

We explored every single room in the department, but I'm afraid that a detailed account of each would fill several pages.

Careful and laborious experimental work has in recent years placed radium therapy upon a sound foundation.

At first radium, or rather the use of radium, was limited to the treatment of superficial conditions, like rodent ulcer, lupus, naevus, in which it sometimes effected brilliant cures. It is now used for malignant growths, and particularly those situated within the body, and which through their proximity to an external opening are suitable for an insertion of radium in tubes.

What about X-rays? Seventeen years ago it took about 15 to 20 minutes to take an X-ray, we'll suppose of the hand, and now the same X-ray is taken in $\frac{1}{100}$ of a second.

Radium is also used for the destruction of tumours which by reason of their size and position cannot be removed by surgical means. Capsules of radium are there buried in openings at various points of the tumour. The tumour cells thus exposed to a cross-fire of the rays degenerate and the tumour decreases in size, the capsules of radium being removed after acting for some hours or days.

Radium is in some cases used as a preliminary to operation, and the tumour then being reduced in size can be more easily and completely removed.

It must be remembered however, that neither the X-rays or radium supersede active surgical measures when these are easily available, for the complete removal of a tumour.

Great care is necessary both to avoid giving too prolonged exposure to the patient as the resulting damage may be beyond repair, also to prevent attendants from coming into repeated contact with the rays.

How are attendants protected? you may ask: (1) The whole of the X-ray department is built with special bricks which consist of Barium sulphate, a small quantity of lead, and various other constituents.

2. The doors are all inlaid with a layer of lead.

3. Radium is enclosed in a heavy lead box.

4. When patients are being treated with X-rays or ultra violet rays the eyes are protected with special goggles.

We hope in due time to have our model cancer ward built.

At present radium is the only source of relief for patients suffering with cancer. Great patience, care, and gentleness must be exercised by the nurse, remembering that however revolting the disease appears to the nurse, it is infinitely more so to the patient. She must never give the patient cause to think that she wearies of the perpetual dressings or finds them distasteful.

The preceding account has been written with reference to Black's Dictionary (13th edition), try an excursion to the X-ray department and by working for two months in the cancer ward.

STUDENT NURSE K. HUNT,
Member of S. N. A. Unit,
Government General Hospital, Madras.

RECENT ADVANCES IN THE TREATMENT OF CANCER

Abstract of a lecture given by J. J. M. SHAW, M.C., CH. B., F.R.C.S., surgeon in charge of Beechmount Royal Infirmary, Edinburgh, during the post-graduate week held by the Edinburgh branch, May 11 to 16.

Cancer is a disease in which good nursing is of the utmost importance. What is cancer? Not something which fastens upon the patient from without, but a physiological change which takes place in the patient's own

body, an abnormal growth and multiplication of cells. The disease is no newcomer. Hippocrates described it, and the commonest sites were the same then as to-day. Cancer is not confined to the human race. Rats, mice and fowls are subject to it, and some species of fishes.

Cancer is usually a disease of old age, though the young are not altogether exempt. To call it a 'malignant' disease is hardly accurate; rather is it the price our bodies must pay for having reached a certain stage of development, a development which is characterised by cell differentiation. These cells have not exactly 'gone Bolshie.' Rather has there been a breakdown in the process of specialisation, so that they go on growing and become out of control, and, once this has happened, it is a very difficult matter to bring such cells back to normal.

Crises of Rapid Growth

Throughout life there are periods or crises of cell development. In tissue culture, if one takes a minute portion of living tissue, incubates it in saline, adding from time to time a little embryo extract, these cells, being now 'free cells,' will multiply rapidly, and any 'sub-plant' or isolated section of the growing mass will do the same. A tiny portion of chicken heart has been growing in this manner in a New York incubator ever since 1905, a small portion being continually separated and sub-planted, so that the total weight of the growth thrown away must by now be something colossal. These sections grow much faster than the tissues in the body, because the latter are restrained by their *function*, i.e., it is their business to specialise by becoming skin or muscle or nerves or whatever is required. The same type of unrestricted, rapid growth also takes place after conception, when the chorionic processes are growing—primarily to enable the ovum to adhere to the uterus. Occasionally, however, the process fails to stop when this particular goal has been achieved, and so, by some very slight imbalance in the body, what was a physiological becomes a pathological process, and a chorion epithelioma results.

In the foetus, after the first phase of free growth of cells, differentiation soon begins, but if it breaks down, as it does sometimes in the kidney tissues, for example, the child will be born with a malignant embryoma.

When Cells Stop Specialising

Why should certain groups of cells which have worked thoroughly satisfactorily throughout a patient's long life suddenly stop specialising and revert to free cells, as happens in the breast, lip, and so on? A hormone called oestrin can cause this breakdown, this lack of restraint in cell growth; also certain local conditions. Acromegaly, an instance of non-cancerous overgrowth of bone, is caused by a derangement of the pituitary. Tar, which is the basis of many a useful preparation for the treatment of wounded surfaces, will, if applied constantly to a *healed* surface, produce cancer; so will other chronic irritations, such as a continual healing and breaking down of scar tissue in one area. Nature throws many more 'free cells' into a wound than can possibly be used. These cells depend for growth not on the blood and lymph streams but on a process called 'glycolysis', in which they obtain their oxygen and other needs from the splitting of carbohydrates in the fluids around them. They are all very sensitive to irradiation, which checks their growth. Radium has this effect on all young cells just because they are young.

Questions Nurses Are Asked

You will be asked if cancer is hereditary. Certainly there are a few examples of bad family trees, or of identical twins who have begun to suffer

from cancer at the same age and in the same site. But on the whole there is no evidence that people inherit cancer. However, it is very common. One person in 11 dies of it, and after the age of 40 the incidence is one in six, so that what may at first appear a hereditary predisposition is merely the working of the law of averages. The hereditary risk is therefore only slight.

Is cancer infectious? Though nobody would be justified in reducing aseptic precautions in treating a lesion, cancer is, in fact, very difficult to transfer from one person to another. One hears of such cases as a mother with a cancer of the breast looking after a family of small children. Taking ordinary precautions this mother need have no fear of endangering her children's health.

Is cancer on the increase? Except for a slight rise in the incidence of cancer of the lung, which may have something to do with the tarry constituents of our motor roads, there is no increase of cancer which cannot be explained by more careful diagnosis.

Treatment

Considering the very slight causal deviation from the normal, the end results of cancer are formidable. The danger from the local lesion, which is usually quite painless, is its habit of bursting its bounds and invading the neighbouring lymphatic spaces and glands—in other words its proclivity to spread.

There have been various fashions in treatment. If it is possible in certain areas to remove the entire affected part locally that is the best treatment of all. In the rest, surgeons, radium workers and X-ray workers must pull together as a team. In surgery the endotherm needle is best as it kills the cells as it cuts through them. There is no vital difference between X-rays and radium. Radium gives a shorter wave than has so far been obtainable by X-ray, but there seems no reason why X-rays should not eventually be developed to this pitch. Radium gives off three kinds of rays, α , β , γ . The γ rays are wavelike, as light is, and able to penetrate the tissues. Radium gives off a gas, radon, which is put up in seeds, and so can be sent through the post. Radon, however, is evanescent, losing a sixth of its power every day. Radium, too, disintegrates, but very slowly, turning to common lead in 1,500 years. Thousands of tons of pitchblende have to be treated to yield a minute amount of the salt radium bromide. This is usually put up in needles, having different coloured threads attached to indicate the strength. If the dosage is too strong the radium will kill normal as well as young and 'free' cells. Radium can also be put up in non-pointed tubes for insertion in some such material as stent, and moulded to the part for surface application; or the patient can receive a concentrated dose from a radium 'bomb'. The reaction after bomb treatment is usually sharp, but if the patients are warned of this and are treated in groups so that they can see with their own eyes that patients who have been treated earlier do recover from the reaction their confidence can be built up.

Protection of Staff

In the early days before the dangers of radium were understood the doctors who handled it used to acquire lesions on the hands, and the nurses became extremely anæmic, so much so that some of them never recovered. Now, various precautions are taken. The time spent in the bomb room is reduced, and the bodies of those who handle the element are protected behind a lead screen. The radium needles are also handled with long forceps and kept locked in thick lead safes.

The Radium 'Hen'

The greatest care is taken to avoid losing any of the element in the dressings and ward sweepings, and a sensitive electric instrument called a radium detector or 'hen', which clucks in the neighbourhood of the radium, is in general use. At the Manchester Christie Hospital all the hospital dressings are wheeled past the 'hen' as a routine. (Beechmount has not so far lost any radium at any time.) During treatment the surrounding skin can be protected and soothed by cod liver oil, or a zinc and castor oil paste, but the latter must contain very little zinc, as mineral substances (and iodine) cause intense irritation.

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THE MOTHERCRAFT PAGE

Articles for this page will be most gratefully received by the Editor,
Miss Diana Hartley, S.R.N., S.C.M., M.T.S. Certificate

The Training of Infants and Toddlers

BY M. MACASARE, *Student Health Visitor, Health Visitors' Institute, Bombay*

'In every work the beginning is the most important, especially in dealing with anything young or tender.'—*Socrates*.

The training of children helps in character formation. It should, therefore, commence at the beginning of life. First of all, it is important to train a child's body, since the training in physical habits passes gradually into character training and self-discipline.

When we are teaching young mothers about the care and management of children, emphasis should be laid upon *regularity*, that is, on doing the same thing at the same time daily; for example the intervals and hours for sleep and feeding. There are two reasons for this: (1) Physical, and (2) Moral.

Physical reasons. We teach mothers that infants should be fed at regular intervals, because it helps children's digestion. Children should be put to sleep at regular hours and should have a sufficient amount of sleep, since it is good for their growth.

Moral reasons. We know that if a baby is fed at regular intervals, he learns not to expect food at other times, and if he is made to sleep at the same time daily, he does so without a question.

Thus, he learns two habits which are bound to be helpful to him in later life. Early training consists chiefly in the formation of good habits. A baby should be trained up in regular ways. He should have regular hours for sleep, regular hours for feeding, regular hours for being out in the open and regular hours for bowel and bladder actions. He should also have regular hours for being thoroughly awake and disengaged, and at his parents' disposal for a little fun. Often we come across mothers who are at times found thoughtlessly to disturb babies sound asleep in their cradles, in their effort to put them to sleep in their arms as a token of their affection. This is not at all good for the babies for physical as well as moral reasons.

Of course, all do not possess the art of training children, though some mothers endeavour to train their children in regularity through the little teaching and experience they have had in life. Many, however, do not realise what it really means. Mothers should be made to understand that it is important to feed and clothe children in the best way possible, but that it is still more important to build up their character. By training them to form