blood, the importance of a fortifying line of treatment and of avoiding all depressing measures.

The problem of specific treatment still awaits solution.

(I have to acknowledge the valuable assistance of my house-physician, Dr. Turkington, in preparing the data for this paper.)

A Lecture ON RADIUM IN THE TREATMENT OF MALIGNANT DISEASE.

DELIVERED AT THE CANCER HOSPITAL, BROMPTON.

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THE action of radium on human tissues was accidentally discovered by Bécquerel in 1901. He carried a quantity of unprotected radium in one of his pockets for a time. A fortnight later a burn appeared on the skin. This accident quickly led to a number of experimental exposures, first on animals and later on human subjects. Wickham of Paris experimented largely with the new agent, and there is no doubt that the medical profession is greatly indebted to this pioneer in radium-therapy, both for the valuable work he has carried out himself, and for having stimulated others to work on the subject.

Remarkable success followed the use of radium on superficial lesions of the skin; naevi, keloid, lupus, rodent ulcer, and, later, epithelioma, have yielded to its curative power.

METHODS OF APPLICATION.

The emanation may be used for inhalation alone or mixed with oxygen, by injection, or, after its deposition upon metals, in glass tubes or on agar pads.

Inhalation has had up to the present no practical value in the treatment of malignant disease. The emanation may be injected into tissues in a saline solution. The solution takes up a very small percentage of the active gas, and is therefore hardly applicable for the type of case we are usually called upon to treat.

The deposition of the active principles upon metals, etc., opens up a large field of usefulness, and it is possible that in the future we may be able to make good use of this method in selected cases.

Experiments are being carried on by Mr. Phillips, the honorary physicist to the hospital, on the absorption power of petroleum, and we hope to get a fairly large percentage of the emanation taken up by petroleum, giving us a very active preparation which may be useful both for internal administration and for injection into the tissues; by the former method it is hoped that we shall be able to introduce into the system a large quantity of radio-active matter. We cannot expect to influence cancer and similar disease, but Dr. Bellingham Smith has shown that radium emanation in whatever form it is used is rapidly eliminated by the respiratory organs, so that a future field of usefulness for radium may lie in the treatment of respiratory diseases (phthisis, asthma, chronic bronchitis, etc.).

The deposit of emanation upon flat surfaces (pads of agar-agar) and their application to the surface of a growth and ionization of the particles into the deeper structures by the aid of a galvanic current may prove to be a useful method.

Flat applicators containing the radium in a varnish are useful in the treatment of rodent ulcer, superficial epithelioma, recurrent nodules of cancer, etc. It is chiefly the beta rays which are employed by this method.

Radium contained in metal tubes which act as filters, of the necessary thickness, may be used for particular purposes, and several tubes may be arranged around a growth.

Tubes may be inserted into the various cavities of the body (mouth, oesophagus, etc.). In treating a stricture of the oesophagus, a preliminary x-ray examination is necessary to locate the stricture and to give some idea of the

extent of the malignant growth. A bismuth cachet is swallowed by the patient, and when screened may be seen passing down the oesophagus. Should there be obstruction, the cachet will be found in the stricture. The exact situation of the obstruction can be determined before the radium tube is passed into it. Later, a radiograph will help us to ascertain if the tube occupies the correct position necessary to influence the growth.

Radium tubes may be buried in the substance of a tumour for a time determined beforehand. It is important that the tubes shall be well surrounded by the growth in order to get the maximum effect of the radiations upon the new growth; the tubes should be placed at equal distances from one another to ensure an equal distribution of the radiations.

ACTION OF RADIUM UPON TUMOUR CELLS.

The action of radium on tumour cells is not purely caustic, though caustic effects can readily be produced if the exposure is too prolonged or the filtration is insufficient. In some growths we deliberately make use of the caustic action to produce necrosis of the mass, in the hope that when the slough separates the normal tissues will fill in the resulting ulcer.

Occasionally enlarged glands are reduced in size with hardly any skin reaction; nothing more than a slight erythema may be produced even after repeated exposures to the same area of skin, yet the enlarged glands situated at a much deeper level slowly diminish in size.

Malignant indurated ulcers will rapidly break down and heal under the action of radium.

The degree of action induced is dependent upon the method of application. The various degrees of tissue change depend upon the filtration employed and the length of the exposure. Thus, if necrosis of the growth is necessary, a thin filter would be used and a long exposure given. Here we are making use of the beta ray almost entirely. Should it be necessary to act on a deeper structure and at the same time protect the skin from such action, a thick filter of platinum or lead is used. Two millimetres of platinum or four of lead are sufficient to cut off all but the hardest of the beta rays, while the gamma ray is unaltered. The filters containing the radium are enclosed in a rubber tube to prevent the secondary radiation induced in the platinum by the radium rays from damaging the superficial structures. If the exposure be long, further protection can be secured by using an inch or more of lint or gamgee tissue.

In this way we can control the exposure so that we get nearly the pure gamma-ray effect. This enables us to get an action upon the deep-seated parts.

It has been claimed that radium possesses a "selective action" on cancer cells. While admitting that it undoubtedly appears to act on such cells, the word "selective" is badly used. Radium exercises an action on all living cells in a varying degree according to the resistance of the particular cell in question. Thus, young actively growing cells are more readily influenced than mature cells. The cells of a new growth approximate in structure and power of resistance to the actively growing cells of a tissue. In this way it is conceivable that the cancer cell is influenced should it at the time of exposure be attacked comparatively early in its life-cycle. Should the cancer cells be of a stronger or more vigorous type, it is conceivable that the action of the radium may be stimulating, and instead of a decrease in vigour of a particular cell we may find an increase in activity, and a consequent increase in the size of a tumour. It is a fact that some cases of cancer increase in size at a quicker rate after radium has been applied. Some types of cancer are more amenable to radium treatment than others.

In addition to the action upon the cancer cell itself, radium acts upon all the tissues composing the growth and surrounding structures unequally. There is a general stimulation of the healthy tissues as a result of radium treatment so long as the exposure is not excessive. If it should be excessive the action is apt to produce a caustic and ulcerative effect, which leads to local death of the tumour and a portion of the tissues around it. This may sometimes be desirable.

When the effect upon the healthy tissues is confined to stimulation, we expect to find an increase of fibrous tissue formation which shuts off the cancer tissue from its blood

supply and causes the atrophy of such cells. The reparative power of the normal tissues is strengthened, enabling them to cope with the invading cells and lead to their destruction. These changes can be seen in sections removed from cases undergoing treatment.

The changes induced in malignant growths by the action of radium and similar agents are, so far as we can see, indistinguishable from the degenerative changes seen in cases of growth which have received no treatment; but this important point must be insisted upon: that the percentage of cases in which we see these changes is much larger in the group of cases treated by radiations than in the group which has received no treatment.

It must be admitted that occasionally we see a case of untreated cancer diminish in size and, in a very small percentage, ultimately disappear. During the treatment of cancer by radiations it is by no means uncommon in a fairly large percentage of our cases to see a marked diminution in size produced. In a smaller percentage we do see the growth disappear—at all events for a time.

The local disappearance of a growth is not a cure. The disease may have, and in the majority of cases undoubtedly has, extended to other parts of the body. Consequently no case can be said to have been cured until we have given the deeper ramifications of the growth sufficient time to develop and manifest their presence. It is therefore important that before we treat the local condition a search be made for secondary deposits. From the point of view of prognosis, this is a most important matter.

Of the means we possess of ascertaining the secondary spread of cancer the first important point is to remember the distribution of the lymphatics draining the area in which the growth shows itself. Recent improvements in radiographic technique enable us to examine the thorax and other parts for secondary deposits in the mediastinum, pleura, or lungs.

A man, aged 24, came for the treatment of a growth of the lower jaw, in itself a serious condition to deal with, because at that age the progress of a new growth is rapid and exceedingly difficult to check. An examination of the thorax revealed a large secondary growth in the right lung. One has to treat such a case, but the result can easily be foretold.

In another case a parotid tumour had been operated upon on several occasions, and latterly the condition had practically disappeared under radium. The patient appeared to be in good health, but had lost a great deal of weight in a few months and complained of occasional attacks of dyspnoea of short duration. A radiograph showed that both lungs were riddled with secondary growths.

A woman, aged 55, had her left breast removed. She came for prophylactic x-ray treatment. The scar was free from secondary deposits, but she complained of a deep-seated pain at the upper end of the sternum, and secondary deposits were discovered in the anterior mediastinum.

One more case may be quoted. A patient, who had the left breast removed about a year earlier, came for the treatment of recurrent growth in the scar, axilla and supraclavicular region on the left side. For several months she had complained of a severe pain on the right side of the sternum, deep seated and gnawing. Several screen examinations and radiographs failed to reveal the presence of definite recurrence on the right side. She was carefully watched, and another radiograph revealed the cause of her pain. A well marked secondary nodule could be plainly seen, and in addition, on the left side, a supraclavicular gland.

This case is most instructive. It illustrates a point I am anxious to emphasize, namely, that regular examinations at intervals should be carried out on all patients undergoing treatment, either curative, palliative, or prophylactic.

SELECTION OF CASES FOR RADIUM TREATMENT.

The class of case which offers the best results in radium treatment also holds out the best promise of success by operation. The earlier we can treat a case of malignant disease the surer can we be of the result. At the very outset we must decide between the two, and in the present state of knowledge of radium and its effects upon new

growth the choice must be given to early operation. We cannot tell when a case is going to do well under radium. Two cases of the same disease, and to all appearances precisely similar, may react quite differently to radium. Further, should the growth not promptly yield to the treatment, it may happen that the stimulation of the tissues composing the growth leads to a rapid extension of the disease; secondary nodules appear at the periphery of the tumour and grow rapidly, or metastases may appear quickly in deeper parts. Even when, to all appearances, the growth has disappeared, sooner or later recurrences may follow, and this after what at the time seemed adequate prophylactic treatment.

Rodent ulcers, when treated early, are particularly amenable to radium. They remain healed for considerable intervals, yet in the end a small recurrence appears at the periphery of the ulcer, and if not promptly dealt with may spread. Repeated recurrences have frequently to be dealt with in the same patient.

Admitting that in every early case of malignant disease operative measures should come first, there are some conditions when radium should be our second choice:

1. The patient may refuse operation, and thorough treatment by radium in early cases may lead to a disappearance of the growth.

2. Or the patient may not be in a suitable condition for operation, and again radium may be found useful.

3. Or it may be that the operation must be so radical that the risk to life is great. Radium should here be given careful consideration as a remedial agent.

4. Inoperable cases of malignant disease are generally handed over for radium treatment. Many of these are hopeless from a curative point of view. Here radium will relieve pain, diminish discharges, check haemorrhages, and frequently heal up ulcers of considerable size.

For comparison of results, it is well to subdivide the group of inoperable cases into the following classes:

- (a) Advanced cases of malignant disease, in which it is obviously impossible to hope to do anything beyond relieving the pain and other distressing symptoms. This relief is sometimes a marked feature in radium treatment. Discharges may be lessened, and where haemorrhage is a feature in the case, especially if it be a general oozing from the growth and surrounding tissues, a sufficient exposure to the action of radium will lead to a cessation of the bleeding. Failing the prospect of achieving either of these results, such advanced cases should be left severely alone, as their treatment by radium can only bring discredit upon it.

- (b) Less advanced cases, in which there may be a prospect of inducing degenerative changes in the tumour mass which will lead to a diminution in size. Some cases may thus be brought within the range of operative treatment. The method of treatment adopted must be thorough: full exposures given at regular intervals and the patient kept under observation. The treatment may be external, or, in selected cases, tubes of radium may be buried in the substance of the growth. Inoperable tumours of the breast come under this heading.

Surgical methods may profitably be combined with the use of radium, and partial operations are a great help to the radium therapist, as it is quite rational to remove as much of the tumour as is possible in order to facilitate the use of radium. A large fungating necrotic tumour of the breast is not likely to yield to radium treatment alone, but if the surgeon removes as much of the growth as possible, then radium may be employed on the portions of the tumour left. Secondary deposits in the glands and areas drained by the lymphatics may be vigorously treated by radium, and if a diminution in size is brought about these may be removed at a subsequent operation. Life may be rendered more tolerable, and undoubtedly prolonged by such measures. Several such cases treated by radium and x rays have shown marked improvement; enlarged malignant glands have been successfully removed after reduction in size following upon radiation treatment.

While admitting the claims of operative measures in dealing with early cases of malignant disease, and with no intention of pushing the claims of radium, I should like to quote two or three cases which were in my own, and in the opinions of several surgeons, operable, but the patients refused operation and were treated by radium.

A case of endothelioma of the soft palate with a secondary gland in the neck was operated upon for the removal of the gland; a portion of the growth in the palate removed for microscopic examination showed it to be a slowly-growing endothelioma. The palate growth was of considerable size; under radium treatment it slowly subsided and practically disappeared. The case was treated nearly three years ago; to-day the patient is in hospital for a recurrence of the growth in the posterior aspect of the soft palate. She has been quite comfortable during the time that has elapsed since she was first treated. I have no doubt she will derive benefit from further treatment by radium.

A gentleman about 60 years of age was referred to me for treatment of a growth in the right tonsil involving the soft palate and uvula. He was seen by several surgeons, but refused to have an operation performed. A section removed for examination showed the growth to be an epithelioma. A gland removed from the left side of the neck was inflammatory; a number of enlarged glands were present on both sides of the neck. Under radium treatment the growth slowly diminished in size; a portion removed later still contained malignant cells, but they were changed in character and surrounded by inflammatory products. The glands in the neck slowly subsided. To-day the patient is perfectly well and free from recurrence.

Rodent Ulcer.

Early cases are readily influenced by treatment. They quickly heal, but prophylactic doses should be given after the ulcer has healed. If the condition is quite superficial the filtration need not be great. The beta rays appear to exercise a profound change in these cases. After healing has taken place filtered doses should be used to reach the deeper parts. Even after thorough prophylactic treatment recurrences are apt to follow at longer or shorter intervals, but frequently respond to further treatment. All cases treated should be kept under observation for a considerable time in order that an early stage of the recurrence may be observed and promptly treated.

When the ulcer is large and involves bone and cartilage the prospect of a cure is not so good. Most complete and powerful dosage may fail to check the progress of the disease. These cases may be even stimulated by radium treatment and increase rapidly in size. In such cases it is better to combine surgical measures, such as scraping or excision, with radium treatment. Several cases so treated have healed and remained well.

Epithelioma.

Growths in the skin are sometimes successfully treated by radium. Here again the excision of the growth and after-treatment by radium commends itself as a rational method of cure.

When the mucous membrane is involved greater difficulty is experienced in influencing the growth favourably. Some growths of the mucous membrane of the mouth and pharynx are hardly influenced by radium.

Epitheliomata which have healed may break down later and grow rapidly. Secondary involvement of glands must be treated as well as the primary growth.

Sarcoma.

The round-celled variety seems to be the type of growth most readily influenced by radium. Large tumours may gradually diminish in size, smaller growths disappear, while secondary glands also clear up. The spindle-celled variety is not so readily dealt with, possibly because it is a more active type of growth. When the mediastinum is involved, exposures may be made over the sternum and ribs in the hope that the disease may be checked.

Cancer of the Breast.

This class of cases forms a large percentage of those sent for radium treatment.

Secondary deposits may be met with in the glands of the axillary and supraclavicular regions. These may be treated at the same time as the primary growth. Secondary deposits in the cartilage of the ribs or sternum may also require treatment. Prolonged exposures to large quantities of well-filtered radium have in several instances led to a diminution in the size of the growth.

Cancer of the Oesophagus.

This condition has been treated with a beneficial result for a time; a number of patients have gained weight and retained the use of the oesophagus up to the time they died of secondary growth in the mediastinum.

Cancer of the Rectum.

Symptoms may be relieved for a time. The radium must be passed into the stricture, otherwise it may act as an irritant to the healthy mucous membrane, and increase the distressing symptoms so common in this situation.

Cancer of the Cervix Uteri.

Radium treatment may also benefit this condition; haemorrhage and discharge are lessened, and great relief of pain is a frequent result of treatment.

Cancer of the Bladder.

If a tube can be introduced into the bladder and brought in contact with the growth, relief may be obtained.

FACTORS INFLUENCING THE RESULT OF TREATMENT.

In routine treatment by radium, the following factors should always be kept in mind, as a full consideration of all in each case will help us to foretell the degree of action and the result likely to follow from treatment:

- (a) Type of growth and condition of patient.
- (b) Situation of the tumour, size, etc.
- (c) The quantity of radium used.
- (d) The filtration employed.
- (e) The duration of the exposure.

An improvement in the results at present obtainable by radium in the treatment of malignant disease may be obtained:

(a) Larger quantities of radium may be used. Up to the present the largest quantity used has been about 1 gram of pure radium salt. Far-reaching effects may be produced by such treatment, especially if the filtration is great and the exposure prolonged; yet, even with such a dose, the result in one or two cases has been temporary benefit only. The type of case so treated has been a deep-seated growth which could only be acted on by the very penetrating rays. For surface lesions the increased dosage may have a speedier effect, which should help to prevent the spread of the growth to deeper structures if it can be efficiently checked.

(b) A more thorough knowledge of the physical properties of radium may enable us to select for particular cases the quality of radiations likely to influence the cell metabolism.

(c) Improvements in the technique.

It must be admitted that the technique has hitherto been more or less faulty. A knowledge of the influence of the various thicknesses of filters may help us to get speedier results. It may be that the use of the beta rays in some cases would lead to better results. Similarly the alpha rays, which up to the present have been little used, may in the future be found to exercise an inhibitory effect upon morbid processes when they are brought into contact with the cells of a growth. The difficulty has been to apply them at all. The radio-active waters at present in use do not appear to have any influence on cancer cells when administered by the mouth.

It may be possible to deposit the active principles of the radium emanations in such a way that we can utilize them either by direct application or by ionization with the aid of a galvanic current, or a combination of radiations may be helpful. In several cases radium and α rays appear to have hastened reparative processes. It is possible that some of the effects noticed may be due to secondary radiations, produced in the structures composing the growth, which exercise a physiological action. Some such general action appears to take place, because it is quite a common occurrence for patients so treated to improve in general health.

The employment of radiations in any form leads to a constitutional disturbance which we designate as reaction. This varies in time of onset according to the dosage. After a time a period of depression sets in, most probably due to a change set up in the growth which leads to the liberation of toxins into the circulation. If they are excessive, the condition of the patient may be rendered serious. This form of toxæmia is met with when large rectal growths are treated. It is possible to make the condition of the patient much worse if care is not taken to regulate the dose.

Up to the present the treatment of malignant disease by radium and other radio-active bodies has been purely local. Consequently it cannot be regarded as a specific

method of treatment. The conditions under which it may become so are being investigated. The endeavour must be to procure a substance, radio-active or not, which, when introduced into the general circulation, will influence morbid processes in the tissues. It may be possible to use a substance which when treated locally by radium, x rays, or other agents capable of exciting the secondary radiations of such substances, will benefit the tissues.

The best we have yet been able to do has been by local stimulation to produce secondary radiations from the tissues, blood, and lymph in the deposits of cancer. When the secondary radiation value of these tissues is better known, and when we know which particular radiation acting upon them will give us their maximum value, then we may hope to improve our results.

CONCLUSIONS.

1. In all cases of early cancer the operative method is undoubtedly the best; it is quicker, safer, and offers the best prospect of cure.

2. Radium is a useful adjunct to the treatment of all cases, first as a prophylactic after operation, and, failing operation, the next best method we possess. It must, however, be stated that x rays are in selected cases quite as useful as radium.

3. In patients who refuse operation, or are for other reasons not suitable for operation, radium is a useful remedy.

4. In inoperable cases radium may help to render the case operable; and, failing that, is undoubtedly useful as a palliative measure.

DIACHYLON OR DUTY: A CALL TO ACTION.

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It is now several years since I drew attention to the fact that not only is the female white lead worker more pre-disposed than the male to plumbism, and to the worst types of it, but that lead probably exercises its baneful influence upon her through the medium of the reproductive organs. A female lead worker, if pregnant, frequently miscarries, so that expected maternity in many instances can only be realized by women when *enceinte* keeping away from the lead works altogether. In pressing the Home Office, through the White Lead Committee, of which I was a member, to abolish female labour in the dangerous processes of lead manufacture or where lead compounds are manipulated, I based the recommendations upon the idiosyncrasy of the female sex generally, upon the disastrous effects of lead upon offspring born either prematurely or at term, and also upon the fact that most of the children born of women who work in lead die from convulsions a few hours or several days after birth. Experience has shown that by the abolition of female labour in the dangerous processes of lead manufacture, both in this country and abroad, not only has much suffering been spared and loss of expectant life to the race been averted, but that actual benefits have been conferred upon the industry itself. Public opinion is less hostile to the trade than it was, and there has been less sickness among the employed, while the manufacturers have saved considerable sums of money, owing to fewer claims than they otherwise would have had under the Workmen's Compensation Act.

Since such admitted benefits have followed the prohibition of female labour in the dangerous processes of lead-making a comparatively new problem of plumbism in female life must now be faced. Medical men in the potteries and elsewhere have repeatedly drawn attention to the fact that, for the purpose of procuring abortion, pills made from diachylon plaster are frequently taken, so that it is unfair to regard all the cases of plumbism occurring in female workers in the potteries as arising from occupation. This announcement has not been acceptable to a section of the reforming public, who, while admitting

that such a practice probably exists, can only regard it as of limited extent, and as a statement put forward by interested persons to prevent further legislation for the protection of females working in lead processes in the manufacture of pottery. The self-administration of diachylon pills by pregnant women for the purpose of procuring abortion is a practice more widely indulged in and with more serious consequences than at first sight appears. The time has come when something must be done, and that at once, to put an end to a practice in some instances followed by death, though the cause is not always recognized, and in more instances by acute suffering and by protracted illness.

Several medical men have written upon the subject, of whom from memory I may allude to Dr. Handford of Nottingham, Drs. Prendergast, Shufflebotham, and Ward of Staffordshire.

During the last two years I have seen seven or eight cases of acute plumbism in married women who had taken diachylon. Two of them just escaped dying, while two others will probably never be the healthy women they were previously to their illness.

CASE I.

A woman, aged 40, pregnant, mother of eleven children, ten of whom are alive, was admitted into the Royal Victoria Infirmary under my care on June 9th, 1911, suffering from severe pains in the abdomen and great weakness of the limbs. Three months before this, believing herself to be pregnant, she took in all 40 diachylon pills. After taking two pills night and morning for ten days she became seriously ill. She had acute abdominal pain and repeated vomiting; she felt listless and was so weak that she could hardly stand. On her admission the menses had not been re-established; there was a marked blue line on the gums, absence of sulpho-cyanide in the saliva, and complaint of pains in the arms and legs. On two occasions albumen was present in the urine. A large tender mass could be felt in the lower part of the abdomen in the middle line corresponding to an enlarged uterus in the fifth month of pregnancy. On examining the blood the red corpuscles numbered 2,400,000 and the white cells 11,000 per c.mm. No lead was found in the urine by Professor Bedson. Under the administration of $\frac{1}{2}$ grain of sodium monosulphite with tincture of cardamoms in water thrice daily, and an occasional opiate when the pain was severe, the patient made a good recovery, left the infirmary on July 7th, and in due course was delivered of a healthy child at term.

CASE II.

A married woman, aged 29, with four children, was admitted into the infirmary under my care on July 18th, 1911, suffering from severe pains in the abdomen and back. She was in a highly strung and nervous condition. Believing herself to be pregnant, she had taken "black stick"—a mixture of diachylon and aloes—in the form of pills, sold to her by a chemist. She took six pills night and morning for the first week, and half that number for the second week. Severe abdominal pain developed, and she miscarried on July 14th, about seventeen days after taking the first pills. For five days previously to miscarrying she had fairly free but interrupted uterine haemorrhage.

She vomited several times daily, and continued to do so for a few days after entering the infirmary on July 18th. There was neither diarrhoea nor constipation, but severe pain during defaecation. She had lost considerably in weight. Her legs were so weak that she could hardly stand. There were tremors of the lower half of the face, and also of the hands. There was not only a dark-blue line on the gums, but a patch of deeply pigmented buccal mucous membrane opposite the lower teeth. The abdomen was extremely tender, especially over the left ovarian region. The knee-jerks and the plantar reflex were lost. On microscopical examination of the blood, which was repeated on several occasions, only once were four basophile corpuscles found over the whole field. The urine was free from albumen on admission. A few days after treatment had been commenced the urine contained a trace of albumen, but this disappeared, and was never again found. On one occasion only was lead found in the urine by Professor Bedson, and that was after the commencement of the administration of sodium monosulphite, which formed the regular treatment throughout, and under which she made a good recovery, leaving the infirmary on August 28th. This woman had taken 144 pills, each of which contained 1 grain of oleate and stearate of lead.

In one woman whom I saw with Dr. Nesham at the Maternity Hospital, and who had taken a pennyworth of diachylon and a pennyworth of aloes, the abortion, was incomplete, and curetting had to be resorted to. In another whom I saw with Dr. Tiplady the symptoms were those of abdominal pain and intractable vomiting, to which the patient all but succumbed. She too had aborted, and presented temporary albuminuria.

I will only mention one other case, and that with the permission of my colleague, Professor Thomas Beattie, in