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AFFECTIONS OF THE EYE IN GENERAL PRACTICE.

by

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AFFECTIONS OF THE CONJUNCTIVA (*continued.*)

In the previous article we considered purulent conjunctivitis in infants, or ophthalmia neonatorum. It follows naturally therefore that we should at once consider gonorrhoeal conjunctivitis in adults. Its synonym is acute blennorrhoea.

I have already said that even with the severest infection a baby's eye can recover. It is with the utmost difficulty that an adult's eye can do so.

In this disease a true example is found. Fortunately acute blennorrhoea is comparatively rate. Both males and females suffer, and, in the majority of cases, it proves most intractable to any form of treatment.

The disease is usually unilateral, and in a right-handed person it is generally the right eye that suffers. The gonococcus is conveyed from the urethral discharge. There is much more swelling of the lids and conjunctiva than in children. The purulent discharge is copious, and there is a great tendency to involvement of the cornea.

It should be remembered that a very similar condition can be produced by the streptococcus, and that on no account should conjunctivitis in children or in adults be put down as due to the gonococcus without a microscopical examination. The gonococcus is a diplococcus which stains very readily and is decolorised by Gram. When the large epithelium cells are examined under the microscope, these bun-shaped diplococci are easily found. The incubation period

is brief, from a few hours to two or three days. The upper eyelid is often found overhanging the lower eyelid with copius purulent discharge appearing from between the lids.

I had a recent case in a boy aged 7. The mother was suffering from a gonorrhoeal discharge. Through desertion of the husband, she had to go out and seek work, the children being left to fend for themselves. They used soiled linen with which to dry themselves. The boy of 7 acquired an acute blennorrhea, while a younger child acquired a vaginitis. The boy's eyes were bleeding freely from large swollen conjunctivae. Although his cornea perforated, we were able to save the eye, and later attempt to remove the dense iris adhesion which had formed.

But in the adult it is exceedingly common to see the whole surface of the cornea slough off. In fact the cornea seems to melt away, its place being taken by dense connective tissue in such a remarkable manner that both the lens and the vitreous are preserved, but, of course, sight is lost.

I have seen the conjunctiva slit in order to relieve the chemosis, but such treatment is wrong. What one has to aim at is the treatment of the conjunctiva, and the chemosis may be reduced by osmosis. Further, on examination, the preauricular gland may be found swollen, and even suppurating.

When the cornea is giving way, haziness or yellow spots or both are found to be present. The surface becomes ulcerated, and the ulceration may extend completely round the cornea, its progress being rapid.

The treatment differs greatly from that of ophthalmia neonatorum in children. As one eye alone is usually affected, the other eye should be rigorously protected by a Buller's shield which consists of a watch glass stuck in a frame of adhesive plaster and fastened to the face and nose. It should be left open at the lower outer angle in order to ensure ventilation. A great many patients will not wear such a contrivance, so that all one can do is to warn them against infection being carried across from one eye to the other.

On no account must Silver Nitrate be used. A cornea which may be just putting up a resistance will break down when such a caustic is applied. Therefore no matter how great the temptation, do not use Silver Nitrate.

Again, as in ophthalmia neonatorum, constant irrigation with a weak warm antiseptic lotion is required. The constitution of the patient suffers greatly, so that he should be kept in bed. Sometimes iced applications are required, although I believe hot fomentations do more good.

At the London Lock Hospital as in a great many parts of India, we use a 10 per cent. solution of Magnesium Sulphate. The osmotic action is produced by the use of Batten's hydrophthalmoscope. The use of this instrument is easily learnt, so that the patient can hold it in his hand and not take up the time of the nurse or surgeon.

Many general practitioners will not undertake any work connected with eye diseases. If there is ready access to the ophthalmic surgeon, in such cases as we are now discussing, the help of the specialist should be sought. But scattered throughout the world are men in lonely posts, such as in various parts of India, where the medical man must rely on himself alone.

In India a great deal of gonorrheal disease is found, and it is from one (Henry Kirkpatrick), who has worked with many cases of acute blennorrhea, that I have learned to use the Magnesium Sulphate solution as described.

If the cornea is completely destroyed, the eye presents an exceedingly ugly appearance, so that many patients ask for its removal. This should not be done immediately. For weeks and months a thin discharge continues to flow from the eyelids. Most of this consists of mucus but it is wise to wait until the eye is perfectly dry before removing it.

When I have removed such eyes, I substitute a glass globe within Tenon's capsule. The movements of the eye are therefore controlled by the extra ocular muscles which are sewn together over it. Movement is thus imparted to the artificial eye.

In any form of gonorrhoeal conjunctivitis I have never found vaccines to be of the slightest use.

We next turn to an exceedingly common condition found particularly in the poorer quarters of many large towns. Phlyctenular conjunctivitis is seen by every practititioner. It is readily recognised by the fact that it occurs in children, many of whom look ill fed, mostly suffering from adenoids. The mother usually brings the child, leading it by the hand, as the eyes remain tightly closed, or at best, the child looks up with difficulty.

If the child can look up, all that is found is a slightly reddened conjunctiva. Nearly always both eyes are affected, or one eye may be affected much more than the other. In more acute cases, one or more small rotund grey or yellow nodules are seen situated on the conjunctiva just at the edge of the cornea. Occasionally these phlyctens, as they are called, invade the edge of the cornea and produce a phlyctenular ulcer. From the fact that enlarged lymphatic glands and other signs of tubercle are present, such a disease has often been associated with tuberculosis. But if a bacteriological examination is

made, tubercle bacilli are not found, but many organisms of muco purulent conjunctivitis are.

It is difficult to say whether the disease is a true infection or is the result of a toxaemia. When phlyctens are present and the conjunctiva is inflamed, there is strong photophobia accompanied by blepharospasm. The child hangs its head and will not look up at the light, and the attempt to open the eyelids is met with the greatest resistance.

In extreme cases phlyctens are found forming a complete ring round the cornea. Such a case suffers most from photophobia and blepharospasm. This must not make the doctor desist from examining the cornea. I admit it takes considerable practice to separate the lids of such a child with the tips of the forefingers without everting them, but it is only by this method that the cornea can be examined fully.

The treatment consists of bathing the eyes frequently with warm boracic lotion, and in mild cases, a little soft ointment consisting of Boracic Acid 10 per cent. and Yellow Oxide of Mercury 2 per cent. placed within the eyelids thrice daily.

When the phlyctens are close to the corneal edge and ulceration is threatening, then Atropine ointment ½ per cent. is combined with the Yellow Oxide of Mercury and used thrice daily.

It is not necessary to bandage the eye. Smoked glasses or a shade may be used, but if there is corneal ulceration, then the eye should be bandaged.

Again, if possible, in these severer cases, may I say that the help of the oculist should be sought.

It might be questioned, if perforation has already taken place, what can be done for the eye? I have published a method whereby grafting can save such eyes and enable even full vision to be obtained. There is seldom any need to sacrifice any eye even if perforation has taken place.

If the doctor discovers the need for removing adenoids and tonsils, this should be done. A change to the country will enable a child to overcome chronic recurrent attacks. The work done at Swanley is the finest example of what can be accomplished for the children, many of whom are taken from the slums of London. Children who cannot go to the country, are greatly benefited by the use of photo-therapy.

Let me conclude this section by a brief reference to what is known as Angular Conjunctivitis. A typical picture is that of an adult suffering from irritating inflammation of the eyelids. The conjunctiva may be slightly reddened, but at the inner and outer canthi, the conjunctiva and skin are sharply inflamed. When the upper eyelid is

raised, the conjunctiva above the cornea will appear practically normal. The patient complains of discomfort with very slight discharge, accompanied by a considerable amount of blinking and itching at the inner canthi.

The disease is due to the Morax Axenfeld diplo-bacillus. These are large thick rods in pairs placed end to end. They stain well and are decolorised by Gram. This form of conjunctivitis responds readily to the use of zinc salts. As the conjunctivitis may be somewhat mixed, I usually begin by painting the lids with 15 per cent. e.g. Protargol, but to the patient I give the following lotion. Boracic Acid, 16 grs.; Zinc Sulphate, 2 grs.; Aqua Rosae, 1 oz. The patient bathes the eyes three or four times a day with this lotion diluted with an equal quantity of warm water. Such treatment produces a rapid result.

DISEASES OF THE CORNEA.

In order that we may easily follow the pathology of the various diseases of the cornea, it would be well to remember its microscopical anatomy. The cornea consists of the following layers from before backwards. A layer of stratified epithelium which is nothing else than the transformed conjunctiva passing over the front of the eye. It is this epithelium which is really the first line of defence of the eye, although the gonococcus and the diphtheria bacillus have the power to attack it in its normal condition.

This stratified epithelium rests upon a thin lamina of homogeneous connective tissue, Bowman's membrane. The third layer is the substantia propria of the cornea continuous with the sclerotic. It is composed of bundles of white fibres arranged in regular lamellae. Between these lamellae lie connective tissue corpuscles. A section stained with gold chloride shows these connective tissue corpuscles and forms a very beautiful picture.

The fourth layer is the homogeneous elastic layer or Descemet's membrane, the posterior surface of which is covered by a layer of pavement epithelium. The nerves of the cornea pass in from the periphery, through the substantia propria, ending in fine tendrils between the epithelium cells on the surface. No wonder the patient complains of pain when a minute ulcer of the corneal epithelium is present.

There are no blood vessels in the cornea, but when the cornea is attacked by disease blood vessels grow in both from the conjunctival vessels on the surface and from the deeper choroid vessels at the limbus.

Ulcers of the cornea are commonly seen in general practice. Very often there is a history of a small foreign body entering the eye. The patient rubs the eye with his knuckle, producing a small abrasion of

the epithelium. If the foreign substance is infective not alone a conjunctivitis may ensue but a corneal ulcer as well.

In poorly fed children, as well as the epithelium being infected, corneal ulceration may extend so deep as to lead to early perforation.

The method of detecting the presence of a corneal ulcer is to insert two drops of 2 per cent. cocaine followed by one drop of 1 per cent. Fluorescin. The conjunctival sac is then washed out, and if there is an ulcer present, its outline will show as a fine green fluorescence. The simplest method however, and one which is painless and does not require cocaine, is 1 per cent. Bengal Red. If the ulcer has not pentrated Bowman's membrane, merely its edge will stain green with Fluorescin. Indeed Bowman's membrane is a very tough structure. With the end of a fine orange stick the epithelium can be scraped off without wounding the membrane. If the ulcer does not extend through Bowman's membrane, when healing takes place, a scar will not be visible. But if the membrane has been destroyed, it will not regenerate, and as healing takes place by connective tissue, then a white scar of more or less density, will form.

A patient with a corneal ulcer will complain of sharp pain with lachrymation and photophobia. The fine terminal nerves of the cornea are exposed, hence the acute pain.

There are many different forms of corneal ulcers. The commonest is the one I have just mentioned. It is a fine superficial ulcer, single or multiple, and is always associated with a certain degree of chronic conjunctivitis. It is the recognition of the latter that indicates the treatment.

Let me give a typical example. A ship's steward presented himself with one eye tied up. He complained of great pain and diminished vision. When I stained the cornea, there were no less than five small ulcers present. Someone to whom he had previously gone attempted to carbolize these ulcers but had omitted to evert the lids, and so did not treat the conjunctivitis. I reversed the procedure and treated the conjunctivitis with the happy result that in a few week's time, all trace of corneal ulceration had gone, and vision once more became normal. Let me just accentuate what I have said. If a minute corneal ulcer is found, treat the conjunctivitis first. For treatment, paint the lids with Zinc, 2½ grs. to the ounce, and give the patient Lotio. A.B. c. Zn., the prescription I indicated at the end of the article of February together with a little Ung. e.g. A.B. 10 per cent., with the eye tied up if there is no purulent discharge. If there is a purulent discharge, the eye must not be tied up.

If a simple ulcer erodes through Bowman's membrane, then it must be carbolized. This is done by placing a drop of 5 per cent. cocaine into the conjunctival sac. The ulcer is dried by touching it

with a fine piece of blotting paper, and by means of a pointed orange stick, a minute drop of pure carbolic acid is applied. The edges of the ulcer should be raised up with the stick so that the carbolization may be complete.

When discussing phlyctenular conjunctivitis, it was pointed out that phlyctens were commonly found situated at the edge of the cornea. But as the epithelium of the cornea is but part of the conjunctiva, this may become affected, and a corneal phlycten ensue. Destruction of the epithelium takes places, and sometimes a fresh infection will start corneal ulceration. The corneal phlycten is a grey nodule, becoming yellow when broken down. It may rapidly erode and perforate the cornea although this is not common. Or it may extend across the cornea carrying a leash of vessels with it. These lie in a shallow gutter and follow the advance of the ulcer. This type of ulcer does not go deep. It remains superficial.

Should the cornea perforate, it is not necessary to imagine that the eye is lost. It is just such a type for which the result of grafting is seen at its best. Some of the cases I have done show little or no trace of where perforation has occurred.

The nature of such ulceration is indicated by the state of the conjunctiva. Phlyctenular conjunctivitis particularly when phlyctens are present at the limbus of the cornea, is readily diagnosed. The ulcer should be carbolized and treatment with simple boracic lotion and Ung. Atropine 1 per cent. c. Hydrarg, Ox. Flav. 2 per cent. should be given. Remember in the case of a simple corneal ulcer which is not due to phlyctenular conjunctivitis, Hydrarg. Ox. Flav. should not be used.

Another type is known as the marginal ulcer. These are shallow, often multiple. The most serious forms occur in old people, which sometimes lead to necrosis of the whole cornea. Such ulcers, if due to the Morax-Axenfeld Diplobacillus should be treated with zinc salts. But sometimes one is really defeated by such ulcers in old people with very enfeebled health. The ulceration will extend across the cornea and so sight is practically lost. Sunlight treatment to the body generally will help these conditions, but must not be applied directly to the eye itself.

Another form of ulceration is known as Neuroparalytic Keratitis. This occurs in cases where the 5th nerve is paralysed. It is seen where this nerve has been injected with alchohol for trigeminal neuralgial and proper precautions for the protection of the eye have not been taken. There is a doubt as to the actual cause. On the one hand, after alcoholic injection, trophic impulses conducted by the nerve are absent. On the other hand, the cornea is insensitive so that foreign bodies entering the eye are not felt, nor are slight abrasions noticed.

The ulcer in this case is treated by gentle carbolization together with a mixture of Ung. Atropine 1 per cent. and Boracic Acid 10 per cent. The lids need not be sewn together as is so often advocated, but the eye must be kept closed by a bandage. It will be months before the eye can be left uncovered. It must not be uncovered too soon.

Closely associated with this ulcer is the one associated with Herpes Ophthalmicus. A recent case was that of a man who presented himself at Hospital. He said that owing to the severe pain in the eye in order to gain relief he had applied hot fomentations which had blistered the skin of the forehead above the eye. He would not believe me when I pointed out that the blisters above the eye, and which extended into the hair of the scalp really constituted the evidence of the disease, and that the condition of the eye was part of the same.

When Herpes Ophthalmicus occurs, vesicles are seen following the course of the supra orbital nerve. The eruption is generally preceded by a neuralgic pain along the course of the nerve. Sometimes fine corneal vesicles are found but not commonly. A diffuse deep infiltration of the cornea associated with an iritis is commoner.

Most text books state that it is an irido-cyclitis, but in those I have met and treated I have never found vitreous opacities. The cornea is insensitive and so can be touched by a fine wisp of cotton wool. Peculiarly enough, there is sometimes a history of contact with other patients suffering from chicken-pox.

The treatment of this condition consists mainly in protection by a bandage. Atropine ointment and warmth are used, and the general health attended to, while the skin may be treated with cocaine ointment 1 per cent., and dusted with starch powder. During the acute stage, the patient should be kept in bed, while opium and quinine should be given internally.

One other form of ulceration of the cornea seen in general practice is the Hypopyon ulcer. This is nothing else than a pneumococcal ulcer. The infection is likely to take place if there is any inflammation of the lachrymal sack (dacryocystitis). The presence therefore of dacryocystitis is a real menace to the eye. If the cornea is injured by abrasion, say with the finger nail or the branch of a tree, etc., infection by the pneumococcus may take place. Hypopyon ulcers also follow measles, scarlet fever, small pox, etc. This ulcer has also been called Ulcus Serpens.

It shows as a yellowish disc near the centre of the cornea. There is a little grey infiltration in the healthy cornea around. There is a violent iritis, and at the bottom of the anterior chamber, a yellow deposit is seen. It forms a horizontal line. If the patient lies on his side, the Hypopyon will move to the lowest part. It may be so

extensive as to fill completely the anterior chamber. It consists of polymorphonuclear leucocytes massed together in the lower angle. These are derived from the iris and ciliary processes. It is sterile.

If the ulcer is left to pursue its natural course it will perforate usually forming a large opening through which the iris prolapses. Rarely panophthalmitis or suppuration of the eye follows. With the majority of cases I see, I admit them at once to Hospital for treatment. They yield to skilled treatment and often a useful eye is saved. But if left to the patinet's own care, the eye is often lost. Cauterization by means of pure carbolic or by the galvano cautery is used, and it is in this type of ulcer that Saemisch's section is employed. With a fine, narrow, Graefe knife, after cocainizing the eye, insert the point in the healthy cornea just outside the edge of the ulcer. The ulcer is divided straight across. The aqueous pours out and with it much of the Hypopyon. Atropine is instilled and a bandage applied. This procedure improves the nutrition of the cornea and evacuates the Hypopyon, but it must not be tried in mild cases or the early stage of severer cases.

A great many oculists use a quinine derivative called optochine. A 1 per cent. solution is supposed to have a specific action on the pneumococcus.

The results of treating a Hypopyon ulcer vary greatly, but often in elderly people where atropine cannot be employed for fear of glaucoma, the result of the ulcer is extensive and the sight is greatly diminished.

The disease known as Interstitial Keratitis is one of great importance not alone to the ophthalmologist, but to the general practitioner as well. The recognition of this disease in the majority of cases is comparatively easy, and the appropriate treatment is exceedingly satisfactory.

If one were to take up the various text books on ophthalmology, the opinions there would be found to be far from unanimous in their methods of treating such a condition. The writer some years ago undertook a special study of this disease (see *Preliminary Report on the Treatment of Interstitial Keratitis*, 1925). Jonathan Hutchinson in 1858 began a series of papers on the subject of inherited syphilis in its relation to diseases of the eye. The number of cases investigated by him was 98, and from his study he was able to show the superior efficacy of specific treatment by mercury and iodides.

Many workers have appeared in this field. Nettleship, Sinclair, Bishop Harman, Langendorff, and others. It was with pleasure I read, Langendorff's work at the Rudolf Virchow Hospital which led him to the conclusion that specific treatment is undoubtedly beneficial although its action is not dramatic. He said: "The most

reliable test of the severity of a disease of the eye is to note the degree of vision left after the culmination of the disease, and judged by this test, the value of consistant specific treatment stands out plainly."

My observations have led me to the same conclusion regarding the end results of specific treatment. I have endeavoured to give these in terms of the vision finally obtained, and in this respect, I am differing from the majority of workers on this subject. The eye is an optical organ and its function is that of vision. Surely, then, the most important consideration is the degree of vision left in an eye that has been attacked by any form of disease. Judged by this test, the best treatment is the one which gives the highest vision at the termination of the disease.

I collected a series of ninety-one cases which extended over a period of four years. I found the proportion of males to females was 1 : 1.87, while Hutchinson obtained the figures 1 : 1.7. My youngest patient was five years of age, and the oldest forty-nine, but only two cases were over twenty-six years of age. The great majority occurred between six and twelve years of age.

The doctor should make himself familiar with the signs of congenital syphilis. For example, the permanent incisor teeth show notching, or instead of notching, may appear peg-shaped with spaces between the teeth (*see illustrations*). The bridge is usually acutely depressed, and I did not notice deafness in any one when the Interstitial Keratitis was first seen. Remember, however, deafness is common in those who have not had prompt and thorough treatment.

I may mention here that I have never seen the slightest improvement in the hearing of any congenital syphilitic from any form of treatment once the deafness was established, and this agrees with those authorities on diseases of the ear who have stated that treatment avails little or nothing in cases where deafness is due to congenital syphilis.

The pathological state of the labyrinth makes it quite clear why this is so. Hutchinson and Jackson said 10 per cent. of congenital syphilitics acquired labyrinthine deafness, and it may supervene just as the attack of Interstitial Keratitis is passing off. How important then becomes the prompt and thorough treatment of Interstitial Keratitis. The deafness alone would indicate that the treatment must be constitutional as the disease is constitutional, although only the eyes may appear to suffer from the ravages of congenital syphilis.

One important fact is brought to light by questioning the mother about the births in her family. Several times I have been told that previous to the birth of the child, now the patient, a miscarriage had taken place. All the children born before the miscarriage were perfectly healthy, while those that came after suffered in a greater or lesser degree from some form of congenital syphilis. Obviously the

miscarriage gave an indication of the time when the mother became infected.

It is also while questioning the mother that one realizes to some extent the awful wastage of human life caused by women contracting syphilis. Recently one woman told me she had had four miscarriages every year for the past four years. The child she brought to me was suffering from the onset of Interstitial Keratitis and had other signs of congenital syphilis about the body.

Interstitial Keratitis is not the last manifestation of congenital syphilis. I have seen a gumma in an eye long after the onset of the Interstitial Keratitis. I have seen gummatous ulcers on a girl's leg when the infected eyes were quite healed. I have seen at the West End Hospital for Nervous Diseases a young man, aged 23 years, who had suffered when a child from Interstitial Keratitis and was now showing symptoms of General Paralysis of the Insane.

It is worth while examining the knees of these young people. They are often attacked and show the typical bilateral sero-synovitis termed Clutton's joints by D'Arcy Power.

The investigation into the etiology was as follows. Sixty-four new cases seen by me for the first time all showed a positive Wassermann reaction of the blood serum. Eight cases were old, the disease having run its course more than ten years previously. In all of these which had not specific treatment, the Wassermann reaction was negative, but in five of these where I was able to have an examination of the cerebro-spinal fluid done, a Luetic Curve was obtained by means of Lange's colloid gold test, proving definitely they were syphilitic. Therefore one must not infer from a negative Wassermann reaction of the blood that a condition is not syphilitic. It was due to this misunderstanding that many cases of Interstitial Keratitis were supposed to be tuberculous. In my series, 100 per cent. were syphilitic.

It is wise for practitioners to remember in congenital syphilis when the Wassermann reaction is positive, treatment does not change it to negative, and in old cases of Insterstitial Keratitis, when a fresh manifestation of syphilis makes itself evident, the Wassermann reaction of the blood serum may or may not be found positive. Remember in acquired syphilis, the Wassermann reaction can indicate the result of treatment, but in congenital cases, it is the clinical manifestations which must be observed as the measure of thorough treatment.

The onset of Insterstitial Keratitis varies greatly. There may be merely fine opacities in the cornea with very little vascular manifestation around the limbus. With the corneal microscope, minute spots not visible to the naked eye, are seen scattered throughout the cornea. In two or three weeks' time the eye becomes much more acutely affected, so that the redness of the pericorneal zone

deepens while photophobia becomes more marked. Many cases show a red patch at the edge of the cornea accompanied by photophobia. If it is looked at through a magnifying glass, this salmon patch is found to be composed of numerous vessels both superficial and deep. Actual ulceration is exceedingly rare.

As the opacities of the cornea increase, minute blood vessels may be seen passing in from the limbus. They are both superficial and deep, and although these vessels may disappear, when the attack has passed off, they can be seen with the microscope years later as fine dark lines.

There is one type of onset of the disease where the cornea becomes entirely opaque. The pupil cannot be seen at all. These are what I have termed fulminating cases.

In the microscopic section of a cornea suffering from Interstitial Keratitis, the following is seen. The epithelium on the surface is swollen and shows minute vesicles or bullae. The body of the cornea is infiltrated with large masses of leucocytes. Large blood vessels accompanied by nerves are seen invading the cornea proper. Descemet's membrane is wrinkled or folded on itself, while the endothelium shows pittings. There is a certain amount of iritis. This should always be borne in mind as it is absolutely necessary to prevent adhesions or posterior synechiae being formed. This can only be done by the use of atropine from the very outset of the disease.

Although a child may be attending hospital, the family doctor is often questioned by the mother as to the cause of the disease, and its duration, also what the outlook may be. Wherever possible I ascertain the Wassermann reaction of the parents' blood, and treat them accordingly.

The course of the disease varies somewhat, but on an average, from the time of the onset of the Keratitis to its termination, is from six to eight months, and occasionally (3 per cent.) there is a recurrence.

The parent of the child should be warned that the disease is liable to attack both eyes. This is the rule in congenital syphilis, but is not the case in acquired syphilis.

The prospect is good if treatment is begun early and vigorously. One case I remember, in which a recurrence took place, the entire treatment lasted over two years. The patient now has 6/6 vision in each eye.

As to treatment, from what I have already said, it is clear that it must follow definite lines. Firstly, atropine ointment 1 per cent. must be applied thrice daily to prevent adhesions forming in the pupillary margin of the iris. If the symptoms are mild and with little photophobia, it is a decided advantage to add Hydrarg. e.g. Ox. Flav. 2 per

cent., but if the attack is severe, then it is better to use atropine alone. Observation with a slit lamp and corneal microscope shows that in these cases with severe photophobia, the superficial structures are heavily involved. The epithelium is oedematous or even bullous. There are numerous conjunctival vessels present, and in such a condition, Hydrarg, Ox. Fav. can only act as an irritant.

I have said the treatment should be constitutional, and as one of the 64 new cases which have been treated from the outset, has developed deafness. In untreated Interstitial Keratitis, deafness is common. Again, choroiditis is singularly absent in those cases which have been treated constitutionally from the outset, whereas it is the rule in untreated cases.

The treatment therefore is as follows. In addition to the treatment by atropine some form of arsenical injection given intravenously each week is employed. I have come to the conclusion that Novarsenobillion (N.A.B.) is undoubtedly the best. If the child is young and the veins are difficult to find, then Sulf-arsenol can be given intramuscularly. The first injection of N.A.B. should be .12 gms. This is increased to .3 gms. in two to three weeks' time. If the child is over 12 years of age the dose can be increased to .45 gms., but for 10 to 12 years of age the amount which seems to act most effectively is from .25 to .3 gms.

It is well to remember that in children, as in adults, two smaller doses given within a week's interval are infinitely better than one dose of twice the amount given singly. Ten to twelve injections should be given with a week's interval between. This is followed by giving Hydrarg c. Creta, 1 to 3 grs. daily. Treatment should be as thorough as possible. Even if the Keratitis be of a mild character, eight, ten, or twelve injections should be given followed by mercury. Iodides should be included if the patients are of adolescent or older age, and treatment should continue for one year at least.

If the Keratitis should prove obdurate, or should a recurrence take place, then a series of injections of N.A.B. should be repeated, and one should be prepared to continue treatment for another year.

When the eye becomes quite white, atropine should be stopped, but the use of Ung. Hydrarg. Ox. Flav. 2 per cent. should be continued nightly so as to obtain the minimum amount of scarring of the cornea. As a tonic Syrup Ferri Iod. is useful also for children.

A glance at the three tables at the end of my little book (*The Treatment of Interstitial Keratitis*) should convince the most sceptical of the value of the treatment I have outlined.

AN ADJUSTABLE WALKING CALLIPER SPLINT.

by

P. L. Gibson, Surgeon Commander, R.N.

In a small Hospital, often considerable difficulty is encountered in obtaining a mechanical appliance, when it is needed in a hurry. Such has been my experience with regard to a walking calliper splint, until two years ago, when an adjustable pattern was designed for me by Chief E. R. S. William John Sharp. I have never seen a similar instrument, and have found it very useful. Indeed prior to having one of these splints in stock, it was not unusual to find, that by the time the patient received his splint, carefully made to measure, he was walking out of the Hospital, untrammelled by any restraining apparatus.

The mechanics of the adjustable walking calliper splint are similar to those of an ordinary walking calliper; the basis of the splint is a Thomas' Knee Splint, in which the weight of the body is transferred mainly through the ischial tuberosity, via a padded ring and two steel bars, to the heel of the boot. Three sizes of steel bars are kept in stock, for gross variations in the size of patients, the fine adjustments being obtained through a screw thread on the terminal 3 inches of the steel bars, by means of which the adjustable foot can be raised or lowered a few inches. The bottom part of the adjustable foot is made of a standard shape, so that it readily fits on to the heels of boots of a Service pattern, vide diagram. Obviously one splint can be made to fit either leg by reversing the foot piece and straps.

The splint has proved of value in the following conditions:—

(1). Fracture of the Internal Tuberosity of the Tibia associated with traumatic synovitis of the knee joint in a heavy man of over 14 stone.

(2). Fracture of the Patella. (3 cases). Of these two were recent cases, and one an old standing fracture with a partial rupture of a fibrous union.

(3). Fracture of Tibia shaft. (1 case).

(4) Fracture of Fibula shaft. (1 case).

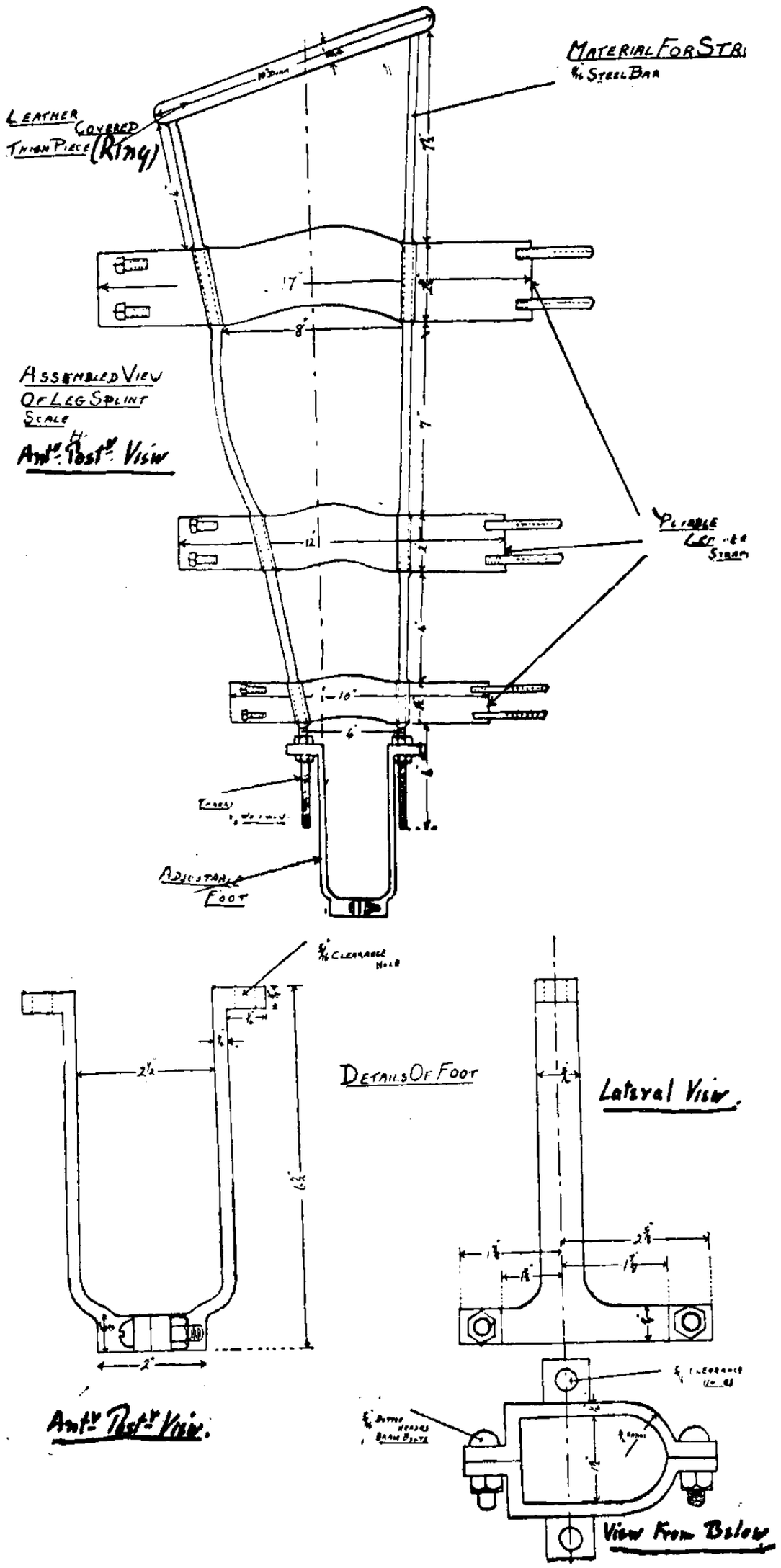
The only disadvantages noted were the following:—

1. Sometimes the metal heel portion of the adjustable foot was liable to skid on a polished floor. This did not occur if the heel of the boot projected below the metal.

2. Owing to the weight of the adjustable foot, it was found that the steel side bars of the splint tended to break off at the top of the threaded portion. In the later models the adjustable foot has been made of cast aluminium (weight 1lb. 1 oz.) instead of cast iron (weight 1lb. 9½ozs.).

This has materially strengthened the splint.

I am indebted to Surgeon Captain W. W. Keir for permission to publish these notes, and to Chief E. A. Edwin P. Pring for drawing the diagrams.


MATERIAL FOR STRI
⅛ STEEL BAR
LEATHER COVERED
THIGH PIECE (Ring)
17"
8"
12"
10"
4"
7"
ASSEMBLED VIEW
OF LEG SPLINT
SCALE
Ant. Post. View
PLIABLE
ADJUSTABLE
FOOT
⅝ CLEARANCE
2½"
6½"
2"
DETAILS OF FOOT
Lateral View
Ant. Post. View.
View From Below

THE STORY OF X--RAYS.

by

Alexander Cannon.

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It was in the year 1705 that experimenters first investigated beautiful and curious effects which were produced when electric currents were passed through glass bulbs which did not contain gas or air. The Royal Society has placed on record for the year 1785 a description of William Morgan's work, a perusal of which shows that in the course of his experiments, he must have produced X—rays, although he did not recognise the phenomenon.

Professor William Konrad Röntgen of Wuzburg, Bavaria, in the Autumn of the year 1895, described for the first time in the life of mankind, a new form of radiation which possessed the remarkable property of being able to penetrate materials which are opaque to ordinary light. During the course of some experiments with air-less glass bulbs, quite familiar to scientific workers and known as Crookes and Hittorf's tubes, Röntgen observed that some crystals of a chemical compound which were lying close at hand became brilliantly illuminated, although all visible light had been excluded by black paper wrappings. Further experiments revealed that certain dense objects placed between the Crookes tube and the crystals, cast a shadow. Towards the close of this year, these findings were made known to the Physico-Medical Society of Wuzburg, and in his paper, Röntgen also described with remarkable accuracy some properties of these new invisible rays, including the fact that different metals possessed various degrees of transparency to these rays, which he named X—rays. He showed that lead 1.5 millimetres thick offered complete resistence to their passage; also that ordinary photographic plates were sensitive to these rays, and produced an X—ray shadow-graph (not photograph, as it is so commonly termed, for they are shadow records) of the human hand. Vienna cabled to England the news of this momentous discovery, and this was published in the *Standard* newspaper on January 6th, 1896, as a "photographic" discovery. In Vienna, the *Presse* assured its readers that the matter was not a joke, but a serious discovery by a serious minded German professor.

Then followed a whole army of workers including Crookes, Davy, Faraday, Hittorf, Humphrey, Kelvin, and Lenards, all leaving their scientific directive footprints upon the sands of time.

One remarkable factor stands out above all others: long before Röntgen announced his discovery, which has made his name immortal, all experimenters had been unknowingly producing X—rays,.....yet

this discovery lay beneath their feet as a hidden treasure, for one man to dig deep and find it.

Sir Herbert Jackson wrote, "Just as I was puzzling over this (referring to the fact that certain substances outside his Crookes' tube were flourescing), Röntgen's discovery was published, and I saw the explanation of my own results."

Excitement now reigned in the whole of the Scientific and Medical Worlds. Its importance in the realms of medicine and surgery, was at once recognised. The Emperor of Germany honoured Röntgen, and the German Minister of War directed that the subject should be fully investigated from the point of view of its great possibilities in military surgery. Give honour where honour is due, and it is Germany who has earned this distinction of priority.

Almost in the twinkling of an eye, communications were made stating the use of these X—rays in medical practice.

But in spite of their value, the knowledge we had gained of their source of origin was small, and the World of Science was faced with the question as to what X—rays were. Tentatively, Röntgen had answered the question in his original communication, by stating that "these rays are vibrations of the æther, similar in that respect to ordinary light, but instead of being *transverse* vibrations, they are "*longitudinal* in character." Criticisms followed like overwhelming attacking forces, for critics argued that if these X—rays were similar to ordinary light, then they must obey all the laws of optics: a mirror will reflect light, but not X—rays; ordinary diffraction grating would not cause them to diffract.

Crookes, believing that X—rays eminated from the cathode stream, wrote to the British Association of Scientists as follows. "In these highly exhausted vessels, the molecules of the gaseous residue are able to dart across the tube with comparatively few collisions, and, radiating from the pole with enormous velocity, they assume properties so novel and characteristic as to justify the application of the term, borrowed from Faraday . . . . . that of Radiant Matter." However, molecular dimensions cannot be assigned to these particles, and it was later that Sir J. J. Thomson established the true nature of cathode rays. Thomson showed that X—rays were produced when cathode rays were stopped by matter. It must not be deducted from this, that cathode rays and X—rays are the same: this is not so; for cathode rays can be deflected by a magnet and X—rays cannot be deflected in that way.

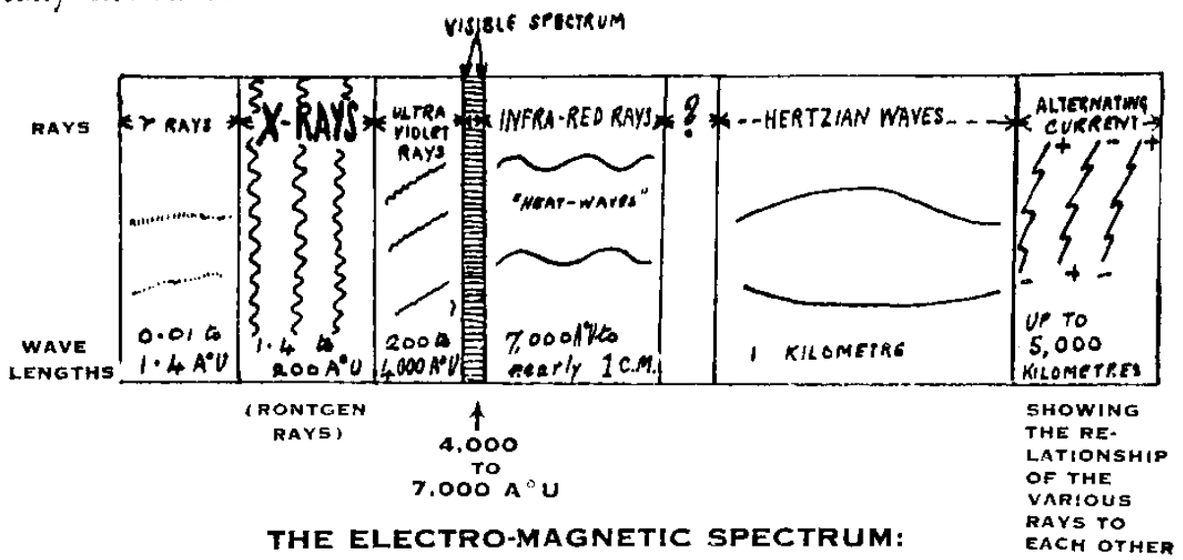
Thomson then discovered that X—rays could discharge a charged conductor, and also would cause a non-conducting gas to conduct electricity, that is, ... they could bring about ionisation.

In the year 1897, Thomson by improving the vaccum in a cathode ray tube, was able to thin out or rarify the cathode stream and measure the amount of deflection it suffered in a known magnetic field, and at the same time, the deflection produced by a known electric field. The apparatus was so arranged that the deflection of the cathode stream due to an electric field produced by two plates placed *inside* the tube, should be opposite in direction to the deflection produced by a magnetic field operating from outside the tube. There would be no deflection of rays at all, when these two fields are balanced. By these experiments, Thomson was able to determine the ratio of charge to mass of each of the cathode particles, and to measure the velocity with which it moved; and to show that the cathode stream really did consist of moving particles, and that each particle had a mass some (then believed to be eight or nine hundred) eighteen hundred times less than the mass of the hydrogen atom, and that each particle carried a negative charge of electricity: in other words, the atom was by no means the ultimate unit of matter, but rather that the atom consists of infinitely small units called electrons.

At Munich, in the year 1912, Professor Von Laue solved the difficulty regarding the impossibility of reflecting and diffracting X—rays. It is known that the wave length of visible light may be measured by means of what is termed a diffracting grating, by ruling a number of parallel lines on a piece of glass, evenly spaced some 20,000 to 40,000 to the inch. The light can only pass between these lines, and as the rays emerge from these minute apertures, produce interference phenomena, depending upon the wave length of light, resulting in a spectrum of colour (instead of white light), similar to that produced by the prism. Visible light has wave-lengths of from 72,000 to 33,000 to the inch. The diffraction grating sorts out the rays. It was observed that X—rays produced no interference phenomenon, however fine were these lines. Von Laue decided that all artificially produced gratings were too course, and hence nature must be resorted to (working on Wien's views of 1907, ... that X—ray wave lengths were probably some 8,000 times shorter than the wave length of visible light. (10^{-9}).) He noticed that the crystal was constructed in a perfectly regular manner, and that the spacings of the atomic layers are almost of the right order of magnitude to be used for diffracting X—rays. Friedrich and Knipping in the same year experimentally tested Von Laue's theory with triumphant success, and hence all doubt as to the nature of X—rays has now been removed. X—rays were shown to be exactly the same in nature as ordinary light rays, but to have a wave length some 10,000 times shorter.

X—rays, and rays of light, which are part of the electro-magnetic spectrum, all have a velocity of 186,000 miles per second; all components of the electro-magnetic spectrum being of the same nature,

and only differing in their wave lengths. This can be diagrammatically shown as:



THE ELECTRO-MAGNETIC SPECTRUM:

(A.°U. = Angstrom Unit = one hundred millionth of a centimetre) Angstrom was a famous Scientist of Sweden.

All of these rays are *transverse* vibratory systems, including X—rays.

Wave motion has nothing to do with material progression. To clearly understand it, one must consider casting a pebble into a still pond, when ripples will radiate from the place where the pebble struck the water. *The water itself does not flow out with the ripples,* but an energy wave sweeps out and periodically pushes it into crests and troughs: *it is the energy which is transmitted and not the water.* X—rays produced by the X—ray tube vary in wave length from 1.4 A.°U. to 200 A.°U., but the resulting beam has a sharp limiting value on the short wave end, which is defined by the voltage used, . . . and this limiting value is termed the Quantum limit. The wave length in practice is adjusted by placing certain substances in the path of the rays, and thereby absorbing certain of them.

X—rays are produced when rapidly moving electrons (cathode rays) are stopped by matter. The wave length of the rays depends upon the rate at which these rapidly moving electrons are decelerated or stopped: the more rapid the stopping process, the shorter and more penetrating the resultant X—ray waves, which are known as "hard" waves; whereas the longer and less penetrating rays are spoken of as "soft" rays.

The speed with which electrons move in an X—ray tube is determined by the voltage used as it is the difference in potential between the positive and negative electrodes which moves the electrons across from negative to positive electrodes, where they are caught by a suitable target, which transforms this energy mostly into heat and

just a fraction of it into X—rays, and hence the temperature of the target is raised so high that the target has to be constructed of a special heat-resisting material, such as platinum or tungsten.

The "hot cathode tube" which is now generally used was invented by W. D. Coolidge in the year 1913. The bulb is made so that all the gas is pumped out of it, so that no current will pass, because there are no free electrons to carry it. J. A. Fleming observed that if a metal is heated to incandescence, then electrons are thrown off from its surface. Coolidge of U.S.A., took advantage of this discovery and in his X—ray tubes the cathode electrode is a spiral of fine tungsten wire, forming part of a subsidiary electric circuit, which causes the tungsten filament to light up and become incandescent, and therefore electrons are given off which will carry a high potential current across the tube. The more the electrons given off, the greater will be the amount of X—rays produced. As the number of available electrons depends upon the temperature of the cathode spiral, which again depends upon the strength of current used—by inserting a resistance into the filament circuit, the amount of current and hence the number of electrons can be varied at will, and so the X—rays can be under complete control.

X—rays can ionize a gas (which is a non-conductor), and so turn it into a very good conductor of electricity. When X—rays fall upon a substance, they too, cause electrons to be emitted.

X—ray shadowgraphs or silhouettes, can also be seen by the naked eye, by the interposition of a screen made of material which is flouresced by such rays: the two best known materials are barium-platinum-cyanide, and Willemite. When the rays fall upon such a screen they produce flourescence, and the places where the rays do not reach it are left dark, hence the silhouette effect. Light is visible to the naked eye, and X—rays are ordinarily invisible, but after some time an eye may become sensitised to their presence to a surprising degree.

In these ways, X—rays are invaluable in the diagnosis of fractures; and by chemicals opaque to X—rays being administered into the alimentary tract, kidneys, thorax, cerebrospinal fluid, or brain, we can detect gross organic changes in these parts of the body.

The most important of all, are the biological properties of X—rays. They can do anything from stimulating the growth of tissues to killing them; and the rays action is as yet little understood. One thing we are quite certain of . . . . in incompetent hands, they are the most dangerous of all medical weapons. In correct doses and exposures, they are a god-send to those stricken with certain forms of cancer in certain stages.

Röntgen rays reveal to us a world otherwise unknown, not only of facts about the human body; but can produce the characteristic purple colour of antique glass upon the modern product. They are

also used in San Francisco to detect adulterations of flour and sugar with sand and chalk; in Germany to detect the adulteration of various other food-stuffs; to locate pearls in oysters without opening the shells; to distinguish between real (transparent to the rays), and artificial (partially opaque) diamonds; to detect fraudulent introduction of mineral substances into textile fabrics to increase their weight; to recognise explosives and contraband in baggage; to discover the contents of parcel-post packets; to examine the insulation of electric cables; to detect internal defects, such as flaws in steel castings and forgings; to examine welds; to detect explosives; to examine coal for ash content; and golf balls to make certain of the core being central and symmetrical; and to sterilize tobacco and cigars.

Dr. Heilbron of Amsterdam investigated paintings of old masters, and found many to be covered over by modern paintings: the old pigments were opaque to X—rays; the new pigments, being usually coal-tar derivatives of low density are transparent to X—rays.

In our medical work, the "specimens" are always human beings, having roughly the same shape, and the same X—ray characteristics; but this is not true concerning the diverse requirements of industry.

Carbon is the only element in the diamond, in which there is nothing else at all. Diamonds are very rare, expensive, and hard, and have great brilliance when suitably cut: carbon is also the only element in graphite, which is plentiful, soft, and a great lubricant, and very cheap. The difference in nature is very slight, being a slight difference in the way the carbon atoms are arranged. It was shown by Professor Bragg that the distance between the atoms varied in the two and also that there are certain differences in structure which explain physical differences which differentiate the two substances. Bragg observed that the carbon atoms in the diamond are arranged as a four-faced pyramid and separated from each other atom of carbon by 1.54 Angstrom Units; the mutual attraction of the carbon atoms being so very great that it is almost impossible to part them, hence the hardness. Graphite, on the other hand, has a similar construction to that of the diamond, except that the distance between the layers of carbon atoms is increased, and hence the attraction of one atom for the other is lessened. Hence Röntgen rays reveal to us the fundamental importance of atomic structure. A compound substance such as nickel and iron give the emitted beam of X—rays characteristic wave lengths; the wave length for nickel, and that for iron being different, and hence Röntgen rays will penetrate any disguise, in its accurate analysis.

Experience has shown us that X—rays affect tissue in a variety of ways. In some cases, living cells are killed by their action, and in other cases, they appear to be stimulated and caused to grow more rapidly. It has also been shown that living cells respond differently

to X—rays, depending upon the period in their lives when they are irradiated: immature cells appear to be much more sensitive to X—rays than cells which are fully grown. If Röntgen rays are not used by highly skilled specialists, their great value may not only be lost, but their effects become extremely dangerous to life. An X—ray and Radium Protection Committee has been appointed in England, and has drawn up a series of rules and regulations for the guidance of those institutions and individuals who employ X—rays. The work of the Committee has so extended, that at the Second International Radiological Congress held at Stockholm in 1927, various safety provisions were adopted as international standards. In days gone by when voltages used were comparatively low (now the voltage used is usually as high as 220,000 volts), and the X—rays were "soft," the danger manifested itself in the form of extensive burns and superficial growths similar to cancer, due to the rays being absorbed by the skin, and superficial tissues, and the damage was then only local, but nevertheless severe, crippling many workers: it had the advantage, however, that its effects were soon manifested. To-day, very high voltages are used (200,000 and upwards), and the rays are therefore "hard" and more penetrating, and even become general in their effects, and hence the after effects are more subtle, producing pernicious anaemia, and other severe injuries with frequent fatal termination, often without due warning.

The electrical dangers from shock must be borne in mind, as although the current is small, the potential is great, and may produce fatal results.

Further, the atmosphere may be affected, by the production of certain chemical effects, and prove harmful to health; and this has also been dealt with by the Protection Committee.

Another important piece of work done by the Second International Radiological Congress in 1927, was the standardisation of a unit of X—ray intensity, as a fundamental and international method of measuring storage. The official unit of X—rays intensity adopted by the Congress depends upon the ionising effect of X—rays, and it is defined as, "The quantity of X—radiation which, when the secondary electrons are fully utilized, and the wall effect of the chamber is avoided, produce in one cubic centimetre of atmospheric air at O deg. C., and 76 cms. mercury pressure, such a degree of conductivity that one electro-static unit of charge is measured at saturation current." The unit is called the *Röntgen,* and is designated by "*r*".

I might add that ultra violet rays are equally dangerous and should only be used by highly skilled doctors, and radiologists.

X—rays are still little understood. Our knowledge of them is still very, very small. Beware of handling, without extreme caution,

a thing concerning which no one knows more than a very little, for in years to come, we shall probably have revealed to us the horrors of the terrible after-effects of X—rays and ultra-violet light, which are often used as a panacea for all ills, with little thought of the morrow. Remember that *a little knowledge is dangerous.* We are, after all, dealing with the unknown, as our present knowledge is almost negligible. Each one of us anxiously awaits the day when disease shall not require to be checked in its high career, but shall be blighted at its origin, or even denied existence, when our weapons of war, which are always destructive to the innocents as well as to our objectives, shall be laid aside. That day may yet be far away, but already beyond the distant hills we see the assured promise of the dawn; for out of darkness there comes forth light as an inevitable law of the universe. There never was a time so rich in promise, so laden with rewards for those who labour with sincerity and truth. Surely, the whole army of science is in league with these faithful workers, moving forward with almost incredible speed, eager to lay at their feet the triumphs of its astounding conquests. The noblest of tasks lies ahead of us, to which we may consecrate ourselves: for the lives of men are in our hands, their happiness, their whole welfare. As we advance, let it be with footsteps fast, but sure—that we may bring no discredit upon X—rays in years to come, but triumph which will outshine all criticisms, and so not only make the name of its great discoverer, Röntgen, even more famous than before, but make X—rays a boon and a blessing to men. Our responsibilities are great. Let us be worthy of our charge.

I am indebted to the Director of Radiological Research, Research Department, Woolich, England, for confirmation of my technical statements, as laid down in his many well-known works.

THE RETICULO-ENDOTHELIAL SYSTEM.

by

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and

G. F. Walker.

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Since Aschoff in 1913 first wrote on the cellular network which he called the " Reticulo-endothelial system " over 500 important papers have appeared on the subject in the world's medical literature. As shortly and concisely as possible we now propose to give a resumé of the whole literature welded and compressed into a descriptive article.

The Reticulo-endothelial system comprises cells classified together because of certain properties . . . . phagocytic, chemical, functional and morphological . . . . which they have in common. The unity of the System has been demonstrated by the universal and constant affinity of its widespread components for certain dyes. Of this more will be said anon. The following structures have been identified as forming the system:—

(1) The Spleen.
(2) The endothelium and certain stroma cells of the lymph glands.
(3) Certain cells in the bone marrow.
(4) The thymus gland.
(5) The Küppfer class of cells in the liver.
(6) The endothelial cells of the capillaries.
(7) Certain cells in the Endocrine organs.

The outstanding fact about the System is that it can be " Blockaded," or thrown out of action, by the injection of dyes notably trypan blue. The effect of a " Blockade " of the System has been very extensively studied in Germany and Austria and the results can be tabulated thus:—

A " blockaded " animal

(*a*) Resists ordinary bacterial infection very badly.

(*b*) Is scarcely assisted at all by chemotherapeutic drugs which in normal animals assist in withstanding such infections.

(*c*) Shows little or no difference from a normal animal in the vulnerability to toxic processes like Diphtheria.

(*d*) Is unable to form the protective granulomatous lesions typically seen in tuberculous and syphilitic infections. Is overwhelmed by such infections without the usual reactive efforts.

From these observations and from innumerable collateral and confirmatory experiments it is recognised that the System aids the body to work against infection. Bacteria are engulfed and "phagocyted," and the bacterial debris and pigment can be seen in the System after an experimental infection in a normal animal. In more chronic infections defensive measures in the form of granulomatous masses are thrown up. Examples of these two phenomena are the staining of the System by the pigment of malaria, and the erection of a strangling fibrous tissue capsule round the margins of a syphilitic lesion, say in the liver.

On very much more speculative grounds it may be thought that the System resists cancer. The spleen is the largest depôt of the System in the body, and it is the one organ in the body which strongly resists experimental cancer besides being notoriously free from natural cancer processes. Again, in a "blockaded" animal cancer metastases are said to be more numerous and active than in normal or controlled animals. It is at least reasonable to think that the natural arrest of cancer (as for example of certain types of scirrhus cancer of the breast) is brought about by a reaction of the System strictly comparable to the strangling stroma above mentioned.

The status of the System in haematology is better worked out. Briefly it appears that the System as a whole, or part of it, may undertake pathological destruction of the blood elements. Well recognised diseases may be classified as disorders of the System, and the best example of this is the red cell destruction brought about by the cells of the System in the liver and lymph glands in Pernicious Anæmia. In Haemolytic Jaundice the cells of the System called the Küppfer cells in the liver, and also the Systemic structures in the spleen undertake considerable phagocytosis. The leucocytes also undoubtedly suffer from the local perverted phagocytic activity of the System. A clean cut example of his perverted activity is the production of Purpura Haemorrhagica. This is better named Essential Thrombopenia or Thrombopenic purpura. In it the platelets are destroyed by pathological activity of the System in the spleen, and splenectomy cures the condition. Haemochromatosis is due to excessive red cell destruction in the liver and lymph glands with a great accumulation of iron, and fibrous tissue reaction there.

Erythrophagocytosis by the System is not all pathological. The formation of Bilirubin from the blood corpuscles is part of the normal activity of the Küppfer cells of the liver. As to whether the bilirubin so formed in the Küppfer cells does, or does not, pass through the biliary epithelium proper depends the chemical qualities of the ultimate bile pigments on which the Van Den Bergh reaction is based.

A very great deal of the physiology of the System is still not fully charted. In particular the rôle of the System in the metabolism

of the ordinary food constituents has not been fully worked out. There is reason to believe that disorders of the System may be responsible for diseases like Diabetes Insipidus. It is known that the cells of the System have great affinity for fats and that blockade of the System causes hyperglycaemia. If all the physiology were known much light would be thrown on the pathology of Diabetes Mellitus. It is certain that the System plays a defensive and phagocytic rôle in pregnancy, but here again exact data is lacking. The state of our knowledge as to the realationships between the System and the endocrine organs is likewise deplorable. It is known that the adrenals inhibit and that the thyroid stimulates the System. Also the ability of the System to store and transport foreign and cellular debris is known to be varied by hormonic influence.

We have barely touched the fringe of the subject. We take the chance of putting a question rather than attempting more. Can the System be *selectively* stimulated and trained to resist infection or cancer as the Physician wishes?

The System can be compared to a standing army billetted on a community :—

(*a*) The garrisons will be well defined and recognisable. (Spleen, Liver, Glands, Marrow).
(*b*) Small detachments will be widely distributed and not so well known. (Testis, Thymus).
(*c*) The roads and railways will always have soldiers on them. (Vascular endothelium).
(*d*) The soldiers will be recognisable morphologically.
(*e*) Their function is to repel invaders. (Cancer and infection).
(*f*) But they nay debauch the local inhabitants. (Splenic erythrophagocytic and thrombophagocytic orgies).
(*g*) Or they may rob the inhabitants of precious metals. (Affinity between System and Iron).
(*h*) In any case they will live on the fat of the land. (Affinity between System and Fats).
(*i*) Their presence must cause speculation.

The Reticulo-Endothelial System, in fact, calls for something much more than speculation. And for this we make an earnest plea.

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THE DANISH TREATMENT OF SCABIES.

by

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During the last ten years a form of scabies treatment with a new ointment has been brought into use in Denmark, and it has proved much of an advance all over this country. *One single inunction suffices; after 24 hours the scabies is cured, and relapses are never seen.* The cutaneous irritation is but slight. The treatment can very well be ambulant. It was first used in 1911 by Professor Ehlers in the hospital of the city of Copenhagen. The ointment was composed by Mr. Marcussen, at that time a chemist of the same hospital. Professor Ehlers made his first publication of the results obtained in 1912 in a Danish medical paper, "Ugeskrift for Laeger."

METHOD OF APPLICATION.

In my department the application takes place as follows. The patient receives an ordinary cleansing bath, wipes himself thoroughly, and afterwards rubs the whole of his body, except the head, carefully with the ointment, which is almost of the consistency of butter. A nurse or another patient helps him with the back. The ointment must cover all the skin, but hard rubbing is neither required nor desirable. The patient ought then to wait for a quarter of an hour, to give the ointment time to get into the skin; after this he can go to bed. The next day at about the same hour he receives a second bath and fresh underclothing and the cure is finished. Meantime, all his clothes have been disinfected; I doubt, however, if this is absolutely necessary. All statistics seem to prove that this very simple treatment is as absolutely reliable as it is comfortable for the patient. But as statistics of scabies treatment in a civil population must, for obvious reasons, always remain incomplete in certain particulars. I think it of a special interest to study the results obtained with the treatment in the Danish Marine Hospital, in which hospital all scabies patients from the Danish navy have been treated since April, 1915. A possible relapse would hardly escape attention. In the period from April, 1915, to April, 1920, 678 cases were treated in the said way without a single relapse. Dermatitis was only observed in two patients, treated on the same day by some ill-prepared ointment which caused an alkaline cauterisation of the skin. One of these patients stayed 7, the others 21 days (see overleaf). The detailed results of this period were as follows:—

Number of days in hospital.							
Year	1	2	3	4-6	7	21	Total
1915	26	5	2	0	0	0	83
1916	67	12	4	1	0	0	84
1917	105	28	5	2	0	0	140
1918	250	36	2	0	1	1	290
1919	93	19	2	1	0	0	115
1920	15	0	1	0	0	0	16
Total 556		100	16	4	1	1	678

Briefly, a cure carried out in this way is absolutely reliable, rapid, comfortable, and cheap—the ointment required for an adult patient costing 3s. or 4s.

PREPARATION OF THE OINTMENT.

The preparation of the ointment is a little complicated, demanding a certain amount of care and practice to obtain a perfect result. The technique of the preparation (Marcussen) is here given.

(1) 1 kg. of sublimated sulphur is dissolved at a gentle heat in a kg. of a 50 per cent. solution of potassium hydroxide. This makes a clear, yellow solution.

(2) 225 g. of vaseline and 225 g. of water-free lanoline are carefully mixed, without heating.

(3) To this mixture 375 g. of the solution of sulphur in potashlye mentioned above, is added.

(4) Fresh zinc hydroxide is prepared in mixing 28 g. $ZnSO^4$ and 40 g. 20 per cent. sodium hydroxide, and this is afterwards added to the ointment.

(5) Liquid paraffin is added to obtain a total weight of 1,000 g.

(6) 5 g. of Benzaldehyde is added to check the somewhat disagreeable smell of sulphuretted hydrogen.

The high sulphides of potassium are the capital element of the ointment, upon which its activity depends, a production of sulphuretted hydrogen taking place when the ointment is placed upon the skin.

SARCOPTICIDE AND OTHER PROPERTIES OF THE GAS.

The sarcopticide power of this gas is very strong. If the hand of a scabies patient is brought into an atmosphere containing 25 per cent. of this gas, after ½ to 1 hour all the adult mites in the skin are killed. As could be expected, the eggs have considerably more

resistance. Unfortunately, the resorption of the gas by the skin takes place rather rapidly, if the whole body, apart from the head is brought into an atmosphere containing this percentage of sulphuretted hydrogen symptoms of intoxication appear after from 10 to 20 minutes, as I have experienced by exposing myself to this treatment, in the hope of finding in this way an absolutely clean and comfortable method of treatment. The unpleasant odour of the ointment is its only drawback, but this odour is not very persistent, and, moreover, after a few hours decreases to a minimum. Before undergoing the treatment, patients should remove from their persons and from the room all objects of copper, silver, etc., or the latter will be discoloured by the gas. The greatest advantage of the treatment is probably the fact that it is very suitable for ambulatory use. Under these circumstances the patient has to rub himself just before going to bed. In the morning he can wash his hands and carry out his daily work. The next evening he must give his hands a new treatment and take the final bath on the following morning, after 36 hours. With reference to disinfection, for patients a change of underclothing and of bedsheets will suffice, but for poor patients a thorough disinfection must be recommended. At Copenhagen ample arrangements have been made along these lines for ambulatory treatment on a very large scale in out-patient departments; thus avoiding all treatment of scabies within the hospitals. It is quite free to all inhabitants and is successful in every respect.

Editorial.

THE ADVANCE OF MEDICINE.

During the last 25 years how much have we learnt? The answer may be supplied by the Great War, diseases which were common then received intensive study, as did surgery, and bacteriology, the remainder were neglected largely, and are only now coming in for their share of attention.

To take an example, in 1905 syphilis was a very different proposition to what it is to-day, it was no uncommon thing to see large syphylitic ulcers, gummata, and various tertiary manifestations, which had to be diagnosed by physical signs alone, and mercury and potassium iodide were the chief remedies at our disposal.

In the Army at the present day we understand that it is rare to see a secondary rash, the man is under treatment even before the Wassermann reaction is positive, the disease is diagnosed by examining a smear. The treatment is simple and efficient.

Surgery too has progressed considerably, in that more operations are performed now than heretofore, owing to the aseptic technique being more efficient, the public better educated, and the doctors more ambitious.

Many of us in fact think that too much operating is done, appendices are removed which appear quite normal, caesarean section is performed on women, who if left alone would deliver themselves, or could be delivered by more simple methods.

The war familiarised the profession with surgery, influencing their whole outlook, and as surgery is safer for the patient than formerly, the practitioner is much more ready to operate, than he was, and many practitioners have quite unconsciously got the opinion that when the patient leaves hospital after operation, he must of necessity be cured, unfortunately this is not always the case.

Professor Munro Kerr believes that the future of general practice lies more and more in the direction of pure medicine far as he says "the surgical specialties including obstetrics and crafts, and craftsmanship only reaches its highest level when individuals in addition to having a natural aptitude for craftsmanship have continuous practice in their craft. This is not possible in general practice, no matter how large the practice may be."

Medicine, particularly tropical medicine has advanced, the old "shot gun" perscription containing about 20 different drugs is almost

a thing of the past, and there is a distinct tendency towards employing a specific.

The pathologists, and bacteriologists have discovered new diseases, and new microbes, but the former have brought blood transfusion to a high state of perfection.

There is no doubt that there is a great future for preventative medicine, during the South African War the deaths from typhoid must have approximately equalled those from all other causes, including wounds; the deaths from typhoid in the Great War were a small proportion of the total deaths. In tropical medicine much has been done in the prevention of diseases such as malaria, and dysentery, in maternity work ante natal clinics are springing up, these clinics are instrumental in reducing the incidence of the toxaemias of pregnancy, and in detecting cases of pelvis in time to select the most appropriate treatment.

Obstetrics however shows less progress than other branches of medical science, owing largely to the neglect of this subject during the Great War, the operation rate is very much higher than it used to be, but there is little or no improvement in the mortality rate, in fact in some clinics it is even higher than it was before the war, because obstetricians generally have failed to realise that the operation rate must be proportional to the death rate.

Science has progressed and is progressing, sometimes a discovery such as that of Lord Lister leads to spectacular results, but in the main the evolution of medical science is slow, but progress is well maintained. The present age is one of rush with a tendency to be superficial, many new things are being discovered, but we must not lose sight of the fact that much valuable knowledge is also being forgetten, the art of taking pains is becoming lost, largely owing to the many labour saving devices which now exist, a fracture is diagnosed in five minutes by X—rays, and there is little need to go exhaustively into the physical signs. But we as practitioners must endeavour not to merit the criticism of a famous author, who, referring to the present generation, remarked that it was like the River Ebro, both shallow and rapid.

Clinical Notes.

HOW TO COMMENCE STUDYING POISONS.

by

Alexander Cannon, M.D.

Oral poisons may be classified according to whether they burn or stain the mouth, or not.

1. Poisons which *do not burn* or stain the mouth (*give emetic*),

(*a*) Narcotics:

(1) *Opium and its preparations.*

mnemonic: My Pretty Polly Can Lap Cordial.

My—Morphia.
Pretty—Paragoric.
Polly—Syrup of Poppies.
Can—Chlorodyne.
Lap—Laudanum.
Cordial—Cordial.

Pin Point Pupils
Stertorous breathing.

(2) *Other narcotics.*

mnemonic: Chemists Very Seldom Trust Childish Assistants.

Chemists—Chloral.
Very—Veronal.
Seldom—Sulphonal.
Trust—Trional.
Childish—Chloroform.
Assistants—Alcohol.

Blue Face
Stertorous breathing
muttering delirium.

(*b*) *Convulsants:*

mnemonic: Prison Superintendents Can Lash Backsides.

Prison—Prussic acid.
Superintendents—Strychnine.
Can—Cyanide of Potassium.
Lash—Laburnum seeds.
Backsides—Belladonna.

Convulsions.
delirium.
failure of respiration.
Collapse.

(*c*) *Irritants:*

mnemonic: Arsenic If Taken Poisons Feebly Fed Children.

Arsenic—Arsenic.
If—Iodine.
Taken—Tartar Emetic.
Poisons—Phosphorus.
Feebly—Fish (bad).
Fed—Fungi.
Children—Corrosive Sublimate.

metallic taste in mouth, burning pain in mouth, throat, and stomach. Vomiting, colicky pains and diarrhœa in several persons in food poisoning.

2. Poisons which *do burn* or stain the mouth *(do not give emetic)*,

(*a*) *Corrosive Acid.*

mnemonic: Nice CHOPS Please Slim Ladies.

Nice—Nitric acid.
C—Carbolic acid.
H—Hydrochloric acid.
O—Oxalic acid.
P—Oxalate of potash.
S—Salts of Sorrel.
Please—Polishing pastes.
Slim—Sulphuric acid.
Ladies—Salts of Lemon.

In Carbolic acid poisoning urine often dark green in colour due to presence of hydroquinone. Sometimes convulsions and trismus before death.

(*b*) *Corrosive Alkalies:*

mnemonic: A Certain Scald Certainly Produced.

A—Ammonia.
Certain Scald—Caustic Soda.
Certainly produced—Caustic Potash.

Elements of Treatment of Groups 1 and 2.

Group 1.

Emetic.....(*a*) Mustard, one tablespoonful in a tumblerful (¼ pint) of lukewarm water, and repeat until vomiting occurs.

(*b*) Table Salt, two tablespoonfuls in ½pint of lukewarm water, and repeat until vomiting occurs.

(*c*) Place two fingers right at the back of the throat.

In *Narcotic poisoning* keep the patient awake, by walking him up and down the floor, slapping the face with a towel, and give black coffee, or caffeine gr. 5, and in the case of opium, 10 grains of Potassium Permanganate in one pint of acidulated water, and repeat in half an hour, if necessary.

If breathing appears to be failing, commence artificial respiration at once.

Treat shock and collapse, by keeping the patient warm, and assisting the circulation to the head and abdomen by posture and local warmth.

Preserve the vomited matter, for examination as to its nature by an analyst.

Group 2.

Corrosive acid: give alkalies.

mnemonic: Limewashing Makes W.C.'s Pleasant.

Limewashing—Limewater.
Makes—Magnesia.
W.—Whitening.
C's.—Chalk.
Pleasant—Plaster.

(in every case one tablespoonful in a tumblerful of lukewarm water).

Corrosive alkalies: give acid such as vinegar (weak acetic acid), or lemon juice, diluted with an equal quantity of water.

In both groups 1 & 2, when the patient is conscious, give milk, raw eggs & milk, cream and flour mixed, and/or tea.

Strong tea (a handful thrown into a kettle of water and boiled), *acts as a neutralizer of most poisons, and is harmless.*

Barley water, thin gruel, etc., are also valuable.

In *Phosphorus* poisoning, *never* give *oil*, as this will increase its absorption, and hence make matters worse.

In *carbolic acid* poisoning (characteristic "chemist shop" smell) give one tablespoonful of Epsom salts in the milk.

In *food poisoning*, give *emetic*, to be followed by *castor oil*, and treat any collapse. Give Tomb's Essential Oil Mixture.

All cases of *strychnine* poisoning should be treated by *emetics* and *artificial respiration* in every case, between the attacks of opisthotonus (standing rigidly on head and heels).

Starch, flour and water are most suitable in *iodine* poisoning.

There are certain poisons which require special treatment, which is beyond the scope of this note.

Poisons have a fatal dose, which is the minimum amount of poison which has been recorded to have caused death. For general purposes, it can be considered as three times the maximum thereapeutic (medicinal) dose.

Certain poisons, which have therapeutic doses, if taken in amounts slightly greater than the medicinal dose, or the maximum therapeutic dose for a long time, cause certain poisonous effects upon the body, which are often manifested in the formation of *skin rashes*. They are:

arsenic.....erythema, urticaria, and eczema. Permanent pigmentation of the skin may occur.

belladonna.....scarlatiniform rash.

bromides.....acneiform rash.

copaiba and cubebs.....papular rash.

iodides.....erythema, papules, and urticaria.

quinine.....scarlatiniform rash or urticaria.

salicylates.....measly or scarlatiniform rash.

santonin.....urticaria.

sulphonal.....scarlatiniform, purpuric rashes, associated with haematoporphyrinuria.

turpentine.....erythema rashes.

For further study of poisons see "Caduceus" Vol. 7 No. 1, February 1928 "A Study of Toxicology" pp. 26- 34.

Review of Books.

Manson's "Tropical Diseases": Edited by Manson-Bahr. Published by Cassell & Co. Price 31/6. Ninth Edition.

This new edition is an excellent production. It includes so much that is new in etiology, diagnosis and treatment no student or practitioner of tropical medicine should miss the opportunity of acquiring this new knowledge in such a ready assimilable form. The editor is to be congratulated on the success of his efforts, and it affords many of us in Hong Kong real satisfaction to see the work of the late Sir Patrick Manson so ably carried on.

Many new illustrations have been added, we would draw attention especially to the method of production of the radiograph facing p.p. 516,517, which might well be copied by other publishers.

K. M.

"A Textbook of Medicine": By Various Authors. Edited by J. J. Conybeare, M.C., M.D. OXON, F.R.C.P., (E. & S. Livingstone, 1929). Price 22/6.

This book on Medicine is published for the first time and in the Preface the Editor offers an apology for its appearance. The intention of such a new work is to "provide within a small compass and at as low a price as possible the essentials of medicine without producing anything in the nature of a synopsis." This the book fulfils. It provides the student with the essential facts regarding Medicine including Tropical Disease, Venereal Diseases, Skin Diseases and Diseases of Infants. It is an excellent book for the student who desires a book for rapid reading, and it should be particularly useful for pre-examination study. For the general practitioner it will be a good work to refer to, and in many instances will help the assimilation of modern ideas of treatment. In the chapter on Malaria we, in Hong Kong, miss the name of Manson. It is but natural also that, practising tropical medicine daily, we should be a little hypercritical. No mention is made in the chapter on Malaria of, quinidine, plasmochin or the examination of the urine for the excretion of quinine as proof of absorption. The author's opinion on Prophylaxis could have been more definitely worded in view of the opinion expressed recently from work done in the Panama Zone. Quinine prophylaxis is useful in keeping a maximum number of men fit while in the malarial region, no one, nowadays, relies on such for the absolute prevention of malaria.

In the chapter on sand-fly fever, the author should draw attention to the "injected conjunctivae," no one, who has seen a ward full of cases of sand-fly fever, will deny its pathognomonic significance. We have seen patients return within the month with a second definite attack of sand-fly fever. The value of agglutination tests for the diagnosis of bacillary dysentery is not mentioned. In the chapter on typhoid a useful fact might be included viz. the state of the agglutination to be expected in those of the civil population who were inoculated in the war and also of the recently inoculated. We fear Lord Moynihan will disapprove and reasonably so of the heading of the pages "Gastric and Duodenal Ulcer."

The Editor is to be complimented on the splendid Index.

K. M.

Acknowledgments.

We have much pleasure in acknowledging the receipt with thanks of the following contemporaries:—

The Post-Graduate Medical Journal, London.

The Hospital Gazette, London.

The Charing Cross Hospital Gazette, London.

The St. George's Hospital Gazette, London.

The St. Mary's Hospital Gazette, London.

The London Hospital Gazette, London.

The King's College Hospital Gazette, London.

The University College Hospital Magazine, London.

The Prescriber, Edinburgh.

Health and Empire, London.

The Birmingham Medical Review, Birmingham.

Publications from the League of Nations, Health Organization, Geneva.

Monthly Epidemiological Report.

Bulletins et Memoires de la Societe des Chirurgiens de Paris.

Bulletin de la Societe des Sciences Medicales et Biologiques de Montpellier.

The University of Toronto Medical Journal.

Bulletin of the School of Medicine, University of Maryland, Baltimore, MD.

Anales de la Universidad Central, Quito, S.A.

The Malayan Medical Journal, Singapore.

Japanese Journal of Medical Sciences (National Research Council of Japan), Tokyo.

Kyoto Ikadaigaku Zasshi, Kyoto.

Okayama Igakkai Zasshi, Die Universitat Okayama, Japan.

The Taiwan Igakkai Zasshi, Government Medical College Formosa.

Chinesische Zeitschrift fur die Gesamte Medizin, Monkden.

Index Universalis, Moukden.

Dr. Huang's Mediccal Journal, Shanghai.

Health, Shanghai.

Opium, Shanghai.

The Tsinan Medical Review, Tsinanfu.

The Moukden Medical College Journal, Moukden.

The Australian Journal of Experimental Biology and Medical Science, Adelaide.

The Medical Journal of Australia, Sydney.

Acta Psychiatrica et Neurologica (Karolinska Institutets Bibliotck), Stockholm.

The Tohoku Journal of Experimental Medicine, Sendai, Japan.

University of Durham College of Medicine Gazette, Newcastle-on-Tyne.

The Bristol Medico-Chirurgical Journal, Bristol.

Das System der Hygiene, Universitat Bratislava.

The Journal of Bone and Joint Surgery, Boston.

Porto Rico Review of Public Health and Tropical Medicine, San Juan.

Boletin de la Universidad Nacional de la Plata, Argentina, S.A.

Archives of Medical Hydrology, London.

Fukuoka-Ikwadaigaku-Zashi, Kukuoka, Japan.

Middlesex Hospital Gazette, London.

Endokrinologie, Leipzig.

Transactions of the Japanese Pathological Society, Tokyo.

Bulletin of the New York Academy of Medicine.

Mededeelingen Van Den Dienst Der Volksgezonheid in Nederlanded-Indie.

Polyclinica Dairen.

Revista del Instituto Medico Sucre, Bolivia.

Bulletin of the Medical Department of the University of Georgia, Augusta, GA., U.S.A.

Cornell University Medical Bulletin, New York.

Actas Y Trabajos, Buenos Aires, Argentina.

Deutsche Medizinische Wochenschrift, Berlin.

Die Medizinische Welt, Berlin.

Contributions to the Study of Tuberculosis, Natioal Jewish Denver.

Acta Medicinalia, Imperial University, Keijo.

Revue Medicale Roumania, Bucharest.

Arquivos de Clinica Medica, Porto.

Mitteilungen über Allgemeine Pathologie und Pathologische Anatomie, Sedani.

The Japanese Journal of Experimental Medicine, Government Institute of Infectious Diseases, Tokyo.

Zytologische Studien, Kanazawa.

The National Medical Journal of China, Shanghai.

Acta Medica Scandinavica.

Notes and Comments.

INTENSIVE POSTGRADUATE COURSE OF NEUROLOGY AND PSYCHIATRY IN VIENNA, SUMMER, 1929.

The following notice has been received from Vienna:—

Although postgraduate medical study is very well organised in Vienna, it was often our experience, that the individual studying neurology and psychiatry lost much time by waiting until a class was complete or that he had to take private lessons which are, of course, much more expensive. On the other hand it is very easy to organize intensive studies for a group of men who come to Vienna at a previously fixed term. Therefore special systematic classes for Postgraduate Study in Neurology and Psychiatry are held in English at Prof. Wagner von Jauregg's Neuropsychiatric Clinic, at the head of which is now Prof. Pötzl, and at the Neurological Institute of Prof. Marburg, Vienna University, Austria, under the auspices of the American Medical Association of Vienna. We decided to repeat it in summer 1929 (May 21.—June 29.)

In these 6 weeks (34 working days, 6 hours daily) the whole sphere of neurology and psychiatry and the adjacent branches (otiatry, ophthalmology, X-rays) will be covered in 204 hours and there remains time enough to go in for one or another special class. Hofr. Prof. Wagner, the former chief of the Neuropsychiatric clinic, his successor Prof. Pötzy and Prof. Marburg will be kind enough to participate in the programme. The names of the other teachers appear below.

The fee is $150.—(about £30 sh. 15) for each person, subscription at the American Medical Association of Vienna included. Applications with a certified bank check at the amount of $40.—enclosed should be sent to Docent Dr. E. Spiegel, Vienna, I., Falkestrasse 3 and are accepted in order of priority. Each applicant gets a card which gives the right to enter Austria without paying the Austrian visa. The class will be held for a minimum of 8 and a maximum of 15 men. If the minimum is not reached, the money will be returned. A certificate can be secured.

Further informations can be obtained by Docent Dr. E. Spiegel, Vienna, I., Falkestrasse 3.

Summary of the Lectures.

Hofr. Prof. Wagner. Special lecture	1
Prof. Pötzl. Special lecture	1
Prof. Marburg. Pathology of nerv. diseases	12

Prof. Pappenheim. Clinic of nerv. diseases	15
Doc. Gerstmann. Clinic of nerv. disease	15
Doc. Kogerer. Functional nerv. diseases	8
Ass. Dr. Dattner. Neurosyphilis	8
Prof. Stransky. Psychiatry	15
Prof. Schilder and Ass. Dr. Hartmann. Psychoanalysis	15
Ass. Dr. Kauders. Therapy of nerv. diseases, including Hypnosis	8
Doc. Spiegel. Vegetative Nerv. System	12
Prof. Hafferl. Anatomy of periphere nerves	6
Hofr. Prof. Sträussler. Histopathology esp. of cortical diseases	8
Doc. Spiegel. Anatomy of the central nerv. syst.	25
„ „ Physiopathology of the central nerv. syst.	15
Prof. Alexander. Neurology of the ear	8
Doc. Fuchs. Neurology of the eye	7
Ass. Dr. Kestenbaum. Ophthalmoscopy	5
Ass. Dr. Sommer. Nystagmus	5
Prof. Schüller and Doc. Sgalitzer. X-rays	8
Prof. Hirsch. Hypophysis	1
Ass. Dr. Adolf. Liquor tests, colloidchemistry of spinal fluid	4
Ass. Dr. Stein. Speech and voice disturbances	2

INTENSIVE STUDIES IN OBSTETRICS AND GYNECOLOGY.

Intensive studies in Obstetrics and Gynecology will be offered from August 24th to September 14th, 1929, at the Peking Union Medical College.

Special attention will be given to macroscopic and microscopic pathology. Ward rounds will be held, dealing with the diagnosis of cases, which will subsequently be submitted to operation before the class, and a final ward round will be given to discuss the after history of these cases. There will be special demonstrations dealing with the diagnosis and treatment of sterility, the management of normal and abnormal labours, and female urology. The use of radium in the treatment of gynecological disease will be discussed and shown to the class.

Seminars will be held at which the class will be expected to discuss chosen subjects under the guidance of members of the Department. The class will also be invited to bring up cases and subjects for discussion.

An effort will be made to show to all the members of the class the conduct of normal labour, and they will be called to any case of abnormal labour occurring during the course. Rubin's test will be shown to the class.

Enrolment will be limited to twenty-five, and all doctors are eligible for admission. The tuition fee is $35.00. Applications should be sent to the Registrar of the Peking Union Medical College or to the Head of the Department of Obstetrics and Gynecology. For information in regard to fellowships address the Registrar of the Peking Union Medical College.