influence unfavourably the results of subsequent treatment. Of course, the fact that a foreign body has been introduced into the uterus must add considerably to the risks of sepsis if further intervention is necessary subsequently, but in the three cases in this series this danger was fortunately not manifest.

The twenty-seven cases in which the method succeeded will next be considered. The chief advantage of the method lies in the comparatively short time in which labour started in the majority of cases. The "induction interval"—that is, the interval between the introduction of the bladder and the onset of pains—is often of considerable importance. In pre-eclamptic patients it may be a matter of urgency that labour should start within a few hours. In all cases an interval of more than thirty-six hours is, at least, a cause for some anxiety. The comparative figures which have been quoted amply justify the conclusion that the induction interval with animal bladders is very much shorter than with the stomach tube or bougies.

Quite apart from the question of efficacy in inducing labour, certain dangers associated with the method must be considered. The injection of large amounts of glycerin between the membranes and the uterine wall is said to be followed by alarming toxic symptoms. In the method here described only a small amount of glycerin can pass out of the bladder, and that very slowly. Nothing suggestive of a toxic effect has been noted in any case in this series.

The presence of any foreign body in the lower segment must tend to displace the head from the pelvic cavity. With animal bladders displacement of the head was noted several times, and on one occasion it caused a breech presentation with a prolapsed cord. The child suffered no harm, but this fortunate result does not, of course, lessen the seriousness of the condition, which must in this case be attributed to the method used. The only other accident which occurred was separation of the placenta in one case. Since the bladder and stylet are passed for a distance of about five inches into the uterus, it is evident that this accident may occur if the placental edge is less than five inches from the internal os. It would probably be sufficient to rupture the membranes and reinsert the bladder within the amniotic cavity in such an emergency; but in the case in which it did happen a smaller (sheep's) bladder was inserted, and no further haemorrhage occurred.

In four cases the puerperium was morbid (British Medical Association standard), but in one of these the rise in temperature was considered to be due to a urinary infection, and in another to an attack of influenza. In the other two cases there was evidence of uterine sepsis of a mild type. The danger of sepsis must exist whenever a foreign body has been introduced into the uterus, but this danger will be minimized in methods which allow of a good aseptic technique. An animal bladder can be inserted without any undue handling on the part of the operator, and without coming into contact with the vulva or vagina.

Apart from the cases in which a macerated foetus was delivered, all the infants in this series were born alive.

The principle underlying all instrumental methods of induction of labour is essentially crude, but in the present state of our ignorance as to the cause of the onset of labour we have to rely on these crude methods in many cases. We must not, therefore, expect entirely satisfactory results from an essentially unsatisfactory operation, but until we are in possession of a more rational principle there can be no objection to attempting to improve the details of an instrumental method of induction.

In publishing these results stress has been laid on the disadvantages and dangers, equally with the advantages, and although it may seem that attention has been drawn to an imperfect method of inducing labour, there is no doubt that it has some advantages over other methods in common use. The lessening of the induction interval is a very real advantage of the animal bladder method, and at the same time the disadvantages associated with it seem to be no greater than with other instrumental methods of induction.

REFERENCE.

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THE PRESENT POSITION OF X-RAY THERAPY IN MALIGNANT DISEASE.*

BY

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THE present time appears opportune for a review of the position of x-ray treatment in malignant disease. Anyone who has followed the progress of radiotherapy during the past twenty-five years cannot have failed to note what might be termed a periodicity in the favour shown to x rays and radium respectively. Just before the war radium was beginning an era of popularity.

At the Annual Meeting of the British Medical Association in 1914 the Section of Radiology arranged a debate, which I had the honour of opening, on the relative value of x rays and radium in malignant disease. The chief points claimed in favour of x rays were availability, unlimited quantity, and, most important of all, evenness of distribution in the tissues, owing to its being possible to use an x-ray tube at a considerable distance from the patient. On the other hand, the advantages of radium were set forth as follows: It could be brought into intimate relation with malignant growths, either by its introduction into cavities such as the oesophagus, or by actually burying radium tubes, or by inserting multiple needles—the latter procedure having been advocated by Professor Joly of Dublin in May, 1914, and a little later by Dr. Stevenson, also of that city. It was, moreover, claimed that, apart from questions of quantity, distribution, etc., radium rays—by which were chiefly meant gamma rays—were qualitatively of more value than x rays. There was said to be a further advantage in the standardization of dosage, or rather of output, which in the case of radium depended only on the quantity of radium and thickness of filter used; whereas the x-ray tube of that period was difficult to control. To some extent the upholders of the x rays admitted the impeachment, but claimed that, with technical advances, the output of x-ray tubes excited at a high voltage would more nearly approach the gamma ray in quality, and that exact control of output would also be secured.

It is interesting to note that radium, although in a sense the most dynamic of the elements, must, as a therapeutic agency, be regarded as static. By this I mean that the radium in use to-day is the same agent precisely as was in use twenty years ago, although the mode of its application may differ. Not so with x rays. Despite the war, the prophesied developments of the x-ray tube did in fact occur. The introduction of the hot cathode tube by Coolidge in America made the control of output easy, and later developments gave us x-ray bulbs capable of standing up to a quarter of a million volts for continuous running.

Working with voltages of this order, the directors of the gynaecological clinic at Erlangen claimed a high percentage of "cures"—three to five years—in cases of carcinoma of the cervix uteri such as previously had been dealt with by panhysterectomy. Their claims as to the value of their treatment in other forms of cancer were very modest, but an idea was unfortunately promulgated in this country that the "new x rays" were of almost equal value in all forms of cancer. The technique as originally introduced required the administration of a so-called "lethal dose" at a single sitting. With the outputs then available this meant seven or eight hours' continued exposure. Severe anaemia and violent sickness were often produced, and many patients died from the effects of the treatment. It is to the credit of British radiologists in general that they were not carried away by this craze; in fact, a joint letter was sent to the *Times* warning the public against exaggerated hopes.

The doctrine of the "lethal dose," which was the *therapia sterilizans magna* of Ehrlich applied to cancer, was bound to be discredited, for it disregarded the part

* Abstract of an address to the Croydon Division of the British Medical Association, May 1st.

played by the local and general reaction of the patient. By the time the medical and lay public in England had become interested in it, the theory was already going out of favour in the country of its origin, and as it faded into the background the technique founded upon it was correspondingly modified. The original intensive dose was divided at first over days, and then over two or three weeks. It became, in short, no longer an "intensive dose," but a course of deep therapy.

The years 1913 and 1914 may be described as boom years for radium; 1922 and 1923 were boom years for the new x-ray therapy. After 1923 the latter began to decline in favour, and last year (1928) radium was once more in the ascendant. Yet the problems are still essentially those of 1914; radium is scarce; efficient x-ray plants are almost everywhere available. X rays are unlimited in quantity, and can be evenly distributed over any desired area. At present the burying of radium is greatly in favour; the chief advances in technique over that in use fifteen years ago consist in the use of more numerous foci of irradiation—radon seeds or radium needles—and a wider encirclement of the growth to be attacked.

In certain circumstances the method succeeds admirably. In early carcinoma of the tongue operative removal is already obsolete, and early uterine carcinoma will probably soon be treated by radium alone. It is in the later and more extensive cases that failure occurs.

Realizing the limitations both of surgical implantation and of surface applications, the Paris Radium Institute has been using relatively large quantities of radium at a distance of 10 cm. or more from the skin. Here we see the wheel in full circle; this is an approach to the technique of deep therapy. In fact, the massive stands used in deep therapy have been utilized to carry the heavy lead box, weighing scores of pounds, which contains the four or five grams of radium which are necessary for the purpose. The cost of the radium for such an apparatus is in the neighbourhood of £50,000, representing interest of at least £2,400 a year. Furthermore, Dr. Regaud of the Paris Radium Institute is aware that this new technique is an imitation of established x-ray procedure, and he warns radium enthusiasts that no final verdict can yet be given as between the natural gamma rays of radium and the artificial gamma rays generated in an x-ray bulb.

Let us now turn to the hard facts we have to face in this country. All x-ray departments in hospitals with large out-patient clinics are crowded out with cancer cases. To change from x rays to radium we should need in England alone more than the whole world's present supply of radium. It is quite obvious that x rays must be used for many decades to come, and advocates of radium who decry their use do a disservice, not only to x-ray workers, but also to the public. In actual fact the hospital type of patient is more often than not a more suitable subject for the exhibition of x rays than of radium, for it is in this class of the community that malignant disease is often neglected until it is widespread. This is not usually the doctor's fault, but is due to ignorance, carelessness, or fear on the part of the patient. The most notable examples occur in middle-aged or elderly women who allow a uterine carcinoma to spread until the whole pelvis is infected before seeking medical advice. Such a case is the following:

A married woman, aged 63, in March, 1928, gave a history of irregular loss for six months, the menopause having occurred ten years before. The vaginal vault was indurated, the cervix irregular, and the uterus fixed. Treatment by deep therapy produced disappearance of all pain and discharge. In June the patient was doing well and had a course of light treatment. A precautionary dose of deep therapy treatment was given in November. The condition was quite satisfactory when the patient was last heard of about a year after the first treatment.

In a considerable proportion of such cases it is possible to dry up all bleeding and discharge, and to abolish pain. The patient returns to ordinary duties for six, eight, or even twelve months, and then usually succumbs very quickly to an acute recurrence.

I say nothing about the "cure"—using the term in the same sense as the surgeons do—of early carcinoma of the cervix by deep x rays alone. In this country we have not had any chance of treating such cases; but I have never heard that the Erlangen claims of 70 per cent. five-year cures in this particular field have been disproved.

Then there is the extensive inoperable carcinoma of the breast—perhaps already ulcerating when the patient first comes for treatment. Here a preliminary course of x rays, followed by palliative surgery, is usually called for; then, after healing of the wounds, further x-ray courses, alternating with, or combined with, ultra-violet light treatment.

As regards the quality of x rays to be used, a great controversy has gone on in the past between the advocates of medium and very hard rays. The general consensus of British radiological opinion, as voiced in a British Medical Association debate at the Annual Meeting in Edinburgh (1927), was that, in breast cancer, medium rays were preferable to very hard ones. My own belief, based upon the treatment of many hundred of cases, is that both types of radiation are necessary. Invasion of the skin, in the form which looks like multiple flat warts, responds best to unfiltered or very slightly filtered rays of medium quality. For mediastinal growth, and for metastases in bone, deep therapy is necessary. It is also often the only treatment that will at times relieve the pain and temporarily stay the progress of that terrible affliction oedema of the arm. I refer to the oedema which is the result of recurrence, and not that which is caused by contraction of scar tissue after operation.

In breast cancer, post-operative irradiation is of great importance. X-ray treatment used solely as a preventive measure has been accused of doing actual harm; and this accusation has been at times justified. If radiotherapy is to avoid this reproach it is necessary to bear in mind certain principles. A large dose of x rays has a depressing effect upon the system as a whole. Unless the dosage has been unduly concentrated the depressing effect is only temporary; but during this period, which may be regarded as a negative phase, a latent metastasis, which might otherwise give no trouble for years, is apt to be freed from restraint. When a patient is apparently sound it is wrong to do anything to him that may depress his powers of resistance even for a short time. I need hardly, before an audience of clinicians, stress the point that the body *does* put up a resistance against the spread of cancer, and that such resistance sometimes gives way in dramatic fashion. We must, then, for safe prophylaxis, use a mode of treatment which is, in the first place, known to be effective where there is actual growth, and, secondly, which improves the patient's general health. As regards the first essential, experience has shown that by a careful gradation of doses a primary or secondary nodule in the breast may often be caused to disappear, without there being any constitutional symptoms whatever. But something more than this is desirable. We must actually make the patients feel better. If they are anaemic and below weight, they must be brought up to a healthy standard. Two years ago I had some patients suffering from actual carcinomatous lesions who had ceased to respond to x rays, and appeared to be going rapidly downhill. As an experiment, I put them on to treatment by mercury vapour lamp. Some of the results were remarkable, as the following case will show.

An unmarried woman, aged 67, suffering from carcinoma of the left breast with glands in both axillae, was given a course of superficial x-ray treatment in April, 1927. A gland in the right groin had previously been excised, but the other lesions were not removed. The patient did not respond to the treatment; she lost weight and was terribly depressed. Mercury vapour lamp treatment (general) was started, and immediate improvement was noted. By December, 1927, the patient had put on 6½ lb., and she had become cheerful. There was a further gain in weight during 1928. The nodules have been kept in check by deep x rays, and the patient is in good health to-day.

I have no hesitation in claiming that a combination of x rays and light will in some cases add months or even years to a patient's life. The effect of the light is a constitutional one, analogous to what occurs in patients suffering from lupus and other tuberculous lesions. But while tuberculous lesions may disappear under light alone, although the diseased areas are shielded from it, cancerous nodules are merely arrested for varying periods; they do not become smaller. The arrest, even though in many instances temporary only, is accompanied by a gain in weight and by a feeling of restored well-being. Many patients say: "the light treatment is life to me." Is it not, therefore, rational to apply such treatment as a

preventive measure? At the least, the patient feels better for it; and, as recurrences must have a microscopic beginning, surely a treatment which can check an established growth must in many cases enable the system to repel an invasion which has as yet gained little force.

In conclusion, I feel that I must, even at the risk of prolixity, hark back once more to the case of the patient suffering from chronic recurrent carcinoma of the breast. Have you ever asked yourselves what happened to such patients before the days of x-ray clinics? I will tell you what happened. For months, sometimes for years, they lay and festered in their homes, the victims of horrible ulceration, more loathsome than leprosy. I can myself remember entering homes where the stench of the cancer patient not only permeated the whole house, but seemed to rush into the street, overwhelming the visitor before he had even crossed the threshold. Such cases must now be rare indeed, and that they are to-day the exception is due to the care bestowed on them in the out-patient x-ray clinics of the general hospitals. The aim of these clinics is to keep the breast patient upon her feet—free from pain, cheerful in mind, and physically unobjectionable—until a final rapid internal spread of the disease removes her after but a few weeks of bedridden life. On the whole this aim is accomplished, and it can be accomplished more readily now than was the case even two or three years ago. This is a record to be proud of. There is a cry at present of "new lamps for old"; but let us remember the Arabian Nights tale, and be quite sure that the old lamps are valueless, and the supply of new ones adequate, before we throw them away.

SYCOSIS BARBAE.*

BY

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THIS paper is limited to a consideration of the subject of cocco-genic sycosis or sycosis barbae, a simple staphylococcal infection of the hair follicles of the beard area in the adult male. Sabouraud¹ has referred to sycosis barbae, with reason, as "un des opprobres de la dermatologie." Textbooks unite in describing the condition as essentially a chronic process, difficult to cure; and discuss treatment, with little enthusiasm, in terms of years. It is wise that the views of the many upon such a malady should be ventilated from time to time, and it is the object of this paper to promote such a discussion.

PATHOLOGY.

An external infection of the hair follicles by the *Staphylococcus pyogenes aureus* produces inflammation which proceeds to abscess formation within the follicle, and is confined, in the main, to that portion of the follicle superficial to the neck of the sebaceous gland. The deeper portions of the follicle are rarely involved. This is the pathology of the condition, and it should be emphasized, first, that the infection is probably always of external origin, and secondly, that there appears to be no further complicating factor in the first instance, no question of a particular constitutional factor, and no question of any local or general state of susceptibility.

DIAGNOSIS.

A correct diagnosis at the onset of any infective process affecting the beard area is of prime importance. The differential diagnosis is not a difficult one, and it is useful to bear in mind here that sycosis barbae—presenting punctate follicular abscesses with surrounding erythema—was so named on account of its resemblance to the yellow pips set in the pink pulp of the inside of a fresh fig. Impetigo, ringworm, seborrhoeic dermatitis, and seborrhoeic sycosis are the conditions most likely to present difficulty in diagnosis.

Impetigo is a vesicular dermatitis primarily, as opposed to a pustular folliculitis, and this should be sufficient

differentiation. If treated with ointments, impetigo is commonly the forerunner of sycosis barbae, but this is the fault of treatment. Ointments tend to spread the eruption, to increase the period of infection, and so, by creating a chronic infective condition of the skin, favour the development of a secondary staphylococcal folliculitis. Impetigo should be treated with antiseptic lotions or powders.

Ringworm of the beard area is usually of the kerion type, and individual lesions—somewhat resembling boils—are red and boggy. The suspicion of ringworm is confirmed if infected hairs can be removed from their follicles without experiencing any resistance whatsoever. The fungus can be demonstrated microscopically.

Seborrhoeic dermatitis and seborrhoeic sycosis, unlike sycosis barbae, never affect the beard area alone. The moustache area is commonly affected, and the eyelids invariably present a chronic blepharitis. The scalp, the eyebrows, and other hairy parts of the body, as well as the flexures, may be involved. The importance of the diagnosis here lies in the recognition of the seborrhoeic diathesis and the special susceptibilities of the patient, which factors must be borne in mind in treatment.

ETIOLOGY.

Sycosis barbae is admittedly a disease confined, in the main, to the hospital class of patient, whether seen in private or hospital practice. Why should this be so?

Is it not likely that the solution of this first problem may have some bearing also upon the mysterious chronicity of this disease? For it is mysterious that a simple staphylococcal infection of the superficial parts of the hair follicles should resist treatment as does sycosis. Focal sepsis, sensitization, the excited or the uncleanly hand of the barber, the use of blunt razor blades, and even the colour of the hair, have all been called in to explain these mysteries, or rather the mystery of sycosis barbae as a whole; but they do not seem in any way to bear upon these two outstanding features—of class distinction and of chronicity.

Inquiry will elicit the fact that almost 100 per cent. of the sufferers from sycosis barbae are persons in the habit of shaving irregularly. He who shaves daily, and he who shaves not at all, rarely falls victim to the barbers' rash. It is this distinction in the personal toilet habits of the upper and lower classes which accounts for the incidence of the disorder being low in the one and high in the other. The factor of daily shaving is not merely of interest from the etiological standpoint, but is of the utmost importance in treatment. That hairy surfaces which are allowed to grow a stubble of hair are prone to irritation and infection is commonly observed; the boil or carbuncle on the nape of the neck is a daily instance of this.

While improper toilet, as well as improper treatment, may be a cause of chronicity in sycosis barbae, there are two other features which must not be overlooked. Septic infections discharging externally—particularly if adjacent to the beard area—may constantly reinfect the beard. Fissures at the angles of the mouth and about the nose, infections of the vestibule of the nose and of the external auditory meatus, infected teeth and gums, boils, whitlows, etc., commonly contribute to the chronic nature of a cocco-genic sycosis, and must be cured before that condition will resolve.

Finally, in cases of long standing, the development of sensitization in the tissues affected may have some small bearing upon the course of the disease, but it is of little importance in treatment until the infective process has been eradicated. That the factor does enter into the constitution of these cases is shown by the following, cited from my own practice.

A man, aged 27, had previously suffered from sycosis barbae, which had at long last yielded to treatment. He presented himself, at this time, complaining of persistent irritability and redness of the beard area, which had replaced the old sycosis. The non-infective, papular, erythematous eruption seen was diagnosed as a sensitization phenomenon, and cleared after the administration of three small doses of x rays. About twelve months later the patient received a course of staphylococcal vaccine treatment for an infection in the upper respiratory tract, and the first of these injections caused a relapse of the papular erythema of the beard area which persisted throughout the course.

* A paper read in the Section of Dermatology at the Annual Meeting of the British Medical Association, Manchester, 1929.