and resection proves possible. The mere size of a palpable but mobile tumour does not make resection impossible. Sometimes the disease proves to be either an innocent growth or simple but extensive ulceration, curable by operation.

CHOICE OF ANAESTHETIC AND OPERATION

Finsterer has shown us that local is here much safer than general anaesthesia. Although the method is tedious, it certainly lessens shock, and diminishes the danger of thoracic complications. After morphine 1/3 grain and hyoscine 1/100 grain have been injected about half an hour before the operation to make the patient comfortably sleepy, novocain 0.75 per cent. is used to produce local and block anaesthesia of the upper part of the abdominal wall. Directly the abdomen is opened splanchnic anaesthesia is carefully induced, with the aid of a long needle passed deeply between the upper parts of the aorta and inferior vena cava. Sometimes a little gas and oxygen, or oxygen and ether, is necessary to complete the anaesthesia.

In most cases of cancer of the stomach it is necessary to remove an inch or more of the duodenum, and from one-third to three-quarters of the stomach, depending on the site and extent of the growth. After such extensive resections direct union of the cardiac remainder to the duodenum after Billroth's first method is impracticable without undue tension, even when the duodenum has been freely mobilized. Therefore it is better to close the duodenum and to join the gastric remainder to the jejunum after the Polya method. When the cardiac remainder is small after high division of the stomach, it is easier to close the upper part of the gastric wound and to use Billroth's second method of anastomosis—of the jejunum to the lower part only of the cardiac remainder. It is also better to bring the loop of jejunum up in front of the transverse colon after Balfour's and Moynihan's methods; for if recurrence takes place, as it often does, about the pancreas and transverse mesocolon, obstruction of the anastomosis is not so likely as when a retrocolic anastomosis is made.

When the abdomen has been opened the first step is to explore thoroughly to make sure if resection is practicable. Secondary growths in the liver, parietal or pelvic peritoneum, pancreas, mesentery, or transverse mesocolon make a radical cure impossible, and so do invasion of the cardiac orifice and fixation of the growth to the large blood vessels, such as the coeliac axis.

Sometimes the general condition of the patient and the way he behaves upon the table make primary resection too hazardous. Then pyloric obstruction may be relieved by gastro-jejunostomy, with entero-anastomosis. After this the patient may become so much better that a secondary resection can be safely carried out. Frequently, although a radical cure appears to be beyond hope, palliative partial gastrectomy is better than gastro-jejunostomy, for the mortality is not much greater, and the patient gets far more relief as well as greater prolongation of life.

Sometimes when resection is impracticable, exclusion of the cancerous part of the stomach is better than gastro-jejunostomy. The stomach is divided above the growth, the distal opening is closed, and the proximal or cardiac opening is joined to the jejunum.

CONCLUSION

1. We are far too pessimistic about cancer of the stomach, and ought to know that a fair proportion of cases can be cured by early operation.

2. Comparatively few cases are ever sent to the surgeon, and less than a third of these come in time for a radical operation to be possible.

3. The diagnosis can and should be made much earlier than it is, even if exploration is necessary to decide this in doubtful cases.

4. In spite of deplorable procrastination in the past, nearly 20 per cent. of the patients who survived resection (at a risk of about 10 to 15 per cent.) were well over ten years later. Much better results will surely follow earlier resections.

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TREATMENT OF MENSTRUAL IRREGULARITIES*

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Disorders of menstruation are among the common gynaecological ailments with which the general practitioner has to deal. Excessive menstruation is very frequently seen, and irregular uterine haemorrhage in which the rhythm of the menstrual cycle is lost is common at the menopause. It is the experience of all practitioners that such irregularities of the menstrual functions may be encountered without gross lesions being present either in the uterus or in the ovaries. It is quite true that irregular haemorrhage is seen in such conditions as carcinoma of the cervix and in polypi, but in these cases menstruation itself occurs rhythmically and the abnormal haemorrhage is superimposed upon the cyclical bleeding. The type of patient now under consideration is the woman who has some form of menstrual irregularity independent of the presence of either tumour or inflammation of the pelvic organs. Such cases are extremely common. It is impossible to appreciate the significance of these ailments without some idea of the modern work on the physiology of menstruation, and it will perhaps be more logical if a short review of this work is first given.

PHYSIOLOGY OF MENSTRUATION

The process of ovulation whereby an ovum is discharged from a ripe Graafian follicle is limited to the child-bearing period of life. Ovulation never occurs before puberty nor after the menopause. It has been shown that it is restricted to about half-way between two periods. It is customary to consider the normal menstrual cycle as being one of twenty-eight days, the first day of the bleeding being taken as the first day of the cycle, and with this standard ovulation is restricted to about the fourteenth day—that is to say, fourteen days after the first day of the previous menstrual period. After ovulation a corpus luteum is formed from the follicle which has discharged its ovum, and within a few days it attains full development, producing the characteristic grey or yellow convoluted body in the ovary. When menstruation begins, or perhaps shortly before, retrogression arises in the corpus luteum, which gradually becomes converted into a structureless hyaline body known as the corpus albicans.

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Simultaneously with the production of a corpus luteum in the ovary the endometrium hypertrophies and, during the presence of a mature corpus luteum in the ovary, shows a peculiar histological structure in that its glands have a characteristic corkscrew-like appearance. During menstruation the superficial layers of the endometrium degenerate, and as a result of disintegration most of its hypertrophied superficial portion is shed into the cavity of the uterus; this, together with the blood which is simultaneously effused, constitutes the menstrual discharge. After menstruation a process of repair ensues, during which the epithelium grows over and covers the denuded areas. These are the main histological features of the menstrual cycle, with the exception that immediately prior to ovulation a peculiar oedematous appearance develops in the endometrium, together with some degree of hypertrophy, which, there is good reason to believe, is controlled by the ripening follicles in the ovaries.

It is well known that two ovarian hormones have now been identified—namely, oestrin and progesterin. The oestrin hormone is produced by the ripening Graafian follicles, although it can also be demonstrated in the corpus luteum, in the placenta, and in the urine of pregnant women. There are good grounds for assuming that the mild degree of hypertrophy which occurs in the endometrium immediately before ovulation is controlled by the oestrin hormone, and is comparable to the pro-oestrous hypertrophy of the endometrium of lower animals. The hormone progesterin is the corpus luteum hormone. It was first identified by Corner, and amongst other properties it possesses the power of inducing a premenstrual hypertrophy in the endometrium of primates, which is certainly comparable to that observed in human beings. This effect of progesterin is only seen if the endometrium is first sensitized by the previous administration of oestrin. The physiology of menstruation is not quite so simple as was originally believed, for it has been shown in the last few years that ovarian activity is dominated by the activity of the anterior lobe of the pituitary, fresh extracts of which, when injected into mice, stimulate the ovaries so that Graafian follicles hypertrophy, ovulate, and become converted into corpora lutea. Similarly, the urine of pregnant women contains substances allied to, or perhaps identical with, the anterior pituitary hormone. It is important to remember that the anterior lobe of the pituitary hypertrophies during pregnancy and leads to the secretion of large amounts of its hormone. It is well known that very commonly women menstruate at reduced intervals after parturition, the condition being referred to as post-partum epimenorrhoea. Such cases may perhaps be explained by assuming the persistence of the activity of the anterior lobe, with the result that follicles ripen and ovulate more frequently.

This represents a brief summary of the physiological principles upon which the interpretation of menstrual irregularities must rest. There are several points which must be borne in mind. In the first place, it is conceivable that a woman for some reason or other may produce large corpora lutea. The result would be an excessive premenstrual hypertrophy, so that during menstruation a large amount of tissue would be shed and menorrhagia or excessive menstrual bleeding result. The second point is that the causation of the twenty-eight-day rhythm does not necessarily lie in the ovaries. No explanation has been offered as to why this rhythm is the rule, but it is clear that as the pituitary dominates ovarian activity it is quite possible that factors disturbing the menstrual rhythm are just as likely to lie in the pituitary as in the ovaries. The third point is the causation of menstrual bleeding itself. I have always maintained that menstrual degeneration of the endometrium is

an active process, and is not induced passively by the simple withdrawal of the hormone progesterin. I have gone so far as to postulate the existence of a third ovarian hormone, one which induces degeneration in the endometrium. If this view is accepted it is clear that in exceptional circumstances this hypothetical hormone, if produced in excess, may lead to a continuous degeneration of the endometrium, so that prolonged uterine haemorrhage is the result.

EPIMENORRHOEA

In this form of menstrual irregularity the patients menstruate with a cycle less than the normal twenty-eight days—usually with one of twenty-one days or with one of fourteen. Typically the menstrual cycle is constant, and is not irregular. In some cases, in addition to a reduction in the menstrual cycle, the duration of the haemorrhage is prolonged and the amount lost on each day is increased. This clinical form of menstrual irregularity is very common, but it must be emphasized that epimenorrhoea in itself is not a disease but merely a symptom. Cases of epimenorrhoea can be classified into fairly well-defined groups. The post-partum type is seen very often indeed, and when such patients start menstruating after parturition the cycle is reduced from one of twenty-eight days to one of twenty-one or fourteen. Post-partum epimenorrhoea may, of course, complicate inflammation of the Fallopian tubes and ovaries, but such cases are relatively few, and in the common form no lesion can be detected in the pelvis. As I have already stated, these cases are probably related to a disturbance of the endocrine balance, and are perhaps due to over-activity of the anterior lobe of the pituitary.

Epimenorrhoea occurs most frequently, however, in patients about the age of 45, when they are approaching the menopause. It is almost invariable that the amount of blood lost at each period is excessive, and quite often leads to a severe degree of anaemia. Not seldom the uterus is found to be enlarged, and is harder than normal. Until recently such cases were grouped under the term "chronic metritis," but since the advance in our knowledge in the physiology of menstruation it has become generally recognized that both the epimenorrhoea and the uterine hypertrophy are due to over-activity of the ovaries. Epimenorrhoea is also common in cases of fibroids, particularly in patients over the age of 40. In another group it develops in patients about the age of 35, most of whom are single. Sometimes it is associated with salpingo-oophoritis, and sometimes with chocolate cysts of the ovary. The aetiology of these cases of epimenorrhoea is not known with certainty. At the present day it is generally accepted that it is not related either to an inflammation of the appendages or to any local lesion in the uterus itself. Almost certainly the condition is due to an abnormality of ovarian function, although there is no proof that the primary fault lies in the ovary; it may very well be that the pituitary is primarily responsible.

Treatment

The treatment of epimenorrhoea is one of the most difficult problems in gynaecology. One has to deal, not with a diminution of activity for which an appropriate hormone might reasonably be administered, but with over-activity, and the question is essentially one of inhibition of ovarian activity. Now, it is quite clear that whatever pharmacological properties may be claimed for the various ovarian and pituitary hormones, no one has at any time suggested that any one of these has an inhibitory effect on the ovary. For these reasons one is very sceptical as to whether the administration of any

ductless gland preparation is likely to be of benefit in a case of epimenorrhoea. These theoretical considerations are borne out by my own experience, and I have personally given both oestrin and the anterior pituitary hormones to cases of this kind without result. When we turn to the prescription of drugs in the treatment of epimenorrhoea it is clear at the outset that there can be small hope of success. The only way in which such drugs could act is by inhibiting ovarian activity. It is true that the amount of blood lost during each period can be controlled by drugs such as ergot and by proprietary preparations such as femermin, but it is difficult to conceive that there is any drug on the market which possesses the remarkable property of inducing a specific inhibitory effect on the ovary. Again these theoretical considerations are borne out by clinical experience. The question now arises as to what can be done for these cases. In patients of 45 or over treatment as a general rule resolves itself into the creation of an artificial menopause. The patient is anaesthetized, the uterus is curetted, and then a tube containing 50 mg. of radium is inserted into the uterus and kept there for forty-eight hours. This is an excellent remedy so far as the uterine bleeding is concerned. It is true that the results are often not immediate, and patients occasionally have one or two periods after the application of radium; but it is very exceptional for further bleeding to take place. Sometimes the first haemorrhage after radium is copious, because the radium itself produces a local inflammation in the endometrium, and this hyperaemic area bleeds excessively during the menstrual period. There are two other objections to radium treatment: one is that almost invariably there is a persistent vaginal discharge due to the local inflammation of the endometrium, and the second is the onset of menopausal symptoms. After the age of 45 severe menopausal symptoms as the result of the creation of an artificial menopause by radiological means are not usual, although they are extremely common under the age of 40 and fairly common between the ages of 40 and 45. It is difficult to give an opinion as to whether the patient is likely to develop these menopausal symptoms if an artificial menopause is brought about; and if the patient is a good subject for an operation, with a thin abdominal wall, I often prefer hysterectomy with conservation of the ovaries to radiological treatment. It should be emphasized that with modern technique hysterectomy has a very low mortality, and if a patient survives the operation and has her ovaries retained she is much more likely to be free of symptoms than if an artificial menopause is induced radiologically. So far as x -ray treatment is concerned, the end-results are similar to those obtained after the application of radium. The great drawback to x rays, however, is that for sound therapy the uterus should be curetted prior to treatment, so that carcinoma of the body of the uterus or of the isthmus can be excluded.

Whereas the treatment of epimenorrhoea in patients approximating to menopausal age is fairly successful, that in younger patients is extremely difficult. Both x rays and radium are, in my view, contraindicated as a means of producing a permanent artificial menopause, which in patients younger than 40 almost invariably leads to appalling severe menopausal symptoms; and one of the worst sequels is the development of kraurosis vulvae, with its attendant symptoms of pain and dyspareunia. Cases of this sort are sometimes encountered, and it is not an exaggeration to say that the resultant symptoms often produce more distress than the original epimenorrhoea. Theoretically the induction of a temporary artificial menopause with either x rays or radium would seem a satisfactory procedure, but in practice this is not so. The

essential difficulty is to obtain the correct dosage, for if a small dose is given no effect is obtained, while if it is too large the result is a permanent artificial menopause. The margin is small, and experience at St. Bartholomew's Hospital has shown that it is extremely difficult to gauge with any accuracy the correct dosage for a temporary artificial menopause. My own view is that with x rays so many factors—such as the location of the ovaries and the thickness of the abdominal wall—have to be considered that this form of treatment is unlikely ever to be used extensively; similarly with radium. I believe that the effect of radium is upon the ovary and not upon the uterus; and, again, it is difficult to gauge the exact distance of the ovaries from the radium placed within the cavity of the uterus.

The treatment of epimenorrhoea in patients prior to the age of 40 resolves itself into either expectant treatment or operation. In cases of post-partum epimenorrhoea experience shows that almost invariably the menstrual functions right themselves spontaneously in due course. Indeed, it is very rare to see patients who give a history of epimenorrhoea which has persisted for more than three years following childbirth. In these cases, provided the patient does not acquire a severe degree of anaemia, the administration of such drugs as ergot during the menstrual period, combined with rest, is the wisest course to follow, and the return of the normal menstrual cycle should be awaited. In the other cases of epimenorrhoea the position is difficult. In those in which it arises without obvious cause in single women of the age of 35, clinical experience shows that it is exceptional for them to return to the old cycle of twenty-eight days. Whether operation is performed depends solely on the degree of anaemia. If operation is decided upon the correct procedure is to perform subtotal hysterectomy and to leave the ovaries behind. It is quite clear that this method is drastic, and it is warranted only if the patients suffer from a high degree of anaemia. The results of hysterectomy are extremely good: the primary mortality is low and the end-results are eminently satisfactory.

METROPATHIA HAEMORRHAGICA

The recognition of this disease is the outcome of researches on the menstrual cycle. The full description of the pathological conditions is due to Schroeder as a result of his investigations carried out at Rostock during the war. The disease is characterized by a complete upset of the menstrual functions, so that ovulation is inhibited and corpora lutea are not produced in the ovaries. Always a cyst is found in the ovaries, and has the structure of a cystic ripening follicle. The condition of the endometrium is that of a diffuse polypoidal hyperplasia, and large plum-coloured polypi project from the endometrium downwards towards the cervical canal. The endometrium shows the changes of a true hyperplasia combined with cystic dilatation of the glands, and in the superficial layer large areas of necrosis can be observed. Premenstrual hypertrophy never develops in the endometrium because a corpus luteum is not found in the ovaries. Metropathia haemorrhagica is not uncommon, and can be diagnosed with a fair degree of precision if due care is taken. It occurs most frequently about the age of the menopause, but it is also seen in young girls before the age of 20, and it is not unusual before the age of 30. The symptoms are fairly characteristic. Usually the patients give a history of a short period of amenorrhoea; this lasts for about six to ten weeks and is followed by continuous bleeding, which may persist for many months. (I have seen cases in young girls in which it has gone on for years.) The amount of blood lost on each day is not excessive, and it is rare for large clots or severe bleeding to be seen at any

stage of the disease. The characteristic symptom is continuous bleeding, similar to the haemorrhage of a normal menstrual period.

The treatment of metropathia haemorrhagica corresponds almost exactly with that of cases of epimenorrhoea, with the exception that in the former we have to deal sometimes with young patients—patients below the age of 25. In these cases the first procedure to be employed is curetting. The whole of the endometrium should be carefully scraped away and the material removed examined microscopically so that the diagnosis can be confirmed. The results of curetting are not very satisfactory, and in most cases the continuous bleeding recurs within a few months: nevertheless, it is sometimes stopped and the normal menstrual cycle returns. There is, however, a tendency, even in these cases, for the disease to recur, and it is very interesting to notice that a cyst may form in the opposite ovary. In young patients with metropathia haemorrhagica, if curetting fails the next line of treatment is to give anterior pituitary hormone either in the form of the prolan preparations or of Parke Davis's "antuitrin S." This method has been employed extensively in America and in Canada, and encouraging results have been reported; in my hands, however, they have not been good. Theoretically, this therapy follows the correct line, for the object of the administration of the anterior pituitary hormone is to stimulate the ovaries to produce corpora lutea. It may be that when more potent preparations are available this form of treatment will be generally adopted. In a few cases I have tried the application of small doses of radium of the order of 40 or 50 mg. for periods varying from twelve to twenty-four hours, but again I have not had any satisfactory results. This, again, is theoretically sound, for it aims at creating a temporary artificial menopause, but, as in all such cases, the essential difficulty is to give the correct dosage.

It might be thought that removal of the ovary which contains the cyst would lead to cessation of the symptoms. A fair amount of evidence has accumulated to show that the opposite ovary invariably becomes cystic within a short space of time, and the continuous bleeding recurs. Unfortunately, in young patients, if there is no response to the various treatments I have indicated, one is sometimes forced to perform hysterectomy and to leave the ovaries behind. It is obvious that such a procedure is very drastic and not to be lightly undertaken. In my experience the patient and her relations eventually insist upon the removal of the uterus, for it is not uncommon for a severe degree of anaemia to be produced by the continuous bleeding: the patient and her friends become tired of the unsatisfactory results of the methods employed, and she becomes insistent upon having the uterus removed.

HYPOMENORRHOEA

In this type of menstrual irregularity the menstrual cycle is prolonged. The usual history given is that the patient menstruates every six weeks, and then perhaps every three months; she may then have a period of amenorrhoea lasting for six months or even longer. Irregularity of the cycle, in which there is a wide interval between the menstrual periods, is a characteristic of hypomenorrhoea. It is seen most commonly in patients about the age of 30. So far as the menstrual functions are concerned, the cause of hypomenorrhoea is an irregularity of ovarian function, and histological investigations prove that ovulation and corpus luteum formation occur spasmodically. Two types can be distinguished: one in which the fault is primarily ovarian, and the other in which the fault lies in one of the other ductless glands, usually the pituitary; the ovaries are deficient secondarily. Patients with primary ovarian deficiency give a

history of a late onset of puberty and irregular menstruation from the beginning; such patients frequently have spasmodic dysmenorrhoea, and not seldom are sterile. In addition, there are certain physical signs of primary ovarian deficiency, such as an ill-developed uterus, small vagina, and scaphoid perineum. On the other hand, cases of secondary involvement of the ovaries usually give a history of normal onset of puberty without severe spasmodic dysmenorrhoea, and quite commonly the patients have borne children prior to the onset of the menstrual irregularity. There are all varieties of endocrine disturbances leading to hypomenorrhoea, and I do not propose to go into them in any great detail. A common type is that in which the patient about the age of 30 develops adiposity, headaches, and irregular and scanty menstruation.

In all cases of primary ovarian deficiency, treatment should be directed along the lines of organotherapy. The results obtained are far from being satisfactory, but occasionally dramatic improvement has been reported. Of the ovarian hormones, oestrin is marketed in the forms of theelin, progynon, menformon, and sistomensin, and recently the British Drug Houses has put a more potent preparation on the market, "oestroform." Oestrin should always be given subcutaneously, for it has been calculated that subcutaneous injections are eight times more powerful than the same dose given orally. This leads to the inconvenience of a hypodermic injection. Another disadvantage is that only small doses are put up by the manufacturing chemists, and it is difficult to believe that any dose of the order of a hundred rat units is likely to have any lasting effect on an adult woman. If such doses are given they must be administered frequently, probably at least three times every week. The corpus luteum hormone, progesterin, is not marketed at present, so that so far as ovarian therapy is concerned only oestrin is available. On theoretical grounds the anterior pituitary hormone, by stimulating the ovaries to produce ripening follicles and corpora lutea, is to be preferred to the ovarian hormones themselves. The pituitary preparations that are available are the prolan preparations and antuitrin S. It should be remembered that here again the hormone must be given by injection, and it is essential that the substances should be freshly prepared. With the anterior pituitary hormone there is the same difficulty about dosage. Probably the ampoules that are put up by the manufacturing firms do not contain sufficient of the active principle to have any lasting therapeutic effect. In any case, if the injections are to be given they must be given frequently—at least three times every week. I carried out some clinical trials with oestrin some years ago and found that in cases of primary ovarian deficiency a good effect was obtained only in those of mild degree. There was little evidence that it had any good effect in severe cases, and I believe that this view is generally held at the present time. With the anterior pituitary hormone the results are not perfectly satisfactory, and it is wrong to suppose that the hormone has a specific effect in reducing the irregular cycle of cases of hypomenorrhoea to the normal cycle of twenty-eight days. In some instances of hypomenorrhoea, in which the patients also complain of sterility, dilatation of the cervix may be beneficial. For some reason or other dilatation of the cervix stimulates the generative organs and, as is well known, conception frequently follows this procedure. Similarly, in cases of hypomenorrhoea the menstrual cycle may revert back to its regular rhythm. This treatment is frankly empirical, and is based on clinical experience. Nevertheless, it is a valuable therapeutic measure in cases of hypomenorrhoea, particularly if sterility is an attendant symptom.

SUMMARY

I have attempted to indicate the theoretical basis upon which the treatment of irregular uterine haemorrhage rests. The evidence is very strong that a large proportion of cases are determined by a disturbance of ovarian function, although it is impossible to say whether the majority are primarily ovarian in origin. No claim is made that modern treatment is all that can be desired; indeed, the methods available are, generally speaking, very primitive. One is conscious of two main deficiencies: the first is a lack of a biochemical method to determine with precision the amount by which the circulating hormones depart from the normal; the second is the absence of standardized hormones of high concentration. At the present day we are as yet only hovering at the fringe of a complete understanding of these ovarian abnormalities. In the future it is more than probable that organotherapy will be the method of choice in the treatment of all cases of this kind.

PRIMARY INTRATHORACIC NEW GROWTH

OBSERVATIONS ON FIFTY CASES EXAMINED
BRONCHOSCOPICALLY

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All writers are agreed that there is a real increase in the incidence of thoracic neoplasms, and in this connexion the following figures, published by Dr. Gloyne from the records of necropsies at Victoria Park Hospital, are of interest. He makes a comparison of lung new growths in two ten-year periods, omitting the war years:

	1904-13	1921-30
Mediastinal (oat-celled)	16	38
Lungs and pleura	4	43

It is apparent from these figures that not only have the growths increased from twenty in the first period to eighty-one in the second, but, whereas in the first period the oat-celled type had a frequency four times greater than growths in lung and pleura, in the second period the latter exceeds the former. At the same hospital, for the years 1931 and 1932, there have been thirty-five necropsies on intrathoracic growth. If we compare the yearly average for these separate periods the picture is even more striking:

	Mediastinal (oat-celled)	Lungs and Pleura	Proportion
1904-13	1.6 per year	0.4 per year	4 to 1
1921-30	3.8 ..	4.3 ..	1 to 1 (approx.)
1931-32	6.5 ..	11.0 ..	1 to 2 (approx.)

Thus the oat-celled type of growth in twenty-five years has increased about four times, the growths of lung and pleura over twenty-seven times.

CLASSIFICATION OF TUMOURS

In the bronchoscope we have an instrument for the visual examination of the bronchi, and its value in the diagnosis of pulmonary neoplasm will be dependent on the frequency with which this disease gives rise to changes in the bronchial tree, and also in what stage of the disease

these bronchial changes are produced. It is generally accepted that malignant intrathoracic growths fall into four groups:

1. Growths of the mediastinal glands (in the older textbooks known as lymphosarcoma, now generally referred to as oat-celled carcinoma).
2. Pleural growths.
3. Bronchial carcinoma (large and single or small and multiple).
4. Pulmonary carcinoma.

Group 1 would appear to be composed of two types: true lymphosarcoma (rare), and the oat-celled growth, which is usually regarded as of primary bronchial origin with early (?) and extreme glandular involvement—in this case the oat-celled growth should be included in the bronchogenetic group. There is no real dividing line between Groups 3 and 4. Some pathologists surmise a different site of origin—for example, mucous gland, alveolar wall, bronchial wall; others are inclined to class all cases of these groups as bronchial in origin, and they explain the difference in the histological picture by assuming that the growth begins in different cases at different levels of the bronchial mucosa, and that a pulmonary carcinoma is merely one in which extension has taken place from a bronchus. From the clinical and bronchoscopic point of view these distinctions are of little importance, as in the two common types—that is, the oat-celled and large bronchus type (the others being of great rarity)—the ulceration commences, or appears to commence, in the large bronchi fairly close to the carina. It is therefore in these two types that the bronchoscope will give valuable diagnostic information. In cases of carcinoma arising in the secondary bronchi, in the parenchyma of the lung, or in the pleura, no bronchoscopic evidence is found until the glands become involved at the root, or secondary extension takes place.

The cytological problem, as mentioned above, is a difficult one, and if this is true of the post-mortem specimen it is easy to understand the difficult position in which the histologist is placed when asked to report on the small portions of tissue, often crushed by the forceps, which one is able to obtain for section during life. It is probably on this account that one has experienced occasional shocks in the endeavour made to differentiate the type of growth by the bronchoscopic appearances and the clinical findings. Nevertheless, the findings generally admit of the following data.

Oat-celled Type.—This appears to arise in the deep layers of the mucosa; the spread is rapid to the lymphatics, and enormous enlargement of the mediastinal glands takes place. Bronchoscopically in the oat-celled type the mucosa is infiltrated and ulcerated, little raised nodules are seen, whitish in colour as compared with the normal mucous membranes, but polypoid formation is rare, though occasionally deeper in the bronchial tree there may be some tendency to occlusion. In association with this type of ulceration evidence of glandular enlargement is seen. There may be some bulging into the trachea, widening and deformation of the carina, and scabbard-shaped bronchi. Section can usually only be obtained with a punch forceps.

Bronchial Type.—These tumours appear to arise in the superficial layers of the bronchus. There is a tendency to spread into the lumen rather than to the lymphatics; glandular enlargement is rare, and the clinical signs are, as we have stated elsewhere, somewhat pleomorphic, but dependent usually on the bronchial obstruction. Bronchoscopically there is usually no evidence of glandular enlargement, the carina is not widened, but may be dragged over if there is collapse of lung; the bronchus is seen to be partially or completely blocked by a polypoid