary sound.

3. *In grave cases:*—The accentuation of the second sound disappears. The pulse becomes quick, small and feeble. Signs of dilatation of the right ventricle.

II. Examination of the lungs.—Both lungs, affected and unaffected, must be examined. If the breath sounds, on the unaffected lung, are exaggerated but normal in character, this shows that it is responding well to the strain. If, on the other hand, the expiratory sound is prolonged, it shows that it is not withstanding the strain as it should. Rales fine or coarse over the non-pneumonic portion of the same or other lung are due to compensatory hyperæmia as double-pneumonia is rare. The prognosis in double-pneumonia is worse. Further in central pneumonia the physical signs appear late. So the prognosis is uncertain. The prognosis in massive pneumonia, in which the exudation extends into the bronchioles, is worse. The prognosis in apical pneumonia where meningitis is likely to develop earlier is not good.

III. Examination of the tongue.—The tongue is furred and in more severe cases becomes dry brown and cracked and also do the teeth. The condition of the mouth is a valuable guide as to the general condition of the patient. So long as the tongue and teeth remain moist the outlook is favourable.

IV. Digestive system.—Continued digestive disturbance—diarrhoea near or with the crisis may prove fatal especially in the aged:

V. Sleep.—If the patient does not get satisfactory sleep or having restlessness, insomnia or early delirium the prognosis is serious. Pneumonia patient never wants to sit up. If he does it is a sure sign of some complication such as pericarditis etc.

The prognosis is worse when complication or complications such as pleurisy, empyema, abscess of the lung, endocarditis, pericarditis, peritonitis, etc. set in.

Further poor health, debilitating conditions, alcoholism, heart diseases, nephritis, diabetes, etc., lead to bad prognosis.

* Specially contributed to THE ANTISEPTIC.

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To recapitulate further, the unfavourable signs are —

- (1) Cyanosed face and appearance of distress.
- (2) Temperature over 105°F., especially in the later stages.
- (3) Respiration over 45 per minute.
- (4) Signs of setting in of auricular fibrillation.
- (5) Feeble cough and absence of expectoration.
- (6) Insomnia and more or less continuous delirium and meningitis.
- (7) Pulse respiration ratio 2:1.
- (8) Tongue dry brown and cracked.
- (9) Profound toxæmia.
- (10) Meteorism.

So repeated examinations and watching the progress of the case are essential. The above are some main points to be given due consideration while announcing a definite prognosis.

In the end I must apologise to you all for selecting so common a subject in which almost all of you are very familiar.

Cases and Comments

Magical Treatment of two Psycho-Neurotic Cases

KAMAL KRISHNA CHATTERJEE, L.M.F.,
M.O., Garh Lakhanpur, Surguja State, E.S.A.

Case 1.—On 25-8-'46 I was called in to see a case of acute pain inside the throat and the patient at the point of collapse due to starvation. The patient was a Mohammedan, male, aged 50 years. He was complaining that a large abscess was going to be formed inside the throat. Due to extreme pain he could not swallow solid food and was under starvation for 12 days. From three days back he could not swallow even any liquid food due to excruciating pain.

On physical examination of the case I found him extremely anæmic and restless. Nothing was detected inside or outside the throat on careful examination. The patient could not speak clearly to make me understand the trouble he was suffering from. From the absence of any positive sign for the pain and the past history revealed from his relatives I came to the conclusion that the patient is a neurotic. To gain his confidence I confirmed the idea of the patient and told him that by a single dose of medicine the pain will subside and deglutition will be possible. Some coloured mixture was then given which he could swallow. After half an hour a cup of hot tea was given. Next milk was given twice that day. Next day he was given rice gruel which he could swallow without any pain. From that day the pain subsided completely. The said mixture (coloured water) was continued for a week. Now he is quite healthy both physically and mentally.

Case 2.—A Hindu boy aged 18 years having convulsive seizures often and on and almost daily for a year. He was brought to me for treatment in the early part of October, 1946, after trying all possible quack remedies during the year of his illness.

On physical examination of the case not abnormality was found in him except severe mental depression. From the past history in relation to the case I came to learn that this ailment started after mental shock. (He was married a year ago and soon after marriage the wife of the patient was separated from him against his will). Now on the basis of his mental worry I impressed on him the idea that by a single injection his disease will pass off and afterwards his wife will be brought to him for nursing. The patient was given an injection of 2 c.c. re-distilled water and from that day the convulsive seizures which were coming so frequently stopped completely. He was given some mixtures afterwards only to confirm his idea that he was suffering from some serious disease. Now he is quite healthy both physically and mentally and is performing his normal duties. (After he was cured he did not persist upon bringing his wife, hence the idea was dropped.)

I have treated many psycho-neurotic cases in the past but in these two cases the notable interest is that they were cured so abruptly without any particular medicine and it seemed as if they were mesmerized. I am publishing this note with the intention that my professional brethren may throw further light in the matter.

Non-Specific Dermatoses

(Climacteric)

SUBODH CHANDRA SANYAL, D.Sc., M.B.,
Nator, Rajshahi, Bengal.

MUCH has been said about the causation of non-specific dermatoses and much awaits further discovery. I crave the pardon of the profession for my audacity in submitting my observations on the use of Endocrines in the following case.

A Hindu female aged about 52 years came to me with a big circumscribed œdematous swelling of the skin and subcutaneous tissues at the nape of the neck, covering the whole of the occipital area. It was extremely painful. She complained that her monthly period stopped some eight years back. On the third year of her menopause one fine morning she found a big swelling on the right hypocondriac region, which was also painful. Thinking it to be an abscess, she applied some country medicine. To her utter surprise the swelling disappeared after five days. Three months after, she got another big swelling on her back which disappeared by applying the same medicine, and now she is getting the same sort of swelling all over her body one after another.

On examining her health nothing abnormal was found. She had no history of any specific disease; but made some vague complaints and of anorexia which are quite natural at this age. Bowels movement regular.

I started injections of Calcium and Iodine I.M. 5 cc. every alternate day and prescribed Mist. Pot. Iodide et Sodisalicylas one ounce thrice daily. These were continued for 15 days. Of course, she got some relief, but the sudden appearance of the swellings did not stop at all. On the 16th day when she came to me again I changed the line of treatment and

advised Stilboesterol injections twice in a week. Eight injections of Stilboesterol were given and she is keeping quite well since last three months.

In conclusion, I may say here that at the menopause, the disturbance of the secretory glands took place, which caused the vasomotor changes, under the influence of which the disturbance of capillary permeability and perhaps of capillary tone caused these sorts of dermatoses which I may call angio-neurotic oedema.

A Case of Infantile Hepatic Cirrhosis

RAJMAL NANDECHA, L.M.P. (C.P.),

Asst. Health Officer, Resy Area, Indore.

History.—My son named Devendra, aged one year, started getting irregular fever in the month of September 1945, and, constipation, but occasional loose motions, frequently green; general condition was normal. His diet was diluted cow's milk sweetened with glucose, as there was no mother's milk, his mother being weak.

He was put on Quinine and alterative powder to move his bowel. Fever and bowels were responding to these drugs.

After about a month my wife told me that the child cries at the time of defaecation and there was blood in the stool.

On examination of the stool, blood was seen bright red and stool was hard.

Examination of the child, to my surprise frightened me when I found that his liver was enlarged nearly upto umbilicus. Spleen could not be palpated.

Treatment.—He was immediately put on—

- | | | |
|------------------|-----|--------|
| (1) Zinc Oxide | ... | gr. ii |
| Calcii Gluconate | ... | gr. v |
| Hydrag c Creta | ... | gr. ½ |
| Pulv. Rhei | ... | gr. i |
| Sodii Bicarb. | ... | gr. v |

Mft. Pulv. such 3. One t. i. d.

- (2) Redoxon Tab. one t.i.d.

- (3) Adexolin and Kapilin Liquid 5 mins. of each 3 times a day.

These medicines were continued for 3-4 months and when no improvement was noticed, my wife compelled me to consult some of my professional brother, who advised me to try Liquid Hepato (Navratan) and he gave me some Ayurvedic mixture. These were given for 2-3 months. In the beginning it showed slight improvement, but later on no improvement was noticed. His liver was the same and now his stools were ash-coloured with frequent passing of blood and occasionally epistaxis. His general condition was now going from bad to worse.

Another prominent physician was then consulted who gave him the following:—

- | | | |
|------------------|-----|--------|
| (1) Zinc Oxide | ... | gr. ii |
| Calcii Gluconate | ... | gr. v |
| Salol | ... | gr. i |

Mft. Pulv. one t.d.s.

- (2) Yeast Tab. 1
Haliverol 5 drops } aa 3 times a day.
Beplex Tab. 1

- (3) Injection of Liver Extract ½ c.c. I.M. twice a week and
Calci-Ostelin ½ on alternate days.

Diet:—Lactic acid milk and fruit juice.

These were given for 3-4 months with slight change in general condition, but epistaxis and stools having blood were still frequent and his liver was making no change and now his abdomen began showing signs of ascitis with prominent views on it. Later some one told me to try 'Jammi's Liver Cure Complicated'. I, having tried all the medicines, was tempted to use it, but this too did not help and the child developed jaundice and then on 9th October 1946 got high temperature which came down in night and on 10th October 1946, he breathed his last.

POINTS:—(1) How in such a short time of one month he could develop such enlargement of liver. (2) Exact cause is not yet known. (3) In spite of vigorous treatment and every care no improvement was noticed.

A Case of Acute Emetine Poisoning

CAPT. A. L. WAHI, I.A.M.C.,

Wahi Street, Khushab, The Punjab.

A HINDU female, about 60, came under my medical care on 17-10-'46. She complained of occasional frequency of stools with passage of mucus and on certain occasions slight quantity of blood—duration 16 years.

C. O. E.—Patient was of thin build and slightly anæmic. Right iliac fossa was tender and descending colon was also palpable and tender. No pain or tenderness in the hepatic region.

Other systems:—N.A.D.

She was clinically diagnosed to be a case of chronic amoebiasis and I made up my mind to treat her with Emetine Hydrochlor I. M., followed by E.B.I. by mouth and then Carbarsone and Enterovioform.

On 18-10-'46 morning I gave her Emetine Hydrochlor 1 gr. I. M. By the evening she complained of slight itching on the palms of hands and slight soreness of the tongue. On examination the tongue appeared somewhat hyperæmic but nothing abnormal could be seen on the hands. There were no further developments till next morning, so I gave her another 1 gr. of Emetine Hydrochlor I.M. By the evening the patient had a rise of temperature to 100°F. and her pulse rate was 120 p.m. She had severe itching of the palms of hands and soles of feet. The palms of hands appeared hyperæmic. The glossitis also became worse and the patient became unable to swallow any solid or semi-solid food.

On 20-10-'46 morning small vesicles could be seen on the palms of hands, the tongue was covered with white crust and the margins were very red. I gave her 10 c.c. of Calcium (Sandoz) I.V. By the evening she had urticaria all over the body more marked on face and neck and it caused her severe itching.

On 21-10-'46 I gave her Adrenalin 1 c.c. S.C. Her urticaria disappeared for a day and then again reappeared.

On 22-10-'46 I put her on Calcium Lactate by mouth 40 grs. daily, divided in 4 doses and continued for another 2 days. Along with this I used Boroglycerine paint for glossitis.

The response was not satisfactory, so I again gave her Calcium I.V. this time using Calcibronat Sandoz 10 c.c. each day on 25th and 26th of October 1946.

By 25th the vesicles on the hands coalesced and formed big blisters which were snipped aseptically and clear serous fluid came out. After this she was given Potassium Permanganate soaks for hands and feet.

On 26th afternoon her temperature went upto 103° F. with a rigor and came down to 99° F. on 27th morning. She complained of severe pruritis of hands and feet as a result of which she felt very restless. She also had urticaria on face and neck. I called in another doctor who suggested I.M. Milk injection for urticaria. She was given 6 c.c. boiled milk by I.M. injection. In the evening her temperature went up to 104° F. and came down to 101° F. on 28th morning. Her urticaria improved with this. Thinking the rise in temperature on 26th and partly on 27th was due to some underlying malarial infection I put her on Quinine by mouth for 6 days. Her temperature came down to normal on 29th. She was given another 10 c.c. of milk I.M. on 1-11-'46 after which most of the itching disappeared. By now scabs had formed on her palms of hands and soles of feet.

On 5-11-'46 the day of writing, her only symptoms are pruritis of hands and feet which I expect would disappear as the scabs separate off.

Conclusions.—A case of acute Emetine poisoning is described whose chief features are as under:—

- (1) Two 1 grain I.M. injections caused the toxic symptoms.
- (2) The main symptoms were urticaria, glossitis, tachycardia and vesication of palms of hands and soles of feet.
- (3) With Calcium the patient showed general improvement but urticaria did not respond quickly.
- (4) Urticaria showed good response to I.M. milk injections.

Penicillin in Impetigo Contagiosum

K. D. LAHIRI, M.B., B.S.,
Senior Hony. Medical Officer, Skin and V. D. Department,
Medical College Hospital, Patna.

SINCE the discovery of Penicillin it has been given extensive trial and good results have been found in a large number of pathological conditions but its use in the venereal and dermatological cases are of special interest as it has not only shortened the period of treatment thus minimising the suffering and expenses for treatment and at the same time has ensured radical cure of the conditions when used alone or combined with other chemotherapeutics (LAHIRI, 1946). When properly used in proper dosage it controls the spread of infection and checks the development of drug-fast carriers (LAHIRI, 1945).

Recently I had an opportunity of treating 14 cases of impetigo contagiosum in infants and children from age 3 months to 3 years. I have used Penicillin alone, combined with Sulphonamide and also with metals and dyes and the results have been very much satisfactory with Penicillin combined with Sulphonamide therapy (LAHIRI, 1946).

Table of Cases.

No.	Name	Age	Penicillin	Sulphona- mide	Ung. Hydrarg Ammon	Dye	Result cure in
1	R. S.	8 months.	Injection.	Locally.	Nil.	Nil.	5 days
2	C. C.	12 "	Nil.	Orally and locally.	Nil.	Nil.	8 "
3	M.	7 "	Nil.	Nil.	Locally for 2 weeks.	Nil.	18 "
4	P. D.	36 "	Nil.	Nil.	Locally for 2½ weeks.	Nil.	20 "
5	R. K.	30 "	Nil.	Nil.	Locally for 10 days.	Nil.	12 "
6	A. K. D.	21 "	Nil.	Nil.	Locally for 13 days.	Nil.	17 "
7	R. P.	5 "	Injection & local.	Nil.	Nil.	Nil.	2 "
8	G. P.	4½ "	"	Locally.	Nil.	Nil.	2 "
9	P. B.	11 "	"	Orally and locally.	Nil.	Nil.	2 "
10	S. P.	34 "	Nil.	Nil.	Locally.	Nil.	7 "
11	I. M.	21 "	Nil.	Orally.	"	Nil.	5 "
12	S. S.	"	Injection.	Orally.	Locally.	Nil.	2 "
13	H. H.	"	"	"	"	Nil.	2 "
14	N.	"	Nil.	Nil.	Nil.	Brilliant green 2% aqueous sol.	7 "

Conclusion.—For epidemics and for outdoor hospital cases it is better to use Sulphonamide (Sulphadiazine ½ tab. 6 hourly) for 4 days together with Ung. Hydrarg Ammon 5% and is very helpful but for isolated cases and acute cases and those who can afford it is better to give orally Sulphonamide for two days and Penicillin in proper dosage for 12 hours every three hours by intramuscular injections of 10,000 Oxford units upto the age of three years.

References:

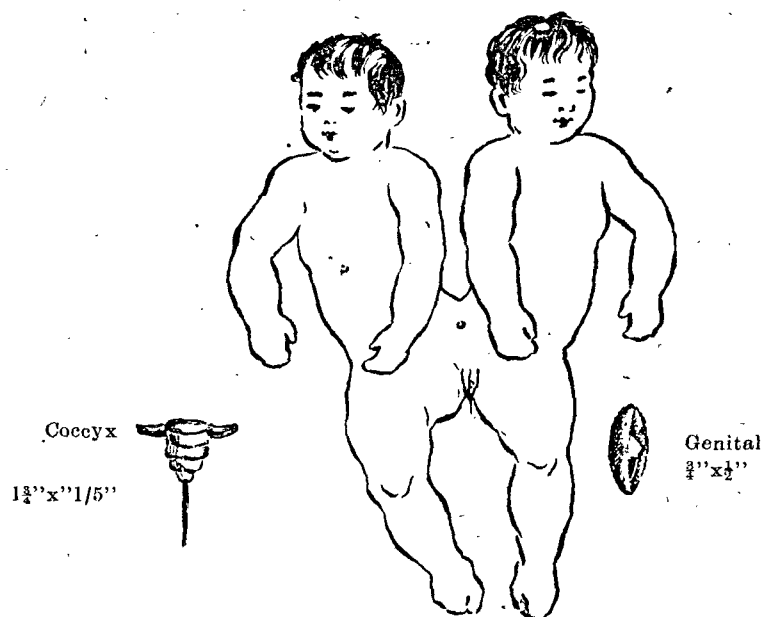
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3. Idem (1946)—Pat. J. Med., 19: 48.

A Peculiar Double Monster (Ischiopagous)

Dr. MANORANJAN CHANDA,
Manikganj, Dacca.

ONE monster was born of a multipara aged thirty years and Muslim by caste. Her husband is a healthy man of about 43 years of age. She is the second wife of her husband and had never before borne any twin or monster. The former wife had also borne a monster, with two heads, with four teeth in each mouth and one body.

It was delivered by a village *Dai* and was a case of foot-presentation. The delivery was at the full term of pregnancy. When the fœtus came out upto umbilicus she failed to deliver it by the ordinary process and a doctor was sent for. In the meantime she tied a rope round the waist of the fœtus and dragging the rope she effected the delivery. It was a double monster fused at the lumbar region. The upper part contained two



full size heads with hairs, four hands, two thorax while the lower part contained one umbilicus, one abdomen, one anus, two hip bones, one sacrum, one coccyx, (single pelvis of the size of an average single fœtus) and two legs. (See diagram). But there was a tail of about $1\frac{3}{4}'' \times \frac{1}{5}''$ like a rat at the end of the coccyx. The genital was a peculiar one; there were two labia major and labia minor. In between them there was a growth of flesh of about $\frac{3}{4}'' \times \frac{1}{2}''$ but no vaginal orifice.

The monster was much bigger than the ordinary fœtus.
The mother is progressing well.

[796]

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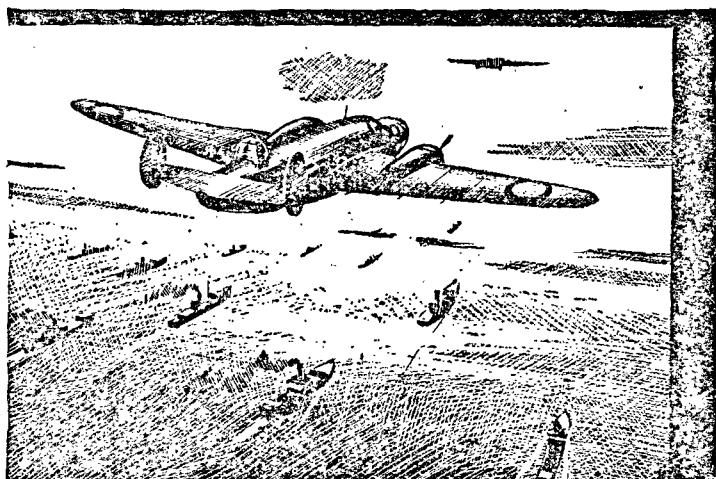
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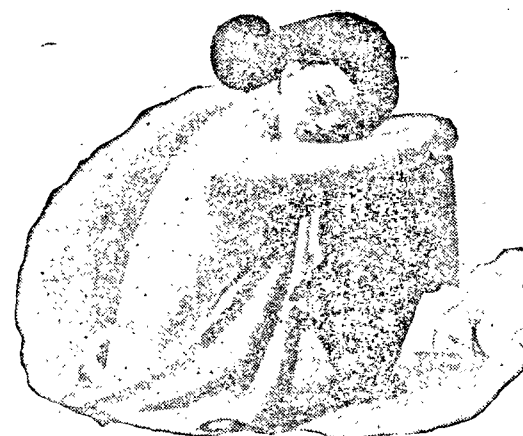
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Penicillin

IN Penicillin we have a remarkable chemo-therapeutic agent which affects many infections of the human body. Though other powerful anti-bacterial agents have been discovered, Penicillin stands pre-eminent in that it combines powerful anti-bacterial action with practically no toxicity.

Practically all the important microbial diseases have now been investigated for susceptibility to treatment by Penicillin. It has now been established beyond doubt that only diseases caused by sensitive organisms can be successfully treated. The list of organisms sensitive or insensitive to Penicillin have been mentioned in many works, and it is unnecessary to detail them here once again. One must, however, remember that some strains of micro-organism classified as sensitive are relatively resistant, and failure in these cases must not cause confusion. When the supply of Penicillin was limited it was perhaps necessary to test the sensitivity of a microbe to Penicillin before beginning treatment, but, at the present moment, when Penicillin has been manufactured on a very large scale and is available in large quantities for civilian use, it may not be necessary and perhaps it is also not advisable to withhold treatment till this investigation is done. At the same time, it is necessary to dispel from the public mind the notion that Penicillin is a panacea for all human ills, for though it may be useful in many infections, it is quite useless in a large variety of diseases. Apart from the diseases caused by organisms insensitive to Penicillin, there are a large number of diseases of unknown or doubtful aetiology, such as Rheumatic fever, Hodgkin's disease and the Leukæmias where the course and progress of the disease do not seem to be affected by Penicillin.

There are a few difficulties in the administration of Penicillin. The first of these is its instability in acid solutions which accounts for a loss of the greater part of the dose when administered by the mouth. The second is that the renal excretion of Penicillin is very rapid. The blood concentration, after giving a dose, falls steeply and within three hours is below the therapeutic level. This is a really serious drawback and necessitates the maintenance of a continuous blood level at night and during the day for some time to enable the Penicillin to act on the micro-organisms. A cumulative effect cannot be achieved.

The distribution of Penicillin in the body after absorption has been carefully studied by many workers. A large proportion appeared in the urine; a small amount was found in the saliva; it was readily detected in the bile; but none was found in the cerebro-spinal fluid, lacrimal secretion or pancreatic juice. Penicillin traverses the placenta and has been shown in the foetal circulation. Diffusion into serous sacs also takes place, but it is found to be far safer to inject Penicillin directly into them. The intra-theal injection of Penicillin solution has, under the circumstances mentioned above, been the most effective and safe route for maintaining adequate level in the cerebro-spinal fluid. As mentioned previously, 60% of the parenterally injected Penicillin is excreted in the urine. This excretion is tubular and it has been found possible to retard its excretion by the simultaneous administration of certain substances which are also excreted by the tubules. It is also retarded by nephritis and other lesions impairing renal functions and in these diseases it may, therefore, be necessary to assay blood circulation from time to time and also give smaller doses at longer intervals. Delayed absorption also takes place if Penicillin in oil is used. Among the other methods used in delaying absorption of ordinary Penicillin are the use of five per cent Glucose or Saline as the vehicle, the addition of Adrenalin, and the application of an ice-bag to the site of injection.

Mention has already been made of the fact that Penicillin is destroyed in acid media and hence oral method of administration is not of much benefit. Various methods, such as administration with alkali, by means of duodenal tube or in coated capsules, were tried in the early days, but were found to be really wasteful. At present, attempts are being made to combine the Penicillin solutions with some sort of buffer such as Sodium Citrate, egg albumen or milk, and to enclose the material in a capsule or to mix it with oil or fat. Some have obtained prolonged effective blood level of Penicillin by mixing Penicillin before administration with Aluminum Hydroxide. Others with Calcium Carbonate, Magnesium Hydroxide, basic Aluminum and acetal have got good results. Some have got good results with simple solutions in iced water. Whatever the methods adopted, there is no doubt that effective blood levels are obtained, but it is quite apparent that they are all 'wasteful' when compared with the intra-muscular injection method, since they all require four or five times as much Penicillin in the twenty-four hours. It should also be mentioned at this stage that other routes of administration of Penicillin are in vogue, though the degree of absorption is very small. It has been suggested that adequate Penicillin absorption can occur through the lungs if the solution is nebulised and inhaled.

Penicillin, as all our readers are aware, is now issued as the Sodium or Calcium Salt and is packed in sealed containers containing 100,000 to 500,000 or even 1,000,000 units of dry salt. Before being issued to the public, it must conform to tests regarding its purity and sterility. It is thermolabile, its thermostability being maximum when the substance is dry and minimal when water or moisture is present. Whereas aqueous solutions are unstable, oily suspensions are relatively stable. Acids and alkalies decompose it. Certain heavy metals such as copper, silver, lead and mercury tend to decompose Penicillin. Some bacteria, as a result of under-dosage, develop resistance to Penicillin. It is, therefore, very necessary to avoid under-dosage and also Penicillin preparations of doubtful potency. Penicillin is quickly

inactivated by the enzyme Penicillinase which is excreted by certain bacteria when growing in aqueous solutions of Penicillin. The stability of Penicillin is affected by water or moisture. The avoidance of this is, therefore, a great necessity. In the dry condition Penicillin should, as far as possible, be stored at as low a temperature as possible. Tablets are, however, more stable. Aqueous solutions rapidly deteriorate, unless stored in a refrigerator.

As mentioned before, Penicillin may be administered parenterally by intravenous, intramuscular and intra-theal route. It is also applied topically to wounds, burns and skin infections as creams or ointments. For injection, it is best prepared by dissolving the contents of a sealed container in physiological solution of Sodium Chloride, using strict aseptic technique. The oily solutions are best made with white bees wax and Arachis oil. Creams for use in superficial wounds, burns and various skin infections are best prepared as an oil-in-water emulsion incorporating paraffins and using Lanette wax as the emulgent. Ointments are best made with wool alcohols or Eucerin. Both the Cream and the ointment are so made as to contain 500 units per gramme.

Penicillin Lozenges and tablets are made but must be protected from moisture during storage. Eye drops containing 1,000 units per millilitre are made with 1.4 per cent solution of Sodium Chloride. Sprays for use in nose and throat infections are made with physiological saline and usually contain 1,000 units per millilitre. Insufflation powder for use in wounds and burns are made by mixing Calcium Penicillin with sterile Sulfathiazole and dispensing in screw capped bottles. Snuffs are also prepared with a basis of dextrose.

The variety of the methods of application and the large number of diseases in which Penicillin has been used as a therapeutic agent, naturally raise the question of the toxicity of Penicillin. Most characteristic property is its harmlessness to the human body when compared to its lethal effect on bacteria. Workers have clearly shown that the concentration of the drug in the blood can be raised upto a level one thousand times greater than that necessary for therapeutic effect. This is in striking contrast to the behaviour of all other chemo-therapeutic agents, most of which have to be given in doses approaching the toxic level in order to get the full beneficial effect.

This harmlessness of Penicillin, however, depends on the purity—those of very good quality having no toxicity at all. But occasionally a few manifestations are seen which must be taken to be slightly toxic in their nature. These, however, are of a minor nature. Pain during injection is present and is usually attributed to impurities. Slight fever following continuous treatment with Penicillin is said to be due to inflammatory changes at the site of injection caused by Penicillin resistant organisms. Occasionally, when given intra-theally, inferior varieties of Penicillin produce meningeal irritation evidenced by a cerebro-spinal fluid pleocytosis, but these are not found with pure varieties of Penicillin. Herxheimer reactions may also be produced in the treatment of syphilis. Urticaria, dermatitis may occur at any stage of the treatment and are usually manifestations of sensitization. But none of these are of great importance and it is not often necessary to interrupt treatment as a result of these reactions.

Penicillin has now been used with great success in practically every branch of medicine and surgery. In gas gangrene, bacterial endocarditis, chest infections, osteomyelitis, syphilis, gonorrhoea, puerperal sepsis, brain

and meningeal infections, eye infections, skin diseases and dental infections, Penicillin has revolutionised modern treatment. World War II more than any other single factor gave the opportunity to try the effects of Penicillin on human beings on a large scale and the achievements have been truly remarkable. In most of these experiments, it has been found that Penicillin has a synergic effect when combined with Sulfonamides.

Penicillin was first discovered five years ago and in the short interval of space that has elapsed since its discovery, enormous strides have taken place in its use therapeutically. Fresh data, as regards its application clinically to new diseases and its storage without deterioration, are being collected all the world over. We are sure that ere long these collected statistics will help in the elucidation of some of the still obscure problems connected with Penicillin.

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Gleanings From Medical Press

MEDICINE and THERAPEUTICS

Treatment of sub-acute bacterial endocarditis with penicillin.—Dr. Robert L. King, M.D., and Robert J. Evoy, M.D., in the September 1946 issue of the *North West Medicine*, have given their experiences of treating three cases of sub-acute endocarditis with penicillin. Of the three cases, two were successful and one was unsuccessful. The principles which they have developed in this kind of therapy are as follows—

The infecting organism must be penicillin-sensitive; large doses are more successful than small; interval intramuscular administration is effective, if given every two to four hours; prolonged therapy may prove more effective, and degree of sensitivity may be an index to intensiveness of treatment indicated. Resistent organisms do exist and thwart all therapeutic attempts with this agent. Small doses may favour development of penicillin resistance; and rapid healing may lead to more structural deformity.

Of the three cases treated, the failure was due to a strain of streptococcus viridans. They consider it important to determine the susceptibility of the organism by invitro observations. In their opinion, if the organism is inhibited by 0.1 to 0.5 units per c.c. 40,000 units of penicillin should be administered every three hours for at least two weeks. They stress the importance of early and intensive therapy.

Stimulating radiotherapy of the pancreas as a treatment of diabetes mellitus.—Irradiation with x-rays was administered to 12 patients with moderate to severe diabetes. The distance of the focus from the skin was 28 cm. A filter Cu and Al was used. The doses given twice weekly varied between 50 and 150 roentgens. In 50 percent of the patients

a reduction in glucosuria was obtained with absence of acetoneuria. The fasting blood sugar increased moderately in 4 patients and decreased in the others. The residual chronic index increased in 3 cases, decreased in the others and arrived in 6 at normal values. The double glucose test showed generally a tendency toward a normalization of the curve. The general conditions considerably improved in 6 patients. —Soler, C. B., Pallardo, L. F., Calvin, J., and Piga, A.: Stimulating radiotherapy of the pancreas as a treatment of diabetes mellitus.—*Chem. Abst.* 40: 1185, March 10, '46.—*Na. Med. Bull.*

Insomnia due to left ventricular heart failure (Wheeler and White, in *Journal Amer. Med. Ass.*, Dec., '45).—Insomnia as a presenting symptom of pulmonary vascular congestion generally has been neglected, because obvious dyspnea, orthopnea or Cheyne-Stokes respiration also is usually present and dominates the clinical picture.

Insomnia, however, may be an early and predominant symptom of pulmonary congestion due to left ventricular failure, in cases in which dyspnea is not a prominent complaint. In such cases insomnia is likely to be misjudged as a symptom of heart failure and ascribed to some other cause. Especially is this true in the absence of basal rales. The insistence of the patient on sitting up, which is ill-defined evidence of orthopnea, in the presence of physical signs of left ventricular weakness (gallop rhythm, pulses alternans and accentuation of pulmonary second sound) may lead to recognition of the etiology of the sleeplessness.

In dealing with patients who show features of strain on the left ventricle, namely hypertension in particular, aortic valvulitis (stenosis or regurgitation) and extensive

acute or chronic myocardial infarction, it behoves the physician to be constantly on guard for early dyspnea, either on effort or as a cause of insomnia, so that adequate treatment speedily may be prescribed to combat the left ventricular failure and weakness which are responsible.

While the significance of obvious dyspnea is common knowledge and the treatment as a rule is adequate, insomnia is likely to be misinterpreted and vainly or inadequately controlled by hypnotics, often causing a serious delay of days or weeks before the signs of increasing heart failure become so evident that radical or emergency treatment proves necessary.

At such later stages of heart failure, insufficiency of the right ventricle tends to appear, and if such right ventricular failure becomes pronounced the pulmonary congestion, and with it the insomnia, may lessen, but painful liver enlargement may take its place and in its turn also cause some insomnia. Rest and digitalis alone may suffice to control the orthopnea and insomnia of early left ventricular failure, but sometimes it is necessary to resort to diuretics, especially mercurials, in repeated dosage and to a very low salt diet.—*General Practitioner*, Sep. 5, '46.

Relief of pain in angina pectoris and cardiac infarct.—The methods employed have been (1) local anesthesia, (2) operation, and (3) administration of 100 per cent oxygen. Typical anginal pain induced by standardized hypoxemia and by exercise was diminished or completely abolished by precordial anesthesia. Electrocardiograms made during the anesthesia, including the three standard leads and the periodical 4 P, showed less definite changes in T waves and ST segments than those made with the same functional load without anesthesia. Alleviation of pain by precordial anesthesia during attacks of angina pectoris is accompanied by improvement in the coronary circulation. Patients exposed to the same functional load after extensive cervicothoracic sympathectomy likewise show improved electrocardiograms. Administration of 100 per cent oxygen has relieved the pain in angina pectoris and in cardiac infarct where morphine was without effect. Good results were obtained in cardiac infarct with pulmonary edema and in eclampsia with and without cardiac insufficiency by the use of 100 per cent oxygen at increased pressure. Oxygenization of the blood was increased, cell anoxia reduced and the venous return diminished.—*J.A.M.A.*

Penicillin in the treatment of childhood gonorrhea.—H. F. Lee and Walter Sussman (*Journal of Pediatrics*, 28: 590, May 1946) report the treatment of 21 cases of gonorrhea in children with penicillin. Thirteen of these were cases of vaginitis in girls, 10 of which were acute and had not been previously treated and 3 had been treated with sulfonamides without obtaining a bacteriological cure. There were 8 cases of acute anterior urethritis in boys under 10 years of age, none of which had been treated previously. The dosage varied from 100,000 to

300,000 units depending upon the method of administration. In some cases injections were given at two-hour intervals; the total dosage in all these cases was 100,000 units; in 4 cases oral tablets with sodium citrate buffer were used, the tablets being given every two or four hours; the total dose in all these cases was over 100,000 units, in 2 cases 300,000 units. In 3 cases a single intramuscular injection of 150,000 units of penicillin in beeswax-peanut oil suspension was given. In every patient smears and cultures became negative after treatment. Dyuria, if present, was relieved within twenty-four to forty-eight hours. The discharge diminished progressively, and usually ceased by the fourth or fifth day in girls and even earlier in boys. In girls 3 negative smears and three negative cultures were required as a criterion of cure; in boys 3 negative smears were accepted as evidence of cure, although all these patients also had one or more negative cultures. The criteria of cure were fulfilled in all cases. In the only chronic case in the series, a case of vaginitis of four months' duration, given a single injection of penicillin in oil, there was a recurrence of discharge after temporary improvement. Cure was prompt when a second injection of 300,000 units in oil was given.—*Med. Times*, Sep. '46.

The treatment of rheumatic fever.—The following constitutes a brief resume of some of the newer aspects of treatment:

Treatment of the active phase.—Absolute bed rest is regarded by all as essential in the active phase of the disease, which is defined as that period during which the patient exhibits symptoms and signs of infection and/or laboratory evidence of rheumatic activity. The temperature curve, pulse rate, erythrocyte sedimentation rate, and white blood cell and differential count constitute useful guides in evaluating the patient's progress. The diet should be liberally supplied with the so-called protective foods and a high vitamin supplement should be added. Salicylates have been used for years to control the exudative manifestations of rheumatic infection and Coburn has recently claimed that massive doses of sodium salicylate will actually shorten the course of the rheumatic infection by preventing the progression of the pathological process.

Any patient treated in this manner should be observed carefully for signs of toxicity, which include tinnitus, nausea and vomiting, hyperpnea and tachypnea, skin rashes, thrombocytopenia, and eventually severe intractable acidosis, coma and death. Children are particularly susceptible to salicylate poisoning, and the drug should be given to them with caution. Since salicylates quite commonly induce hypoprothrombinemia and thus predispose to hemorrhage, vitamin K, in doses of 2 to 5 mg. per day, should be made an integral part of salicylate therapy, and the patient's prothrombin time should be checked at periodic intervals.

Not only are the sulfonamide drugs ineffective in the treatment of acute rheumatic

fever, but there is some evidence that they are actually harmful. Several recent reports on the use of penicillin in the treatment of acute rheumatic fever have indicated that this antibiotic is of no value.

Congestive heart failure may occur during an acute rheumatic episode, and in younger persons is almost always due to active rheumatic carditis rather than mechanical failure. The treatment of this complication is essentially the treatment for congestive heart failure from any cause. There is still some controversy concerning the use of digitalis during acute rheumatic carditis, but most workers are agreed that congestive failure constitutes an indication for digitalis therapy, although it is admittedly less effective when an acutely diseased myocardium is the precipitating cause. The patient should be observed carefully for toxic symptoms during digitalization, bearing in mind that digitalis may precipitate heart block in a person whose conduction time is already slowed by rheumatic carditis. If diuretics are to be administered, they should be given prior to digitalis therapy, since a sudden diuresis may increase the effective concentration of digitalis in the system to the point where toxic manifestations may occur.

Intervals between attacks:—Although almost everyone agrees that the treatment of the acute attack necessitates absolute bed rest, there is a growing conviction that bed rest in the absence of active infection is not only of no avail, but may actually be harmful. All the evidence indicates that the progression of the rheumatic lesion occurs during the period of active carditis, and that after healing has occurred, exercise does not further the progression of the lesion. After signs of active infection have subsided, the patient should be permitted out of bed and gradually allowed to resume activity to the point of tolerance.

In many persons, the functional capacity of the heart appears to be unimpaired in spite of the persistence of murmurs, and it is the author's conviction that such persons should be allowed to engage in all forms of exercise which do not induce dyspnea or exhaustion. The question of elimination of foci of infection in a quiescent interval is one which is still *sub judice*. Most workers believe that the same indications for the removal of infected foci should be used in rheumatic subjects as are used in nonrheumatic persons. It is important to guard against the development of upper respiratory infections in rheumatic persons by attaining optimum nutrition and striving for good hygiene in every day life.

Prophylactic use of sulfonamides:—Although the sulfonamide drugs are ineffective in the treatment of the acute attack, recent experience has indicated that they are remarkably effective in cutting down the incidence of rheumatic recrudescences. Most workers have used sulfanilamide for this purpose, but the indications are that sulfadiazine is at least as effective. The drug is administered in daily doses of from 1 to 2 gm. the object being to maintain a level of from 2 to 3 mg. per 100 c.c. of blood.

At this dosage level, very few drug reactions have been encountered. It is a wise precaution to check the hemoglobin and leukocyte count weekly for a period of four to six weeks after starting drug therapy, since the few drug reactions which have been reported have occurred early in therapy. The present evidence would indicate that this type of prophylactic medication should be continuous throughout the year for a period of several years.—Glady's J. Fashena, M.D., in the *Texas Medical Journal*.

Virus stomatitis and virus diarrhoea of infants and young children.—G. J. Buddingh (*Southern Medical Journal*, 30:382, May '46) presents a study of a form of virus stomatitis and virus diarrhea occurring chiefly in infants under six months of age. The usual type of aphthous stomatitis, which occurs most frequently at six months to five years of age, is caused by the virus of herpes simplex. If the form of virus infection described by the author occurs in infants and children over six months of age, the stomatitis is the chief manifestation. There is usually a sudden onset with refusal of food and irritability. The earliest lesion is a fine vesicular eruption along the anterior border of the tip and the under surface of the tongue and occasionally on the gums. The vesicles soon disappear; the affected area shows an excoriated surface that tends to bleed easily; the gums are swollen and hyperemic. There is little if any fever. This form of stomatitis is self-limiting, and persists for seven to fourteen days. In infants two weeks to six months of age, a moderate diarrhea is the chief symptom of the infection, but most of these infants have some stomatitis that may be overlooked. There are usually four to eight stools daily, of greenish-yellow color with occasional "flecks" of bright red blood. In most cases, the child shows little evidence of illness and takes feedings regularly. The diarrhea usually continues four to ten days, and treatment with sulfonamides has no effect on the course of the disease. When this infection occurs in children under two weeks of age in the nursery, diarrhea is the chief symptom and epidemics of "diarrhea of the newborn" may develop. At the Vanderbilt Hospital, Nashville, Tenn., 5 such epidemics have occurred, and the disease has been mild except in premature infants. Of 33 full-term infants developing the disease, only one died; of 8 premature infants, 3 have died. Some other epidemics of diarrhea of the newborn occurring elsewhere but found to be due to this virus have been of more severe type. The stools in this type of diarrhea in the newborn, as in older infants, are greenish-yellow in color and flecked with bright red blood. Careful examination of the mouth and tongue shows a mild stomatitis or glossitis in about three-fourths of the cases. In the milder cases the disease lasts ten days or less; in severe cases it may persist several weeks with exacerbations and remissions. Inoculation of swabbings from the mouth lesions into

the rabbit cornea does not produce the typical herpetic keratitis, but does produce a typical corneal reaction, characterized by a definite haziness, with cloudy opacity along the lines of scarification; the same reaction is produced by inoculation of small amounts of stool from cases of diarrhea, due to the virus. As it was found that adults may also be infected with the virus and may act as carriers, the author advises

that for immediate control of a nursery epidemic, a search for the virus should be made in all personnel connected with the nursery by the inoculation of mouth swabs into rabbit corneas. As it has been found also that the virus may be present in the female genital tract this may be the original source of infection in epidemics of diarrhea among the newborn.—*Medical Times*, Sep. 1946.

SURGERY

Preoperative and postoperative care of the diabetic.—William Nyiri, M.D., Newark, N. J.

Diabetes with surgical complications may be subdivided into three groups:—(1) elective operations; (2) surgical emergencies; and (3) patients with certain infections and with dys- or hyperthyroidism.

The essential aim is to have the patient's carbohydrate equilibrium under control, to have his acid-base balance normal and to have his glycogen depots filled up. After accomplishing this goal, the only difference preoperatively between a diabetic and a non-diabetic lies in the precaution not to leave the diabetic under carbohydrate starvation overnight or for many hours prior to surgery. In view of the frequent desire to keep the stomach empty preoperatively this is best carried out by intravenous administration of 500 to 1000 cc. of 5 per cent glucose in physiologic salt solution. Insulin may be added directly to the infusion fluid or given hypodermically. The latter route is preferable because it permits greater flexibility of dosage, according to varying needs. In severe operations which require much time, intravenous glucose may be repeated during the operation. Postoperative diabetic management depends on the severity of the case and the limitations set by the surgeon. Patients who, from the surgical standpoint, have no restrictions on the gastro-intestinal tract may soon be returned to the diet and possibly insulin dosage which they followed before the surgical complication. Patients who, for the first few days postoperatively are not to eat or even drink must receive their carbohydrates in form of intravenous clyses of 5 per cent glucose with saline. The quantity and succession of these infusions as well as the amount of insulin to be administered depend on the severity of the diabetes and the state of the water metabolism. In most cases, examination of the urine four to five times a day is sufficient to reach the proper decisions and make adjustments in the treatment. If spontaneous voiding is impossible, occasional catheterization may be necessary. In acidosis and in very severe glycosuria in which proper treatment may depend on changes made every one to two hours, the doctor may need the urinary information more frequently and will proceed accordingly. The plasma acetone test, which can be done in a few seconds, is more reliable than ketonuria to distinguish between severe and milder acidosis; it even permits an adequate judgment in the rather

rare cases where ketonemia but no ketonuria is present due to "kidney shut-down". As the patient progresses to the stage where food intake becomes permissible, parenteral measures are gradually replaced by oral feeding; here one starts with the carbohydrates as liquids and step by step adds starches in semisolid and solid forms. Loss of protein, caused by these restrictions, is not serious enough to warrant concern; the protein administration is only of secondary consideration for the time being. For obvious reasons, fats have no place in the treatment.

With surgical emergencies, no time should be lost, no matter how severe and complicated the metabolic disturbance. The operation should take place without delay if waiting would only render the outlook gloomier. On the other hand, the diabetic (antiketogenic) treatment may start simultaneously and at once without interfering with the surgeon. The intravenous route, essentially according to the plan described above, should be used. Unless too much time was lost previously, the patient's acidosis or lack of control will be sufficiently improved within a comparatively small span of time (several hours) to improve postoperative chances of complete recovery. Of course, in such emergencies the risks are greater and the physician will usually have to resort to more drastic insulin dosage.

The third group, which comprises infections, like abscesses, phlegmons, infected gangrene, cholecystitis, appendicitis, infected urinary tracts, osteomyelitis, etc., stands between the first two classes. Here the infection, with its often trypsin-like toxic effect, will have a detrimental influence on the diabetic state. Insulin resistance, fever and general toxicity will stand in the way of efficacious metabolic treatment. Therefore, speedy surgery is the first step in the metabolic therapy. Sometimes improvement of the carbohydrate tolerance after opening and drainage of the infected focus is so dramatic that it allows a quick, drastic reduction of the amount of insulin. Then our only fear in diabetic treatment is insulin overdosage. Diabetes with dys- and hyperthyroidism may be included in this third classification. The excessive amount of thyroxin and lack of insulin in the human body represent a dangerous metabolic combination. Here again as in infections, speedy operation is in order. This quickly allows, indeed often necessitates, substantial diminution in insulin dosage. The preoperative

use of thiouracil offers the same advantage in diabetics as in non-diabetics.

Blood-sugar, will not always give a true picture of the severity and extent of the metabolic disturbance. The basic derangement in diabetes mellitus is admittedly the loss of carbohydrates through glycosuria, followed by the changes in salt, water and fat metabolism. By administering enough insulin and carbohydrates, one can insure in practically all cases, utilization of a sufficient amount of glucose. The overflow, which then still manifests itself as hyperglycemia and glycosuria, will not exercise any appreciable influence on the course of events. For obvious reasons only excessive hyperglycemia and hypoglycemia will serve as warning signals. The healing tendency is not materially influenced by hyperglycemia. Whoever still has doubt about it, is reminded of the modern surgical practice of giving continuous intravenous glucose infusions pre- and post-operatively in non-diabetics, whereby the blood sugar is kept on higher levels for days, because under the circumstances of sugar influx into the blood stream even the healthiest pancreatic gland cannot produce insulin fast enough to keep the blood sugar within normal limits.

Another important point is the matter of water metabolism in surgical diabetes. The amount of the intravenous infusion fluid varies greatly with the individual clinician. Obviously it will depend on the degree of dehydration of the patient and it is impossible to follow any fixed rule. However, it may be wise not to introduce excessive amounts of water as the already weakened circulation may be overtaxed. Other things being equal, the optimum quantity of intravenous fluid in twenty-four hours is 3,000 cc. In a 5 per cent glucose solution this introduces 150 grams of dextrose. Even making allowances for a sizable glycosuria, this still permits the utilization of ample carbohydrates.

Fats.—Just as each diabetic has his individual blood sugar fluctuations, so the readiness or disinclination to go into acidosis is an individual matter. Some diabetics may go off the proper described diet for a long time and indulge in fats without showing ketogenic tendencies. Others are indiscrete only once and clinical and chemical acidosis set in without delay. For this reason a surgical diabetic, especially when not previously known, is better off without any fats; especially as caloric calculations do not have any place for the time being. Therefore, it is our practice to bar fats completely from the pre- and post-operative management of diabetics.—*Jur. Med. Soc. N. J.*, Aug. '46.

The importance of rectal bleeding.—J. Gerendasy, M.D., Elizabeth, N. J.

It is the careless custom of many physicians to ascribe any rectal bleeding to hemorrhoids, often without even a simple digital examination. There are a number of other ano-rectal conditions besides hemorrhoids and cancer which produce

rectal bleeding. However, the point to be stressed is that bleeding is one of the symptoms, above all others, which calls for a complete examination of the anus, rectum and sigmoid.

The most frequent causes of rectal bleeding are hemorrhoids, anal fissure, rectal prolapse, polyps, the ulcerative disease of the terminal bowel and carcinoma.

Internal hemorrhoids cannot be accurately diagnosed with the unaided finger; an anoscopic view is necessary. Again, hemorrhoids may be due to various causes, and it is by no means uncommon to find that the piles are merely an indication of a malignant growth higher up. Every patient of middle age or over should have a sigmoidoscopy to eliminate this possibility.

Prolapse of the rectal mucous membrane, polyp or hypertrophied papillae are sometimes mistaken for hemorrhoids. Proctoscopy is indicated.

Sigmoidal and rectal cancer can often be reached with the finger but sigmoidoscopy will give a much better concept of the tumor. Besides, biopsy is indicated in all suspected growths.

Anal fissure is comparatively easy to diagnose. There is little bleeding but excruciating pain with (or following) each bowel movement. Visualization of the lesion with a tag of hypertrophied skin presents a typical picture.

Rectal prolapse, more common in the young, is easily visualized on straining as a roseate of pink rectal mucous membrane. Proctoscopy is indicated to rule out a polyp or pin worms as a possible cause and to diagnose sigmoidal intussusception with bleeding as the only symptom.

A polyp is an adenomatous growth and may be pedunculated or sessile. It is potentially malignant and should be removed for histologic examination, especially at its base and the adjacent mucosa. A single polypus is more often found in the rectum and sigmoid than higher up in the colon. It is often the cause of obscure rectal bleeding. Proctosigmoidoscopy will assist in its detection.

The other major causes of rectal bleeding are the ulcerative diseases. Most important of these are chronic ulcerative colitis, lymphogranuloma venereum, amebic and bacillary dysentery.

Chronic ulcerative colitis should be the first thought in the presence of blood in the stool associated with loose frequent movements. It is not difficult to diagnose on proctoscopy as the appearance of the mucous membrane is characteristic. However, it is well to rule out routinely, other causes of large bowel ulceration, particularly amebic and bacillary dysentery.

Sigmoidoscopy should be performed on all patients bleeding rectally.

Lymphogranuloma venereum may show blood per anum but diagnosis is easy as the disease is usually confined to the rectum. The proctitis occurring in the presence of rectal stricture produces a dirty, thin bloody purulent discharge. The Frei test, either

with mouse brain or chicken embryo antigen, differentiates it from other forms of proctitis.

Bacillary dysentery usually presents a picture of loose stools mixed with blood, pus and mucus. The sigmoidoscope reveals shallow ulcers sometimes difficult to differentiate from chronic ulcerative colitis. Diagnosis is confirmed by finding the specific organism in the stool culture the first week or two of the disease or later by specific agglutination reactions of the patient's serum.—*Jour. Med. Soc., N. J.*, Aug. 1946.

Drugs in surgical infections.—Drug administration in surgical infections may be prophylactic or therapeutic.

1. The prophylactic use of drugs is possible in war wounds, in contaminated accidental wounds of the soft parts, in compound fractures and burns in civilians and in operations on contaminated regions of the body, such as the alimentary canal.

2. In order to evaluate drugs properly in these cases, there must be a comparison of drug treated cases with non-drug treated controls. These controls must alternate with treated cases without any selection of cases. This group presents a fixed starting point.

3. The appraisal of the therapeutic value of drugs in established surgical infections is much more difficult because there is no fixed starting point. The infection may have begun weeks, months or years before the drug treatment is started, during which time it may have had all kinds of treatment, any number of secondary contaminations, profound alterations in blood chemistry, in the nutritional status and in morale. It is difficult to run a parallel control series.

(a) In established infections the control may have to be the previous course of the case itself.

(b) However, if it can be shown that drug treatment obviates the necessity for surgery or makes possible a more conservative procedure or shortens the healing time or permits primary closure or early secondary closure which would not have been possible without the drug, its value may be demonstrated.

All these facts indicate the difficulty of evaluating drugs in the treatment of surgical infections. A carefully laid out plan should be followed and a number of different investigators in different cities should study the problem in a uniform manner, comparing and pooling their results.

Results of drug therapy in surgical infections may be designated by the terms (a) brilliant, (b) good, (c) questionable and (d) with no effect.

In the prophylactic studies, and in established infections when controls are used, the results in treated cases must be significantly better statistically than the controls before the benefit can be certainly attrib-

uted to drug treatment. When controls are not used the results must be repeatedly and consistently "brilliant" or "good" in a large series of cases before the benefit of drug treatment can be considered clearly proved.—Meleney, *J.A.M.A.*, Vol. 124, No. 15, p. 1021.—*Jour. Med. Soc. N. J.*, Aug. '46.

Diagnosis of tumours of the central nervous system.—Sir Hugh Cairns, D. M., F.R.C.S.

Before using accessory methods the neurologist must assess the clinical picture and the patient. There are certain cases suspected of intracranial tumour in which thorough clinical investigation discloses the true nature of the condition—migraine, aural vertigo, anxiety states and so on: and in such cases the use of accessory methods may be not only unnecessary, but even harmful in heightening the patient's apprehension.

To use accessory methods effectively and in their correct order, the clinical picture must first be studied. In overt tumour syndromes, where there is advanced papilloedema and rise of intracranial pressure, lumbar puncture and ventriculography may be dangerous unless carried out as part of a carefully planned attack, with operation following hard upon the receipt of crucial diagnostic information supplied by the accessory methods. Furthermore, neurosurgery is no exception to the rule that in order to treat a patient satisfactorily it is necessary to know his background and to assess the degree and manner in which he has been disabled by his illness.

Lumbar puncture.—The manometric pressure should always be measured, and, with the patient horizontal and relaxed, should normally be around 150 mm. of cerebrospinal fluid. Rise of pressure above 180 mm. is suspicious of tumour. In certain circumstances the protein content of the C.S.F. is important in pathological diagnosis, for with almost all intracranial tumours which are in contact with the large cerebrospinal spaces—the ventricles and the basal cisterns—the protein content of the C.S.F. is raised above 60 mgm. per cent. In brain-abscess also the protein in the C.S.F. is usually raised and in addition there is usually a moderate increase of the white cells, not necessarily all polymorphonuclears.

In the surgery of the spinal cord an advance has been made in recent years from increasing use of lumbar puncture and refinement of the Queckenstedt test, and the more liberal use of spinal radiography with opaque media. Any patient with progressive weakness of the legs should be promptly investigated by lumbar puncture, and, if the Queckenstedt test shows even a partial block, as indicated by slowing of the rise (or fall) of the C.S.F. in the manometer on (or after) jugular compression, there are good grounds for suspecting spinal tumour. In such cases opaque radiography on a tilting table will often reveal the situation

of a spinal tumour before there is enough sensory disturbance to indicate the level of the tumour by clinical methods. Spinal tumours are usually benign, and when they can be removed at an early stage, the patient is spared months of incapacity while waiting for the sensory level to develop, and recovery is prompt and usually complete. In spinal radiography the substitution for lipiodol of myodil, has proved of value; for the fluid runs easily in the subarachnoid space, and appears to be quite innocuous.—*Bristol Medico-Chirurgical Journal*

Human bite infections.—Here the infecting agents are the fusiform bacillus and Vincent's organism which, with various secondary invaders, produces the most damaging infections of the hand that are seen.

At first the inflammation remains localized in the area of the knuckle but soon begins to spread through definite anatomical planes. Extension can occur proximally under the dorsal aponeurosis and also distally beneath the extensor tendon, thence to the volar side of the finger and through the lumbrical canals to invade the deep spaces of the palm. The middle palmar space becomes infected and occasionally one of the flexor tendon sheaths.

The treatment for superficial human bite wounds consists in careful debridement and immobilization on a splint. They should not be sutured. Inability to extend the finger indicates that the extensor tendon has been damaged with probable contamination of the joint and is a very serious prognostic sign. Suppurative arthritis and osteomyelitis of the adjacent bone occurs almost invariably. For this reason it is wise to hospitalize such cases for a few days, keep the hand in a warm, moist dressing, give 20,000 units of penicillin intramuscularly every 2 hours and observe carefully for extension. In fulminating infections with a marked systemic reaction, X-ray therapy is helpful, but should be administered cautiously and only by a roentgenologist.

In late foul-smelling wounds, all necrotic tissue should be excised. Zinc peroxide is helpful if used properly. The powder is mixed with sterile water to obtain a creamy suspension and introduced into all parts of the wound which is then sealed by covering with several layers of vaselin gauze. The dressing is changed daily and all of the zinc peroxide instilled the previous day is carefully removed. This is important as otherwise the preparation will cake in the wound and block drainage. Dakin's or 1 percent chlorazone solution is useful to obtain separation of necrotic tissue.

General postoperative care of hand infections.

EYE, EAR, NOSE & THROAT

Anosmia.—Anosmia, or loss of the sense of smell, is a symptom rather than a disease and as such is usually the result of some local pathologic process. A sensation of smell can be perceived only when the air-

borne odor reaches the olfactory portion of the nasal mucous membrane in the upper recesses of the nasal cavity. Any mechanical cause of nasal obstruction, such as nasal polypi, deviation of the septum or chronic

tions.—Drains should consist of light strips of vaselin gauze laid gently in the wound. Their only purpose is to keep the skin edges apart and should not be packed in so tightly as to impede the escape of pus. Coarse rubber tubing must never be used. Such heavy material does irreparable damage to the delicate structures of the hand.

Various chemical agents have been used in the aftercare of these infected wounds. Although surgical drainage is certainly the paramount consideration for effective treatment, the sulfonamides and penicillin have proved very useful in the early stages. They have little if any value in chronic infections. The local application of sulfonamide powder has not materially shortened the healing period in cases which have been adequately drained.

After incision, the hand is placed in a sterile dressing composed of many pieces of unfolded gauze, the whole moistened with physiologic saline or Ringer's solution and held together by a sterile towel. The incorporation of a light metal splint in the dressing assures immobilization. The extremity may then be placed in a heat cradle and the dressing moistened every few hours with physiologic saline solution by opening the outside covering. Such a dressing is usually necessary for only a few days and longer use may result in harmful maceration of the skin. Likewise, drains should be removed as soon as the suppuration decreases lest they retard healing.

Later care consists in soaking the extremity once or twice daily in warm, soapy water, keeping the wound clean and carefully debrided, dried in sunlight or under an electric light, and finally dressed with sterile gauze and splinted. If the wound contains debris or a necrotic eschar which does not separate, Dakin's solution is useful.

Each dressing should be changed solely by the use of sterile instruments and great care used not to add bacteria from without nor to contaminate the fingers. After observing these precautions, it is certainly illogical to advise the patient to go home and soak the hand, dressing and all, yet this advice is frequently given.

It must constantly be borne in mind that the purpose of all treatment is restoration of function. At each soaking, the hand and fingers should be moved through the greatest range of motion that does not cause pain. During the course of the infection when immobilization is required, it should be in the "position of function", wrist dorsiflexed, fingers flexed and thumb abducted from the palm. William H. Requaek.—*U. S. Naval Medical Bulletin*, Sept. '46.

borne odor reaches the olfactory portion of the nasal mucous membrane in the upper recesses of the nasal cavity. Any mechanical cause of nasal obstruction, such as nasal polypi, deviation of the septum or chronic

hypertrophic rhinitis may cause anosmia by preventing odoriferous particles from coming in contact with the olfactory mucous membrane. Acute inflammation of the nasal mucous membrane may temporarily annul the sense of smell by producing infiltration of the tissues surrounding the olfactory fibrils, thus impairing their sensitivity and giving rise to anosmia.

Anosmia may also arise from the inhalation of pungent fumes or from the prolonged use of snuff or from the excessive use of tobacco. Other causes are fracture of the base of the skull, intracranial tumors, lead poisoning, hysteria, malaria, cerebral hemorrhage and syphilis. The duration of anosmia depends upon the cause, and measures designed to remove the causative factors are obviously required for the therapeutic purposes.

Hyperosmia, or increased sensitivity to odors, is sometimes met with in hysteria, neurasthenia, hypochondriasis, the menopause, sexual perversions, and other entities in which the nervous system is in a state of temporary or permanent irritability. Opposite to hyperosmia is hyposmia, exhaustion of the sense of smell, which occurs in individuals whose occupation constantly exposes them to the same odors. For example, exposure to perfumes or flowers over long periods of time may readily create a diminished olfactory receptivity. In parosmia there is a perversion of the sense of smell. Here the patient may complain of an unpleasant, foul odor which may be actually related to a specific cause or may prove to be imaginary. When actual, it occurs as a symptom of acute or chronic sinusitis, syphilis of the nose, or of intracranial tumors which involve the olfactory bulbs. Again, the disturbance may accompany such neuroses as hysteria, neurasthenia and hypochondriasis. Pregnancy, the menopause, uterine disorders and epilepsy are other etiologic factors.

Since anosmia is a symptom attributable to a cause, treatment in the main consists in eradicating the etiologic factor. In the case of nasal polyposis this is simple. The sense of smell has often been restored when dependent only on nasal obstruction. The prognosis is always more promising if there has been any intermittence, but if the anosmia has been present and continuous for very lengthy periods of time the problem becomes more difficult. The prognosis is worse the less evidence there is of any lesion to explain the loss of smell.

Coarse olfactory tests may be employed

clinically to determine whether a patient still has olfactory function. For this purpose one may utilize strong-smelling, volatile liquids which are non-irritating. Examples of these are oil of cloves, oil of lavender, turpentine and asafetida. While one nostril is closed, the test substance is held before the other nostril and the patient instructed to sniff and describe the kind of odor he detects if he still has a sensation of smell. There are other and more exact methods for measuring the sense of smell, but the one just described is the simplest.—*E.E.N.T.*

Laryngitis sicca.—Laryngitis sicca usually coexists with those two other disturbing entities, atrophic rhinitis and pharyngitis sicca. Laryngitis sicca or atrophic laryngitis is frequently seen in women. At one time it was believed to occur in women who wash clothes, but this relationship has never been conclusively established. Speaking against this would be the increasing number of women who in recent years have had, much against their will, to engage in an occupation they would as soon leave to any reliable laundry.

In laryngitis sicca, the structures of the larynx appear atrophied and unusually dry. Viscid secretion can be detected on the vocal cords and this tends to form crusts which have a dark tint. Occasionally, the crust formation may be so extensive as to encroach on the lumen of the larynx and cause dyspnea. The crusting may be limited to the larynx, or it may extend upwards to the pharynx or downwards to the trachea. The crusts give rise to coughing, a procedure which often dislodges them, leaving, however, an excoriated surface. The voice sometimes becomes temporarily less hoarse after expulsion of the crusts.

As in atrophic rhinitis, treatment in the main consists in getting rid of the crusts. This is usually accomplished by the employment of various types of inhalations. As in atrophic rhinitis, numerous agents have been employed. Some of the older solutions include spraying the larynx with Mandl's solution and painting it with bicarbonate of soda solution. Sprays of Dobell's solution or hexylresorcinol have been found to soften the crusts which are then removed and the atrophic area sprayed with unmedicated oil. The internal administration of iodides has been employed empirically.

As in the case of atrophic rhinitis, the cause is still a mystery.—*E.E.N.T.*

OPHTHALMOLOGY

Papilledema.—Placidus, J. Leinfelder, M.D., Iowa City.

This affection of the nerve head is of inflammatory origin, and the edema of the papillary tissues is the direct result of the congestion and exudation of inflammation. Usually the swelling is accompanied by a

profound loss of vision, a fact that is of great importance in differentiating it from choked disc. Frequently the vision is lost suddenly and completely, but gradual loss over a period of two or three days may occur. Gradual improvement in vision usually follows the course of resolution of

the edematous nerve head, and at the termination of the inflammation the vision and visual fields are normal or nearly so. In the more protracted and severe cases, some degree of optic atrophy and loss of vision may result. Occasionally the inflammatory reaction is so severe that the surrounding retina and macula are involved and the appearance of the fundus is that of a neuroretinitis. Even in these patients, however, a return to normal vision may be expected.

When a tumor is located in a silent region or when any tumor has been growing for a long time, however, an increase in the intracranial pressure occurs and a choked disc is usually present. The direct etiologic relationship between increased intracranial pressure and the choked disc is generally recognized, but a complete understanding of the underlying physiopathology has not been reached. It is readily understood that an increased pressure in the subarachnoid space of the optic nerve can compress the central vein as it leaves the optic nerve, causing congestion of the retinal vessels, and that this alteration in venous pressure so affects the vascular physiology that resorption of tissue fluid by the venous capillaries is impaired and edema of the tissues results.

Occasionally increased intracranial pressure is not accompanied by edema of the disc despite the fact that the cerebrospinal fluid pressure is very high. The circumstance is encountered more often in cerebral abscess but may be seen when tumors are present. Also anomalous are those cases in which a choked disc is present but in which the spinal fluid pressure is normal. In some of the latter patients a high cord tumor may interfere with cerebrospinal fluid circulation and because of the block a true value for the intracranial pressure is not obtained, but in others one can only speculate that the pressure varies from time to time and, by coincidence, a normal reading is obtained.

Usually a choked disc develops slowly and once present remains until the cause (increased intracranial pressure) is removed. Variation from day to day may be seen occasionally, however, especially in the early stages, but such observation must be weighed with due consideration for errors in interpretation. Sometimes papilledema does not occur until after operation for the relief of increased intracranial pressure, or similarly a slight elevation may be increased in severity on the days immediately following craniotomy. Elevation and edema are not always in direct proportion to the amount of increase in cerebrospinal fluid pressure, but most frequently a long standing pressure will produce more swelling than will a lower pressure of short duration. In very long standing choked disc, the gradual development of optic atrophy causes scarring of the disc tissues and decreased edema.

Little has been written concerning the resolution of choked disc following operation for brain tumors. The initial response may be an increase in the amount of swell-

ing; this is particularly true when the operative manipulation necessary for removal of a tumor is extensive. However, if the choked disc is slight in amount, has been present for a short time, and the required operative procedure is simple, it may disappear in from twenty-four to forty-eight hours. More commonly, there is a gradual subsiding of the edema, and several days may elapse before any perceptible change is observed. When the surgical intervention has resulted in considerable trauma and distortion to the brain and if the elevation of the disc has been great, it may be two weeks before definite reduction in the amount of swelling has taken place. When the edema of the nerve head has not subsided within two weeks of the operation, one becomes suspicious that the operative intervention has been ineffective. If choked discs persist three weeks after operation, one can be certain that the operative treatment has failed.

Occasionally one encounters a patient with bilateral choked discs and increased intracranial pressure but in whom there is little additional evidence of brain tumor. Roentgenography after injection of air into the ventricles or subarachnoid space and exploration may disclose no evidence of tumor, and biopsy of brain tissue discloses an edematous state of the tissue. Decompressions have been made in treatment of these patients with pseudotumors, and it has been determined from this that wide and rapid fluctuations in intracranial pressure occur as a result of transient edema of the brain.

As a complication of the retinopathies of hypertensive vascular disease, arteriosclerosis, leukemia, and nephritis, one may observe a swelling of the nerve head which extends into the surrounding retina. This is not a simple extension of edema from the retina to the nerve head, but as is due to increased intracranial pressure. Reduction of the intracranial pressure results in a decrease in the amount of papilledema as well as amelioration of the general symptomatology. Presumably the choked disc form of papilledema occasionally encountered in hypertensive vascular disease is of the same etiology, yet in these cases the retina remains normal except for the profound vascular changes that are so apparent in the arteries. Of a similar nature are the choked discs that occur in patients in the terminal stages of subacute bacterial endocarditis. It is assumed that in this event the profound anemia is responsible for poor cerebral nutrition which leads to an edema of the brain.

A discussion of papilledema would not be complete without the mention of the pseudochoke or pseudoneuritis. Unfortunately, all of the differentiating signs of this condition are not sufficient in every instance to positively differentiate it from choked disc. Not always is the physiologic cup encroached upon or obliterated early in the course of choked disc, for patients with proved brain tumors have been seen in whom a

diagnosis of pseudochoke was imperative because of well defined physiologic cup and the equivocal state of the veins. Furthermore, a pseudochoke existing in a patient with a syndrome suggesting brain tumor may present a formidable problem to the ophthalmologist. One must carefully look for hemorrhages and engorged veins, consider the refraction, and delineate the blind spot by perimetry in order to reduce the possibility of errors in these patients. Frequently only repeated examination after an elapse of several weeks will enable one to correctly evaluate the condition.—*Journal Iowa State Med. Soc.*, Sep. '46.

Penicillin in eye work.—James T. Jarrott, M.D., F.A.C.S., Hempstead, N. Y.

Penicillin is the drug of choice in the treatment of eye diseases secondary to the gonococcus, streptococcus and staphylococcus and in intra-ocular infection by the pneumococcus. The pneumococcus is more frequently the cause of infection than the staphylococcus in penetrating injuries of the eye.

There are several methods of administering penicillin therapy, depending on the site and source of the infection:

1. Infection of the lids. The commonest infection here is ulcerative blepharitis and this condition is best treated with an ointment.

2. Infection of the conjunctiva, especially ophthalmia neonatorum and gonococcal conjunctivitis: best treated by the instillation of drops of a strength of 2,500 O.U. per c.c. used every half hour for three hours, then hourly for twenty-four hours and every two hours thereafter.

3. Corneal ulcers and the anterior segment of the eye:

(a) By subconjunctival injection of one-half c.c. of a strength of 5,000 O.U. per c.c.

(b) Iontophoresis—with a solution of a strength of 3,000 O.U. per c.c. dissolved in a 0.9 per cent. NaCl solution for 5 minutes.

(c) Cotton pack in the lower fornix, using one-tenth of a c.c. of a strength of 5,000 O.U. per c.c. and leave in for one to two hours.

(d) Application of penicillin crystals directly to the corneal ulcer.

(e) Direct injection into the anterior chamber—2/10 c.c. of a strength of 2,500 O.U. per c.c. The best result is obtained if injection is made within 6 hours following infection: after twelve hours the results are not so satisfactory.

(f) Intramuscular or intravenous injection is not so satisfactory for intra-ocular infection as the concentration within the eye is not sufficient to combat infection.

(g) Posterior segment—Intravitreal injection.

(h) Orbital cellulitis—Intramuscular or intravenous injection.

4. For the posterior segment of the eye, intravitreal injection of 0.2 c.c. of penicillin of a strength of 2,500 O.U. per c.c. This injection should be made at least within 12 hours after infection; after 24 hours the results are not satisfactory.

5. For orbital cellulitis—intramuscular or intravenous injection is the most satisfactory.

In using penicillin locally to the eye, there is a possibility of producing an ocular dermatitis, which is evidenced by the lids becoming red and edematous with weeping of the skin, congestion of the conjunctiva, and seromucoid secretion.—*Medical Times*, Sep. 1946.

Penicillin in common sty.—Andr w De Roeth, M.D., in the September 1946 issue of *North West Medicine*, gives his experiences of the treatment of common sty (eye). Uptill now the standard of treatment was yellow oxide of Mercury. In recurrent cases, autovaccine was used, and recently, toxoid was specially effective. In the last few years, sulfathiazole ointment came into use. This gave better results than mercuric oxide ointment. On the argument that penicillin has killed all organism known to be sensitive to penicillin, it was considered logical to use it in this common disease. As the organism dwells on the lid margin and in the ducts of the numerous glands, the surface local applications seem to be sufficient for recurrent styes. Penicillin ointment 2,000 units per c.c. in a petrolatumlanolin base, was found to be useful, if applied four times a day for 8 to 14 days. Allergic dermatitis of the lids occurred in a few cases, but the majority got better.

Treatment of acute conjunctivitis and trachoma with sulfonamides.—Miterstein, B., and Stern, H. J. *The Lancet*, 1945, May 26, p. 649.

The acute phase of Koch-Weeks conjunctivitis is described. If left untreated, it subsides in 6 to 8 weeks, but usually becomes chronic. In 13 patients, one eye was treated with silver nitrate, the other with a 5 per cent ointment of Pyranil (a compound containing p-amino-phenyl-sulphonamide in addition to pyridine-dicarboxic acid anhydride). The results in 12 cases were equally good in both eyes. Treatment with both silver nitrate and Pyranil was more successful than treatment with either alone.

Sulfanilamide by mouth, 0.05 gm. per Kg. body-weight daily, was tried without effect. However, sulfapyridine by mouth, 0.05 gm. per Kg. of body weight, produced dramatic improvement within 24 hours. In a few hours the bacilli showed pleomorphic changes, and became fewer in number.

After 14 hours, smears were consistently negative. Cases were clinically cured in three to seven days. Local treatment was sometimes needed. Treatment was continued at least a week beyond the time of clinical cure to avoid relapse. Sulfapyridine

applied locally had no effect.

Sulfanilamide, sulfapyridine, and pyranil have proved valuable in treating trachoma. The authors think Pyranil is the treatment of choice in cases associated with severe corneal complications.—*Am. J. Ophth.*

DERMATOLOGY

The use and abuse of sulfonamides in dermatologic conditions.—C. F. Lehmann, M.D., San Antonio, Texas.

There are several dermatologic conditions which call for the employment of one or the other of these products. In some of these conditions greater dependence is placed upon the drug than upon any other procedure used concomitantly; in others, the use of the drug is an adjuvant, or it may be discretionary.

There is no skin condition in which the local use of sulfonamides for a period longer than four days is justified.

Advantages of the drugs.—The conditions in which the use of the drugs are of definite value comprise certain nonsyphilitic venereal diseases and acute pyogenic infections. Of the venereal diseases, lymphopathia (lymphogranuloma) venereum and chancroid call for their use. The results in each are of course best when the drugs are used in the early stages. It has been reported that a positive Frei test became negative after treatment with the drug, thus indicating a specific effect upon the infection. Gonorrhea is preferably treated by penicillin; however, in the rare cases of penicillin-resistant organisms sulfonamides occasionally have to be resorted to.

Sulfonamides find a definite place of usefulness in the following acute pyogenic infections: erysipelas, widespread impetigo, cellulitis, accompanying inflammatory dermatophytosis, furuncles, lymphangitis, early hidrosadenitis, and in some carbuncles. For all of these, penicillin serves an equally good purpose, but in many instances the use of sulfonamides is the more practical measure because of technical difficulties involved in the administration and expense of penicillin. Erythema nodosum responds well to sulfadiazine if there is a definite focus of infection. (The tendency of sulfathiazole to produce erythemanodosum-like lesions should not be overlooked.) Erythema scarlatiniforme responds only if there is a definite focus of infection, which must be eradicated to prevent future recurrences.

Certain chronic infections of the skin are benefitted occasionally but rarely cured only by sulfonamides. Of these, sycosis barbae is occasionally cured by short courses. The drugs are of distinct value in anthrax, actinomycosis, and chronic axillary abscesses in combination with penicillin therapy.

Sulfonamides are sometimes used in other skin conditions which are of unknown etiology: notably, pemphigus, lupus erythema-

tosus, and dermatitis herpetiformis. They have been of doubtful benefit in any form of pemphigus, with the exception of those forms with attendant sepsis. They are of no value in the chronic discoid type of lupus erythematosus, and are reported to help only about 5 per cent of the acute disseminated types.

Untoward effects.—The untoward effects of the sulfonamides may vary from mild rashes of the skin to toxemia. The eruptions may be morbilliform, scarlatiniform, purpuric, varioliform, urticarial, papular, vesicular bullous, or nodular. There may be a fixed eruption or exfoliative dermatitis. A photosensitization may be induced by the drugs, but does not usually remain chronic. Stomatitis may be caused. The reactions usually express themselves on the fifth to the ninth day, but may occur from the first to the thirtieth day of administration. The general toxic symptoms may be fever, acute hemolytic anemia, hepatitis, leukopenia, with granulocytopenia, acute agranulocytosis, hematuria, anuria, ocular and auditory disturbances, and rarely psychoses.

Increasing numbers of sulfonamide dermatitides following the local use of the drug in an ointment are being seen. Most of the cases follow sulfathiazole ointment, and the incubation period for the sensitization dermatitis varies from twenty-four hours to a week after initiating the ointment. Very few cases are seen following the use of the drug in either a paste or powder. The ointments commonly used are composed of a water soluble base that softens the epidermis and increases permeability of the skin. Practically all cases in which a sensitization dermatitis develops are ones in which the primary dermatitis was of an allergic nature, or exudative. This fact corroborates the idea which is commonly held that the reactions in epidermal cells are intimately concerned with the beginning of an allergic state.

Once started, a dermatitis due to sulfonamide sensitivity is extremely pruritic and recalcitrant to treatment. The degree of the toxicity may vary from only a moderate amount of skin involvement to an exfoliative dermatitis with purpuric and pemphigoid characteristics, and disturbance of the hematopoietic system with rarely death.

The dangers of the possible development of this sensitization through external applications of sulfonamides must be carefully considered, particularly since at some later time the need for internal administration of these drugs may be life-saving, and a

high degree of hypersensitivity may prevent their adequate use in serious general infections.

It is questionable whether local application of sulfonamide ointments is superior to any old measures such as 5 per cent ammoniated mercury ointment, sulfur and acid salicylic, resorcinol, or oxyquinoline; and because of the potential danger from their use it is recommended that sulfonamide ointments be used most cautiously, and if used at all, for a period of not more than five days, and that they never be used upon exudative or allergic dermatoses.—*Texas Medical Journal.*

Iodine and dilute acetic acid in tinea capitis.—In the treatment used by Strickler the hair was clipped and kept short and dilute acetic acid (3 per cent) was rubbed into the scalp with a toothbrush for two minutes, special attention being paid to the infected areas. This was followed by keep-

ing an electric bulb of 150 to 200 watt strength sufficiently close to the scalp to impart a distinct sensation of heat. The iodine ointment or oil was next rubbed into the scalp with a toothbrush or hand for two minutes, and the electric bulb was used again for six minutes. The iodine ointment consists of iodine crystals, red blood cells, chlorophyll and magnesium dioxide. It is used in the proportion of 2 gm. of the iodine to 32 gm. of benzoated lard. Trial is being made of the iodine mixture of the same strength incorporated in an oil. It is believed that this would prove more efficient, the iodine molecule becoming activated through photodynamic action. Of 60 patients with tinea capitis 27, or 45 per cent, were cured. In view of the almost epidemic proportions of tinea capitis at present, this local treatment appears worthy of trial, particularly since added experience has raised the proportion of cures to almost 70 per cent.—*J.A.M.A.*

OBSTETRICS and GYNÆCOLOGY

Hydrorrhœa gravidarum.—To a questioner, the following answer is given in the *B.M.J.* Aug. 31, 1946:—

Leakage of liquor amnii implies rupture of the membranes, and when it occurs during pregnancy is to be regarded as accidental, although it might be associated with an inherent weakness of the membranes or lack of cervical support due to a previous laceration or high amputation.

When the membranes rupture during pregnancy the outlook for the fetus is poor, because abortion or premature labour nearly always occurs within a few days. However there are cases recorded in which the pregnancy has continued for as long as 50 to 120 days and the child has survived. One possibility is for the membranes to rupture and then retract from around the fetus, which thereafter develops outside them. This is accompanied by a continuous or intermittent discharge of liquor during the pregnancy and the child rarely survives, since it tends to be born prematurely and in any case is feeble and often deformed.

Another possibility is that the fluid discharged is not liquor amnii but an unusually heavy secretion of the uterine glands which tracks down between the decidua vera and the decidua capsularis. This condition is rare and is supposed to be associated with some type of decidual endometritis. The continued discharge of fluid from the uterus during pregnancy—liquor or otherwise—is usually called hydrorrhœa gravidarum.

Finally the possibility that the fluid is urine, the patient suffering from some lack of control over the bladder, should not be overlooked.—*B.M.J.* Aug. 31, 1946.

The inactivation of pitocin and pitressin by human pregnancy blood.—1. *Authors' summary and conclusions:*—Blood from humans from about the fifth month of pregnancy to at least seven days post partum can rapidly inactivate pitocin and pitressin as tested by their oxytocic action on the pregnant human uterus. These observations serve as additional data that the posterior pituitary is not the causative agent of parturition in humans.

2. Blood from males, non-pregnant females, and early pregnancy cannot inactivate these substances as rapidly.

3. Toxemic patients appear to be more sensitive to the oxytocic action of pitocin.

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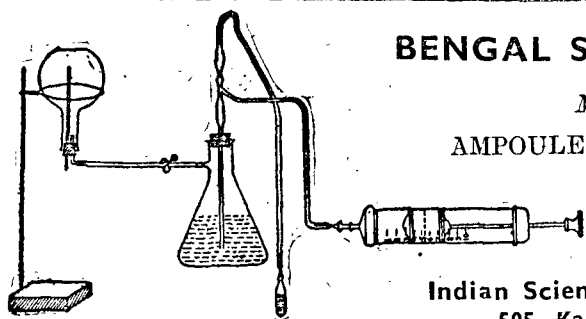
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Relapses After Typhoid

To The Editors, THE ANTISEPTIC, Madras.

Dear sirs,

In your November edition, Dr. Mahavir Prakash, M.B., B.S. (Luck.) has asked the readers to give their own experiences and opinions about the relapses after typhoid. I therefore lay the following:

I happened to treat a number of patients of typhoid fever in the last three months. As described by Dr. P. L. Gupta, M.B., B.S. (Scotland) in your August edition, strict orders were given and absolutely nothing but fruit juices and milk was advised to all of my patients. But to my surprise nearly half of the patients got relapses in spite of this restricted diet to the patients during and after the disease. I was assured by the attendants of the patients that nothing except the above mentioned articles of food was given to them. But they admitted the physical exertion of the patients. This exertion was mainly in the form of sitting in the bed without any support on the back, continuously for an hour or so many times a day.

In one of my relapsing cases, where the history of only exertion in the above form was positive, the relapse was so severe that the patient died.

I am therefore of opinion that the relapses are mainly due to the physical exertion of the patients, which results in the activity of typhoid bacillus and consequently their reappearance into the circulation from spleen like organs.

As we often come across such relapses after typhoid I request the readers to throw more light on the subject.

I/c. Dispensary, Yours faithfully,
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To The Editors, THE ANTISEPTIC, Madras.

Sirs,

It is not uncommon to see patients of all ages, but mostly between 3 and 18 years, with shallow dry and harsh skin, with thin emaciated and anæmic faces. These persons appear before medical persons, with distended abdomen and usually complain of occasional pain in the abdomen and other gastrointestinal disturbances, and of voracious appetite. Their chief complaint is "Bloodlessness, and occasional abdominal pain". In majority cases, I have noticed extremely annoying salivation.

I happened to treat the patients of the above type for pneumonia, gonorrhœa, tonsillitis and other inflammatory conditions wherein I used sulphapyridine and Sulphathiazole. I was surprised to see that in three cases, dead round worms (in 2 cases) and in one hookworm were passed. I attempted the same treatment in 4 cases, which were established cases of ankylostomiasis. It was rather encouraging to note that these 4 patients passed out worms, though in one case it was rather suspicious.

It would be an experience, both interesting and instructive for the members of our profession, to make their own independent observations in the light of these suggestions and record them in the pages of this journal for our edification.

Bareilly, Yours sincerely,
U. P., B. B. RAI, M.B., B.S.,
21-10-'46. Divisional Surgeon,
St. John Ambulance.

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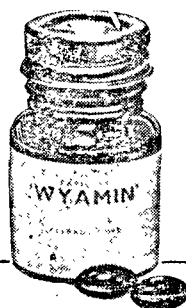
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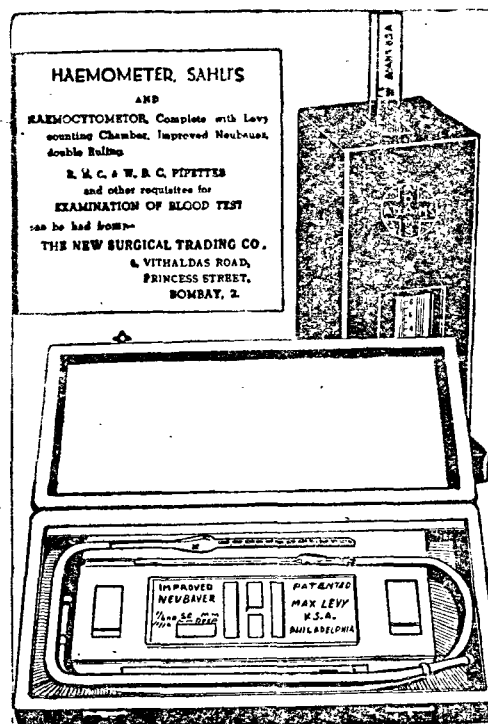
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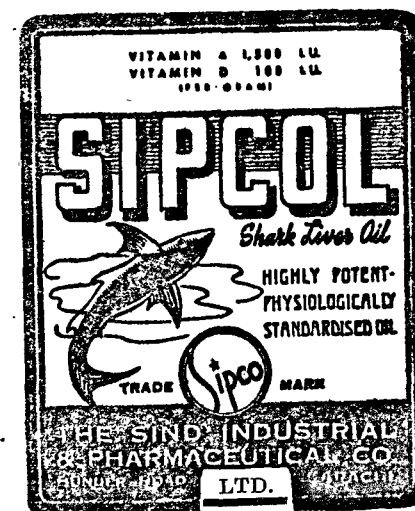
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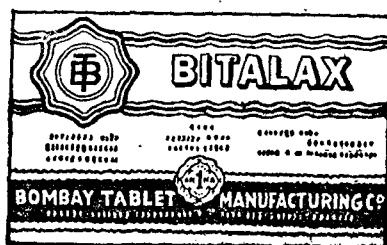
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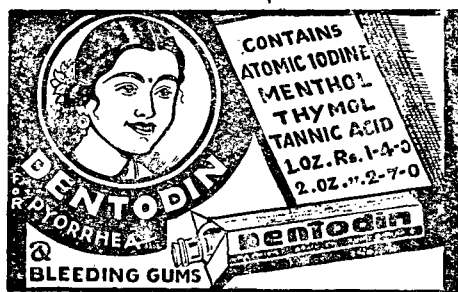
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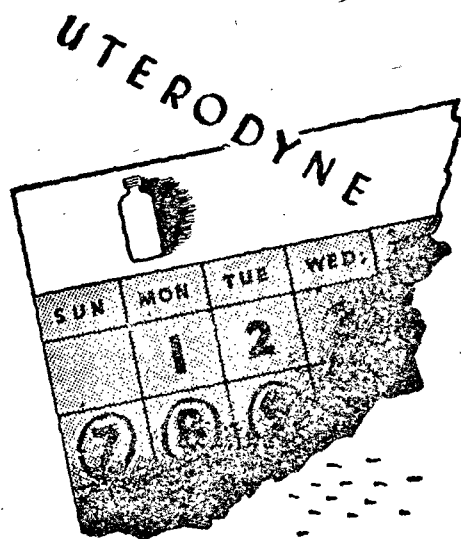
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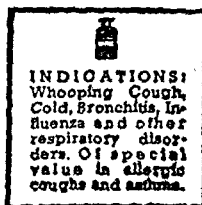
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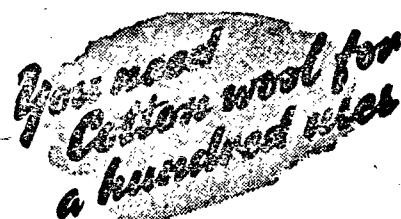
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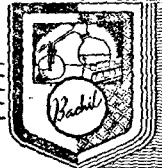
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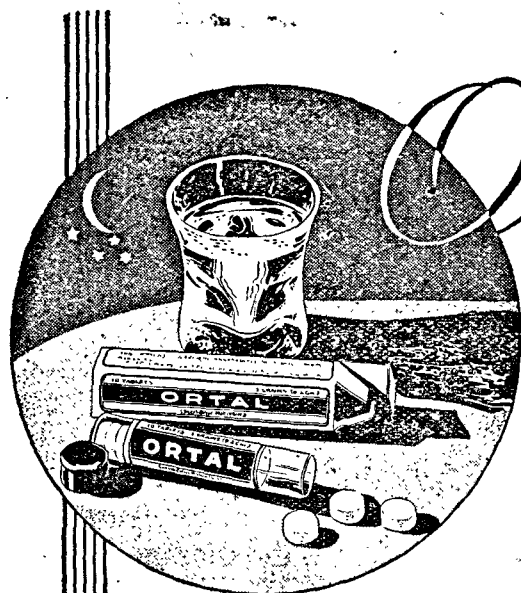
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