up to 440 volts. The room temperature was maintained at 70° to 75° F.

Ulcers.—All cases treated have responded after varying periods; one worthy of note was a blacksmith's striker, who did not lose a day's work while undergoing treatment. The following is a typical case: Indolent ulcer of six months' standing in a girl aged 17. After nine weekly irradiations, beginning with three minutes at a distance of 10 inches and increasing to fifteen minutes at 6 inches, the ulcer was completely healed.

Eczema.—Exposure to the lamp produces very rapid reaction; at first the itching and discharge is increased, but this quickly gives way to new skin formation and complete relief from pain and irritation. A typical case was that of a cabman with severe eczema of the right leg who had been treated medicinally for some weeks with no good result. His leg was irradiated weekly, beginning with five minutes at 10 inches. After seven treatments, finishing with ten minutes at 6 inches, the leg was healed.

Alopecia Areata.—Cases of this disease have been successfully treated after medicinal measures had failed; hair 1 inch in length may be seen six months after treatment. Healthy hair grows about 4 inches a year. Prolonged treatment is not always required. Fine hair often appeared on bare patches after the third treatment. In a typical case, in a woman on whom a patch of alopecia areata had existed on the back of the head for six months, I began with fifteen minutes at 12 inches. Four irradiations at intervals of a fortnight at a distance of 6 inches for fifteen minutes were sufficient to start the hair growing.

Sycosis.—In this disease both successes and failures must be recorded. A chronic case healed, but three weeks later broke down; this may have been due to the fact, which I discovered later, that he was using his old shaving-brush. On the other hand, a case of sycosis of the upper lip responded rapidly and healed after four treatments. A case which may be quoted as typical is that of a man, aged 52, whose upper lip had been infected for several weeks. The lip was irradiated on four occasions at a distance of 2 inches, commencing with three minutes and increasing to six minutes. Two sun-baths of the body were also given.

Lupus.—Three instances of lupus have come under my notice in the past twelve months. All made excellent progress under the treatment. One has healed, the others are approaching that condition. These patients have had weekly irradiations.

Burns heal very quickly as compared with ordinary medical treatment, often showing healthy epidermis in half the time usually required.

Psoriasis.—I feel diffident about mentioning this disease, but results would appear to show that ultra-violet radiation is very valuable in the treatment of this disorder. Local patches are rapidly removed, but where the disease is general a long course of treatment is essential.

Sciatica.—Six to twelve treatments would appear to give complete relief; even long-standing and acute cases respond; one patient who had been fourteen weeks in bed returned to work after six irradiations. One case only was unrelieved—a man, aged 63, who had been ill for six months. He, however, had only three treatments. A typical case is that of a man, aged 37, who had had sciatica of the left leg for fourteen weeks. At the first exposure he was given three minutes at a distance of 5 inches; the pain was relieved. Six other irradiations were given at weekly intervals, the time being increased to fifteen minutes at the same distance.

Local Tuberculous Conditions.—Tuberculous knees, glands, and hip, and an anal abscess have all responded to treatment. A patient with a tuberculous hip who has been a cripple for eight years is already, after six irradiations, walking and able to go out alone, which she had not attempted to do for three years.

Chorea.—I have found the ultra-violet radiation very useful in the treatment of chorea. A patient had had the disease for five consecutive years, often being confined to bed for as long as three months. She had weekly sun-baths, and was kept up and about last year, although pregnant. At first she was given small doses all over the body, and later the dose was increased until she could stand as much as an hour at a time. Whenever the chorea appeared to be starting extra baths were given. She bore a strong healthy child, although she had miscarried twice previously.

Rickets.—Children with rickets always respond well to ultra-violet radiation. One child who, on an average, was having fits twice a week, due to the disease, has not had a return since its first sun-bath. In another case—a male child aged 5 months—I began with five minutes' radiation over the body at a distance of 18 inches. The bath was repeated twice a week, the time being gradually increased to fifteen minutes. He was treated for three months.

Rheumatism.—The chronic rheumatic patient appears to derive considerable benefit from ultra-violet light; it certainly seems to relieve rheumatic patients of pain and stops the progress of rheumatoid arthritis.

From the above cases it may be concluded that ultra-violet light is not only useful to the tuberculosis and child welfare medical officers, but also to the general practitioner in his daily work. The form of apparatus I have used can be fitted comparatively easily in any surgery, and, provided the doctor gives his personal attention and exercises considerable patience, he will soon obtain good results.

Ultra-violet light is by no means a panacea for all ailments, and in some of the diseases I have treated it simply replaces a more painful and cumbersome method by a pleasant and easily applied remedy. I think also that it often acts quicker than some of the older methods, allowing

patients to go on with their work or return earlier to work than otherwise. Especially do I recommend it to the practitioner in an industrial area where the worker, hidden between walls or under glass all day, is hardly ever subjected to the ultra-violet rays of the sun, and is therefore more susceptible to ultra-violet action.

There is little doubt that a general sun-bath stimulates the average person if it be given wisely. In my opinion, on no account should a patient be allowed to treat himself, as I have seen some very bad effects from overexposure. The artificial sunlight bath appears to act on the general metabolism of the body—the appetite improves and the mental outlook brightens. This is particularly the case, of course, in large towns and industrial districts such as that in which my own practice lies. During the winter months I find it a most valuable asset.

ACCENTUATION OF A "MITRAL MURMUR" BY A TEMPORARY TOXAEMIC CONDITION (ACCOMPANIED BY TEMPORARY NYSTAGMUS).

BY

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The patient in this case was a boy, aged 14 years and 10 months, an indoor pupil of the Royal Cambrian Institution for the Deaf and Dumb. His deafness is congenital, and it may be of interest to state again that nearly all cases of congenital deafness have hearts with normal sounds, whereas the majority of acquired cases have some adventitious cardiac sounds. My experience is that the acquired cases are generally associated in their origin with some specific feverish condition, when either through some inflammatory condition of the heart the circulation of the blood in the region of the middle ear becomes enfeebled, or through some coinciding inflammation of both heart and ear the local tissues are irretrievably damaged.

For such a reason it may be of interest to mention that when this boy, in March, 1918, at the age of 8, was first medically examined by me his heart sounds were normal, but when I re-examined him in March, 1919, he had what is usually called a systolic mitral murmur. Between these two examinations (namely, in November, 1918) he had a very bad attack of influenza. The mitral murmur at each periodical examination did not become more marked, but rather seemed to be, if anything, less noticeable. Slight distinctions in quality and quantity of heart sounds are, however, very difficult to estimate. At any rate, he did not suffer at all from an impediment to the circulation of his blood, and his activities were quite unimpaired.

On December 19th, 1924, there was a Christmas tree at the institution, when this boy indulged unduly in the good things on the table. About an hour after the feast was over he fell down, and was thought to have hit his head. He became pale, pulseless, and collapsed, and the stomach was emptied of all its contents. Before I arrived he had been given a small quantity of brandy, but neither this nor any water could be retained. When I examined him there was no evidence of any cut or bruise on the head, nor did there appear to be any soreness on the following days. He was quite unconscious, the pupils were considerably dilated, and he had marked lateral nystagmus. The temperature was 100° F., and the pulse (120) was very soft and feeble. I found a very diffused impulse beat, a slight increase of the cardiac dullness, and a marked mitral murmur over the whole cardiac area. As he was quite quiet and in no pain, with only a very slightly raised temperature, I ordered him to be kept warm with hot-water bottles, and watched during the night.

The next morning some amount of consciousness had returned, the nystagmus was less marked, the pulse slightly stronger, but he was still very pale and the tongue flabby. The heart's impulse was still considerably diffused and the murmur very marked. He was ordered 3 grains of calomel (which had the desired effect), and subsequently was given three drops of Condy's fluid in water every four hours. In two days the nystagmus had disappeared, the pulse tone was restored, the tongue and appetite were good, whilst the impulse was nearly normal. The next day he was allowed to be taken home for the holidays, with a note as to the condition of things to the medical officer of the education authority.

After his return from the holiday (when the treatment consisted entirely of rest) I found the heart conditions normal, save for a slight mitral systolic murmur, and the reserve power of the heart good, whilst there was no evidence of any nystagmus.

The presence of this temporary nystagmus is of considerable interest and importance, for in my opinion it helps to emphasize the toxæmic nature of the whole attack—the nystagmus, like a vertigo, arising from some gastric poison. The collapsed and pulseless condition can be considered due to a toxæmia, whilst the stomach disturbance, together with the beneficial result obtained by means of calomel, seems to confirm a gastric origin. Gastritis of such a nature is usually associated with signs and symptoms classified under the head of urticaria—an irritable condition of the skin resulting in rapid exudation of serum or lymph; an acute labyrinthitis causing vertigo; an acute injection of the bronchial mucous membrane causing asthma.

In this case there was a markedly diffused impulse and an extensive accentuation of the mitral systolic murmur. This marked diffusion of impulse is explainable by a rapid exudation of fluid into the pericardial cavity, which accounts also for the increase in the area of cardiac dullness. That this pericardial fluid is subject to variations needs no proof, but to prove definitely when and to what extent those variations occur we have to fall back on symptoms. Any disturbance of the intrapericardial conditions is necessarily associated with very alarming symptoms, and of such a nature as was found in this patient.

Normally one finds 4 to 8 c.cm. of pericardial fluid present *post mortem*, generally lying in the most dependent part of the opened sac, but that is no evidence of the position or conditions of the fluid during life. In 1915 I drew attention to the fact that during life the intrapericardial pressure is negative to the extent of 6 to 8 cm. of water, and the result of this negative pressure is by suction action to keep the pericardial fluid at an equal thickness all over the surface of the heart.

For an organ like the heart, in, as it were, perpetual motion, a great essential is proper lubrication, which is supplied by the pericardial fluid, right both in quality and quantity; but should a toxæmic condition occur suddenly, with a rapid exudation into the pericardial cavity, the lubrication is disturbed and the motion of the heart interfered with to a serious extent. Evidence of such an exudation into the pericardial cavity is supplied in the case here recorded by the markedly diffused cardiac impulse.

Heart disease has been recognized as an entity for barely one hundred years, so that whatever tradition exists cannot be above criticism, especially of a constructive nature. In my opinion a great wrong has been done to the science of cardiology by depicting on cardiograms the "exact" position of a sound or murmur, implying a scientific exactitude for what is really a matter of individual judgement.

Let us for the moment cease to consider the cause of the heart sounds, and concentrate on the conditions necessary for their conduction to our auditory apparatus. The heart sounds have to pass through the pericardial fluid (normally a thin layer) as well as the chest wall. With a rapid exudation of fluid into the pericardial cavity there must be a considerable modification of the conducting conditions, to prove which one need only refer to the fact that in a case of marked pericardial effusion the heart sounds are not heard. Since fluid is a good conductor of sound we should expect the heart sounds to be readily transmitted, but the reverse is proved to be the case. The "energy" transmitted from the chestpiece of a stethoscope to the ears is the same as that transmitted from the chestpiece of a cardiograph to the tambour and "pen" for the production of the heart curves or waves on the moving roll of paper. The "heart curves or waves" therefore represent on paper what is heard by the ear—that is, the "heart waves" represent the heart sounds.

In pericardial effusion the "heart waves" are reduced to a minimum, and so also are the heart sounds; in other words, there is so little movement of the pericardial fluid that no movement is recorded on the cardiogram.

Is the diminution of this fluid motion associated with the disappearance of the heart sounds? Were the sounds produced in the heart they would be conducted all the more readily with such a large quantity of fluid; in other words, are the heart sounds produced normally by the fluid in the pericardial cavity?

Watson, to whom belongs the credit of being a pioneer in the realm of cardiology, dogmatically asserts that the first sound of the heart is due to the contraction of the heart muscle—"because, gentlemen, you all know," he tells us in his lectures, "that a muscle when it contracts produces a sound." But a muscle when it contracts produces no sound, so that the heart sounds cannot be due to the contraction of the heart muscles. The vibration of the valves has been asserted to be responsible for many heart sounds, but is it possible to believe that a thin membrane, of which the valves are composed, can be strung so taut as to cause such a loud-sounding vibration as evidenced by the heart sounds? Truly, when the valves are affected the sounds are affected, but the more diseased the valves the less they are capable of vibration, although coincident with a marked increase in volume of sound. When, however, the valves are affected the intrapericardial conditions are also considerably modified, and I have drawn attention to the fact that in heart failure the intrapericardial pressure has become atmospheric with a consequent loss of suction action whereby the lubrication of the heart is greatly disturbed.

It is now generally agreed that the end comes in heart disease, not by valve leakage, but through failure of the myocardium, which to act satisfactorily must be properly lubricated with pericardial fluid of the right quality and quantity under proper conditions; but, as I have proved by means of the manometer, those pericardial conditions are not normal in death due to heart disease.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

GALL STONES IN A GIRL AGED THIRTEEN:

CHOLECYSTOTOMY, REMOVAL OF FOUR STONES: RECOVERY.

THE memorandum by Dr. R. S. Woods (BRITISH MEDICAL JOURNAL, March 21st, p. 552), describing cholecystectomy in a male aged 18, has stimulated me to record this case.

I have not attempted to search the literature, but Walton (*Annals of Surgery*, July and August, 1911) gives the following table showing the age at time of operation in the 409 cases upon which his paper is based, and the ages at which symptoms first appeared.

Age at Time of Operation.			Age at which Symptoms Appeared.		
Age.	Number.		Age.	Number.	
1-10	...	0	1-10	...	3
11-20	...	0	11-20	...	27
21-30	...	26	21-30	...	57
31-40	...	68	31-40	...	122
41-50	...	117	41-50	...	101
51-60	...	123	51-60	...	67
61-70	...	63	61-70	...	27
71-80	...	11	71-80	...	5
81-90	...	1	81-90	...	0

He quotes a paper by Still in which records of twenty-three cases in young children (ten of them stillborn and young infants) are collected. Nevertheless, the operative removal of gall stones at the age of 13 must be sufficiently rare to be of interest.

I was asked to see a girl, aged 13, in consultation. Her doctor informed me that some months previously she had had cystitis accompanied by *B. coli*. For about eighteen months she had had frequent attacks of severe abdominal pain and vomiting. These attacks usually came on at night. She had had an unusually severe attack starting at 2 a.m. on March 21st, 1920. When I saw her, on the afternoon of March 23rd, the pain, now much less severe than it had been, had settled in the right hypochondrium and right iliac fossa. The abdomen was normal except that the right lower rectus was somewhat rigid.

I diagnosed recurrent appendicitis. As the present attack had subsided I arranged to operate, and on March 27th, 1920, opened the abdomen, using Battle's incision, and removed the appendix. It contained a concretion and two threadworms, and showed a stricture near the tip. As, however, it was hanging down in the pelvis I was not satisfied that it accounted for the pain in the hypochondrium. I therefore explored further and found to my surprise a large gall bladder containing stones. I enlarged the incision, opened the gall bladder, and removed four large stones.