sections this fibrosis was universal and no remains of carcinoma cells were to be found, but in the great majority of sections taken as long as one year after infiltration lighter staining areas were seen occupied by the debris of cells and representing the degenerated remains of columns of carcinoma.

The stroma remained infiltrated with lymphocytes in the areas surrounding such masses of debris usually for several months. While these degenerative changes were well marked and easily observed, it was remarkable how fragments or debris of the carcinoma cells persisted even in cases showing clinical cure.

Clinical Changes.

The clinical changes were usually well marked, and consisted of all degrees of improvement of the three main symptoms—haemorrhage, pain, and discharge.

Haemorrhage was the symptom most completely controlled. Usually it ceased within the first ten days, and, in a case reacting satisfactorily, either did not recur or only an occasional slight loss occurred. This often happened even when subsequent physical examination showed some persistence of ulceration which might bleed on manipulation.

Cessation of discharge occurred in 18 cases, but in 6 others it was considerably diminished. It was usual for a patient to state that the bleeding had ceased and that she now had only a little discharge.

Pain was affected variously. In about one-third of the cases it was entirely relieved, in another third partially relieved, and in the remaining third either unaffected or aggravated. It is probable that such aggravation is due to pelvic fibrosis compressing the nerves, in spite of the fact that the majority of such cases showed clinical improvement and increased mobility of the uterus.

On *local examination* marked changes were found. Usually by the end of the first month the ulcerated surface had cleared up considerably, and in another month the improvement was such that ulceration had disappeared and the cervix was represented by a cicatrized dimple at the vaginal vault. By this time also the periuterine infiltration had usually cleared up, and a uterus which, at the first examination, was found to be firmly fixed was now more or less mobile with the thickening dispersed from the fornices. This would show that at least a certain amount of such pelvic infiltration is inflammatory.

Results of Treatment.

The following is a summary of the results of treatment in this series.

Of the 40 cases, 26 had one application of radium, and of these 3 are known to have died within a year, 4 failed to report again, and 2 developed vesico-vaginal fistula. Of the remaining 17 cases the clinical improvement in symptoms and on examination was so marked as to constitute clinical cure in 10; while in the remaining 7 discharge and pain have persisted in 5, with haemorrhage in 2, and the local condition shows unsatisfactory healing and some persistence of infiltration.

Ten cases had two applications of radium, and of these 2 died and 6 failed to report. The other 2 both showed marked local, general, and symptomatic improvement, being free of symptoms with the local condition cleared up beyond recognition and with increase of weight.

In 3 cases three applications were given, and one of these failed to report. The other 2, when last seen, were free of symptoms and the local condition was represented by a cicatrix in the vaginal vault.

In one case, in which carcinoma of the cervix developed subsequent to previous subtotal hysterectomy for a uterine fibroid, four applications of radium have been given; symptoms have ceased and the local condition has cleared up.

Of the 40 cases, then, 5 are known to have died and 11 have failed to report; vesico-vaginal fistula has developed in 2, and in 7 the clinical condition is unsatisfactory. Considerable improvement, amounting to clinical cure, has been obtained in 17 cases. It appears reasonable to estimate that of the 11 cases who failed to report 6 have died; on this estimate the total number of deaths would be 11, while if the whole 11 are to be counted as dead the total deaths would be 16.

The number of cases actually treated by radium is in excess of the 40 quoted, but none are included whose treatment commenced less than a year ago.

Conclusions.

The conclusion arrived at is that in inoperable carcinoma of the cervix we have in radium the most potent therapeutic agent yet to hand; that in practically all cases greater or less alleviation of the haemorrhage and discharge can be obtained; and that in slightly under 50 per cent. a condition of clinical cure is brought about. The action of radium is locally destructive to the carcinoma cells and produces such degenerative changes that further activity would appear to be out of the question. The line of further investigation is therefore by improved technique and, if necessary, by increased dosage to expose all parts

of the parent tumour, together with any extensions, to the fullest effect of the radium rays so that cell activity may cease.

It is to be emphasized that this paper represents essentially a personal experience which happens to be in general accord with the experience of others who have used radium as a palliative in carcinoma of the cervix.

The cases considered were all inoperable according to the usual clinical criteria, and such controversial aspects of the matter as radium as an alternative to operation in any given case, preliminary radiation in the so-called borderline cases, or post-radiation hysterectomy in cases showing such local improvement and disappearance of infiltration as may tempt the surgeon to operate, have been avoided. Again, all the cases recorded were treated locally, and no attempt was made to treat extensions in the pelvis, as by the Daels and Schwartz operations. The recorded results of these procedures have not tempted me to resort to them.

It is important to estimate the exact position that radium should occupy in the treatment of carcinoma of the cervix, and it is as a contribution in that direction that this paper is presented.

I am indebted to Professor Sir Ewen Maclean for putting beds at my disposal for this investigation.

THE APPLICATION OF ULTRA-VIOLET LIGHT IN GENERAL PRACTICE.

BY

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At the present time much is being written on the specialized application of ultra-violet light, but to my knowledge nothing has been recorded of its use in general practice.

As a result of six months' experimental work on friends and myself with various types of lamps, I selected a quartz mercury vapour lamp* of the atmospheric type. Such a lamp has the advantage of portability, and combines economy of current with powerful ultra-violet radiation. The expense of producing the light is not prohibitive, for the electricity used does not cost more than the average bottle of medicine.

The actual source of the ultra-violet light is the gaseous particles of mercury raised to a point of incandescence by the passage of an electric current. This constitutes the mercury arc. Until recently the only type of mercury vapour lamp was the vacuum lamp, but the atmospheric pattern I have used is much stronger in ultra-violet radiation and has a longer effective life. It is important to add that it is necessary at all times to guard the eyes by glass goggles, since the ultra-violet light causes severe conjunctivitis unless such protection is used. Once installed, the lamp appears to be indestructible, except by mechanical breakage. I have had one in use for over 2,000 hours and it is apparently as good as new.

Various tests have been devised for measuring the intensity of ultra-violet radiation. Amongst others, the bleaching of methylene blue (L. Hill) and the toxic property of ultra-violet light on bacteria introduced into the blood stream (Eidinow). The methylene-blue test, however, is of use only for indicating comparative strengths of ultra-violet light and does not determine the reaction of the individual. The blood test, useful in measuring the effect on the patient, is somewhat difficult to perform in general practice. A simple preliminary test can be made by exposing a small area of the palmar surface of the patient's forearm to the light for one minute at a distance of 6 inches. The resulting erythema is noted after twenty-four hours.

I would emphasize the fact that in 90 per cent. of the following cases I had previously tried ordinary therapeutical measures which were either ineffective or progress was extremely slow. Details given below are of my early cases when I used a 110-volt lamp. Lamps can now be obtained

* Such a lamp is manufactured by Messrs. Kelvin, Bottomley and Baird, in their works at Hither Green, S.E.13. A suitable stand was designed for me, and has proved very satisfactory for applying local and general irradiation.

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.