ten years. Nor is the mere size of the primary growth of first importance, as long as the extension is outward as it were, and not inward towards the chest wall.

So far the indications are clear and our course is easy. But what are we to do for patients not suitable for radical operation? We will consider first those whose unsuitability derives from general causes, and not from the condition of the local disease—the very young, the very old, the very feeble, the diabetic, those with very high blood pressure, and, of course, those who absolutely refuse operative treatment. Here, too, I think our course is clear. Interstitial radium treatment carried out on a comprehensive scale unquestionably offers these patients their best chance of long survival.

Then we come to the cases where radical operation is unsuitable owing to the extent of the primary disease, or to gross involvement of the axilla, or even slight involvement of the supraclavicular glands. Here I believe the best course to be a strictly limited operative removal of the tumour and surrounding breast tissue, followed by implantation of radium needles in the axilla and the usual lymphatic paths. One cannot but feel that by removing the major portion of the disease one has put the patient's tissues in a better position to take advantage of the effects of the subsequent radiation therapy. This limited amputation has also proved of great value in my hands in cases where ulceration of the tumour is imminent, or has already become established.

Lastly, we come to the class in which the local condition is more widespread, and where skin nodules, peau d'orange, diffuse invasion of the breast, or involvement of both organs is manifest. In these, again, our course is quite clear. They are naturally quite unsuitable for surgery, and the disease is too extensive for the rather limited powers of radium—I mean, of course, limited in the geographical sense. Deep therapy is the method of choice in such cases as these, with the proviso that the voltage should be as high as possible, and the beam should be delivered with all the intensity that the tissues will stand.

It sounds somewhat paradoxical, but it seems to me that it is in some of the most widespread, and therefore by ordinary standards our most hopeless cases, that the most brilliant results of x-ray therapy have been obtained. Their lives are not saved, but they are prolonged in a high degree of comfort for very long periods. It is certain that my x-ray colleagues have taught me that we must never accept final defeat in these cases of advanced breast cancer until visceral metastases afford unmistakable evidence that the end is near.

The Northcote Trust, which deals largely with the social supervision of the patients at St. Thomas's Hospital, has completed its twenty-seventh year of work, and its last report covers the twelve months ended October, 1936. It records a real improvement in housing conditions and unemployment, and illustrates the work which the almoners undertake. Help is forthcoming in necessitous cases in ways such as the obtaining of employment, the provision of convalescence treatment, the after-care of cancer cases, and nursing at home. The Northcote Trust Hostel for Girls has been rebuilt, and since its reopening last August has had a full complement of girls and infants. Patients visited at home during the twelve months under review numbered 333; 898 were assisted in other way than by the provision of convalescence facilities or surgical appliances; 993 received convalescent treatment; and 787 surgical instruments were supplied. The income of the Trust during the year was £2,810, and there was a small credit balance at its close.

VARIATIONS OF WEIGHT DURING PREGNANCY*

BY

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The importance of weight-taking during pregnancy and the significance of an abnormal increase has attracted very little attention in this country.

In 1862 Gassner showed that there was a progressive increase in weight of the mother which was greater than that due to the foetus and the hypertrophied reproductive organs. He found that during the last three months of pregnancy there was an average increase of 3.5 to 5.5 pounds. Zangemeister (1916) advocated weight-taking as a means of detecting incipient toxæmia, and in 1925 he showed that during the few days immediately preceding labour there was a definite loss in weight. Hirsch (1922) demonstrated a loss of weight a few days before labour, and ascribed this decrease to the activity of the hypophysis.

Davis (1923) found that the usual gain during pregnancy was 20 pounds. He came to the conclusion that weight-taking should be a routine practice in ante-natal work, since it gave information about latent dropsy. In the same year Hannah found an average gain of 12 pounds during pregnancy. Wieloch (1924) stated that the tendency towards insidious oedema could be detected by systematic weighing of the patient. Randall (1925) found that the average gain in primiparae was 23.2 pounds, and in multiparae 21 pounds. He concluded that the extent of the increase in weight should aid materially in foretelling the toxæmias of later pregnancy.

Slemons and Fagan (1927) found the average gain to be 16.5 pounds. Toombs (1931) made comparisons between the mother's gain during pregnancy and the infant's weight, but failed to establish any relation. Bingham (1932) stated that abnormal weight increase was a precursor of toxæmia, and that it also tended to make the labour more difficult owing to the deposit of fat in the pelvis. He found that the child tended to be larger in proportion to the increase in weight of the mother.

Siddall and Mack (1933) reported that the total gain during the last four months of pregnancy was 15.7 pounds, and concluded that excessive weight gain appeared to be of questionable value in the early recognition of impending toxæmia. Cummings (1934) found the total gain in the first trimester of pregnancy to be less than half a pound, in the second trimester 13 pounds, and in the third trimester 11 pounds. The greatest gain occurred during the sixth and seventh months, in which it was 5 pounds. He stated that an abnormal gain in weight was a very early sign of the toxæmias of pregnancy. During the same year Harding and Van Wyck came to the same conclusion, and therefore advised the practice of weight-taking in pre-natal care.

The present investigation was undertaken to determine the weight increase in normal and toxæmic cases in an attempt to establish standards and to ascertain what significance could be attached to an abnormal gain.

Method of Investigation

Each patient was examined during the last few months of her pregnancy, weekly, fortnightly, or monthly, depending on the findings at the previous examination. A history of any previous illnesses and pregnancies was taken at the first visit, together with a history of the present pregnancy. A general systematic and obstetrical examination was also made; the patient was weighed, the blood pressure taken, and an examination of the urine performed.

* Investigation undertaken during the tenure of a British Medical Association Research Scholarship.

At each subsequent visit the patient was weighed, similar clothing being worn. The blood pressure was determined, the urine was examined, and any untoward symptoms were noted.

Gain in Weight during a Normal Pregnancy

Our first consideration must of necessity be the average gain during a normal pregnancy. During this investigation 211 patients were examined; of these, thirty-seven developed albuminuria and a further fifteen cases had toxæmia although no albuminuria occurred. These fifty-two cases cannot be considered when the increase in weight during a normal pregnancy is discussed. The average monthly gain in the 159 normal pregnancies was 2.8 pounds during the last three to four months. The gain was similar in the seventy-seven primiparae to that of the eighty-two multiparae—namely 2.8 pounds.

There are contradictory statements in the literature with regard to comparisons in the gain in weight of primiparae and multiparae. Cummings states that in his series primiparae gained 0.1 pound more on the average throughout pregnancy. Hannah also finds that there is a slightly greater gain in primiparae during pregnancy. Others, however, state that there is no appreciable difference in the increase in weight in first pregnancies as compared with succeeding pregnancies.

Although the average increase each month was only 2.8 pounds a number of patients gained considerably more than this during a particular month, one even gaining as much as 12 pounds. Owing to this fact it was thought advisable to obtain in every case the *greatest* gain in any one month, in order to ascertain the average for this figure. This was found to be 4.8 pounds in the primiparae and 4.4 pounds in the multiparae, the average in the 159 cases being 4.5 pounds.

Gain in Weight during a Toxaemic Pregnancy

As stated previously, thirty-seven patients developed albuminuria, due to a mild or severe toxæmia, and a further fifteen had a mild toxæmia although no albuminuria occurred. The average weight increase per month of these thirty-seven albuminuric cases was 4.4 pounds, that of the eighteen primiparae being 5 pounds and of the nineteen multiparae 4 pounds. The average *greatest* increase in any particular month was found to be 8.1 pounds, the average in the primiparae being 8.4 pounds, and in the multiparae 7.9 pounds.

In the fifteen cases of toxæmia which did not show albuminuria treatment such as diet and rest was instituted when the symptoms and signs were first noticed; this may explain the subsequent absence of albuminuria. Most of the patients had a raised blood pressure (not less than 140/85 mm. Hg); headaches, eye symptoms, nausea, and oedema of the ankles were present in a varying degree. The average monthly gain in these fifteen cases was found to be 4.2 pounds, whereas the average *greatest* gain in any one month was 8 pounds.

This table shows that the average increase in weight during each of the last three or four months, the period

TABLE I

	No. of Cases	Average Increase per Month	Average of Greatest Increase in any One Month
Normal cases ...	159	2.8 lb.	4.4 lb.
Toxaemic cases (no albumin)	15	4.2 lb.	8.0 lb.
Toxaemic cases (albuminuria)	37	4.4 lb.	8.1 lb.

when most toxæmias develop, was almost 2 pounds more in the cases which were eventually toxæmic. More striking than this, however, is the sudden abnormal increase in weight in any particular month. The cases in which eventually there was toxæmia had gained on the average 8.1 pounds during one month, whereas the corresponding figure in the normal cases was only 4.4 pounds. In other words, the toxæmic cases had gained almost double the normal amount at some time previous to the appearance of the toxæmia.

Forty-one cases gained more than 8 pounds during a particular month, and twenty-six of these (63 per cent.) became toxæmic at some later date. On the other hand, 107 cases did not have an abnormal increase—namely, above 5 pounds during any month—and amongst these only one case (0.9 per cent.) developed toxæmia. Table II illustrates this fact.

TABLE II

Greatest Increase in any One Month	No. of Cases	No. of Toxaemic Cases	No. of Normal Cases	Percentage Toxaemia
Over 8 lb. ...	41	26	15	63
Between 6 and 8 lb.	36	17	19	47
Between 5 and 6 lb.	27	8	19	29
Below 5 lb. ...	107	1	106	0.6
	211	52	159	

If the toxæmic cases in Table II are taken separately it will be seen that fifty-one of the fifty-two cases (98 per cent.) had increased over 5 pounds in weight during one of the later months of their pregnancy, 50 per cent. gaining over 8 pounds, 32.6 per cent. between 6 and 8 pounds, 15 per cent. between 5 and 6 pounds, and only 1.9 per cent. below 5 pounds. It should also be pointed out, however, that fifty-three (33 per cent.) of the 159 cases in whom no toxæmia ensued had an increase of over 5 pounds during a particular month. Therefore, an abnormal increase in weight does not invariably signify that the patient will develop a toxæmia.

Abnormal Increase in Weight as an Early Sign of Toxaemia

We must now consider at what time, in relation to the toxæmia, this sudden increase in weight appears. In thirty-seven patients who developed albuminuria thirty-five showed an abnormal gain in weight, 5 pounds or more per month, before albumin appeared. One of the remaining two cases had albuminuria on the same day as the abnormal increase in weight was noted, and the other was the only case in which no abnormal gain was found. The albuminuria did not appear immediately in the thirty-five cases, but was found on the average twenty-nine days later, the longest period being ten weeks and the shortest five days.

Rise of blood pressure is known to be an earlier sign than albuminuria in a toxæmia of pregnancy; it would therefore be of interest to consider when this sign appeared in relation to the abnormal gain in weight. Seven of the thirty-seven patients had a raised blood pressure before the abnormal weight increase was detected, and in a further three cases the rise in blood pressure seemed to coincide with the increased gain. In the remainder, if the blood pressure rose, it did so after the abnormal gain was shown. In the fifteen cases in which no albuminuria occurred one patient had a rise in blood pressure one month before any abnormal increase in weight was detected. An increased gain and a raised

blood pressure were found at the same examination in six cases; in a further six the blood pressure was raised on the average three weeks after the weight increase. One of the remaining two patients complained of headaches and "spots before the eyes" six weeks after the abnormal weight increase, there being no rise in blood pressure; the other patient developed oedema of legs, hands, and face three weeks later, the blood pressure being 130/80 mm. Hg. The following table gives the first indication of a toxæmia noticed in the fifty-two cases under consideration.

TABLE III

First Indication of Toxaemia	No. of Cases	Percentage
Abnormal monthly increase in weight... ..	34	65.3
Abnormal monthly increase in weight and raised B.P. simultaneously	9	17.3
Raised blood pressure	8	15.3
Albuminuria	1	1.9

It would appear, therefore, that an abnormal increase in weight during any one month is usually an earlier indication of an impending toxæmia than a rise in blood pressure.

Loss of Weight before Labour

Loss of weight of the mother immediately before labour was found in only seventy-three of 207 cases, a percentage of 36. In this series of cases, therefore, an impending labour could not have been diagnosed by the loss of weight of the mother. These findings are comparable with those of Cummings (1934) and Siddall (1933); the former found that 40 per cent. and the latter 24 per cent. of their patients had lost weight before labour.

Relation between Abnormal Weight Increase and Type of Labour

As mentioned previously, Bingham found that an abnormal increase in weight predisposed to a more difficult labour. In this series of cases fourteen primiparae and fourteen multiparae had an average gain of more than 5 pounds per month; the remainder had an average monthly gain of less than 5 pounds, although some may have gained more than 5 pounds in a particular month.

The duration of labour and the forceps rate in these two groups are shown in Table IV.

TABLE IV

	No. of Cases	Average Duration of Labour	Forceps Rate
Primiparae (not overweight)	86	17 hours	24 (27%)
Primiparae (overweight)	14	18.2 hours	4 (28%)
Multiparae (not overweight)	97	11.4 hours	9 (9%)
Multiparae (overweight)	14	11 hours	1 (7%)

The number of patients overweight is small, therefore great stress cannot be laid on the result of the comparison, but it is evident that in the cases under consideration the type and duration of labour was not affected by the weight increase of the mother.

Discussion

Increase in weight must obviously take place during a normal pregnancy, but observers differ as to the amount. In the articles quoted the figure varied from 12 to 24

pounds. Many of the causes of the increase are self-evident—namely, the foetus 7 pounds, the placenta 1½ pounds, the amniotic fluid 2½ pounds, and the enlargement of the uterus and its appendages 2 pounds.

The general increase in the tissue of the mother, including hypertrophy of the breasts, must account for some gain in weight, which would vary with the type of woman concerned. It is difficult to arrive at an average figure for this increase, but it would probably be between 2 and 4 pounds.

The increase in blood volume which takes place during pregnancy must cause a small part of the gain. The blood volume is about 7 per cent. of the body weight, and would therefore be 8.8 pounds if the average weight of a woman of child-bearing age is taken to be 9 stone. The blood volume has increased at least 20 per cent. at term, thereby accounting for a gain of 1.6 pounds.

During the first trimester it is universally agreed that there is very little variation in weight, some patients losing a little and others gaining, depending probably on the ease with which the body adjusts itself to the presence of the ovum. The increase which occurs must therefore take place during the last six months. It is suggested, both on theoretical grounds and from the above results, that the average monthly gain during the second and third trimesters should be between 2 and 4 pounds, and the total gain 16 to 18 pounds. If the gain is greater the patient should be questioned carefully, and be examined in order to find, if possible, the cause of the discrepancy.

In the 211 cases under consideration it is clear that systematic weighing of the patient was of definite value in foretelling a toxæmia of pregnancy. The average increase in weight of a potential toxæmic patient was definitely more than that of a normal patient, but it was not sufficient to be of real clinical value, since the 4.3 pounds, which was found to be the average monthly gain of the toxæmic patients, was as a rule gained by the normal cases during one of their later months. If, however, the patient has a *monthly* gain of 4 to 5 pounds in two or more consecutive months it should be regarded as abnormal; dietetic errors, if present, should be rectified and a stricter supervision undertaken.

On the other hand, a sudden marked rise in weight during one month, particularly if at least twice the normal gain, is of great help in foretelling a toxæmia. If the patient showed a monthly gain of 8 pounds or more there was a 63 per cent. chance of her developing a toxæmia, and following a 6 to 8 pound gain a 50 per cent. chance. It would appear, therefore, that it is the sudden abnormal increase in weight rather than the gradual gain which is of importance in detecting an incipient toxæmia. Another fact which should be mentioned is that all cases which show this sudden gain do not develop toxæmia, but almost all cases of toxæmia (98 per cent. in this series) will have shown an abnormal increase at some time before the appearance of albuminuria.

It has been shown that this abnormal gain is as a rule an earlier sign than a raised blood pressure, but that occasionally the latter is the first indication. Therefore ideal ante-natal supervision should include the taking of the weight and blood pressure each month during the second trimester, with more frequent observations during the last trimester. If this is carried out almost all the toxæmias of pregnancy (97 per cent. in this investigation) would be diagnosed before albuminuria appeared. Treatment could then be given and the percentage of the maternal mortality due to the toxæmias of pregnancy should be materially reduced.

The majority of the toxæmias (82 per cent. in this series) would, in the present state of our knowledge, be diagnosed at the earliest possible time if the weight only was taken regularly. This is quite a simple procedure which the patient can perform herself, provided that similar clothes are worn and the same reliable scales are used on each occasion. If an increase of more than 5 pounds occurs she should have had instructions to report to the doctor. In this way a certain number of the toxæmic cases may be avoided; if not avoided, with appropriate and early treatment most of the cases would be less severe. Appropriate treatment infers that the patient should be seen frequently in order that the blood pressure be estimated, other signs and symptoms of toxæmia looked for, and a diet given until the abnormal increase in weight has been reduced. An important dietetic measure appears to be the elimination of salt; in a few cases this alone was sufficient to reduce the weight.

Conclusions

1. The average increase in weight during pregnancy is 16 to 18 pounds, and the monthly gain during the second and third trimesters is normally between 2 and 4 pounds.
2. An increase of 5 pounds or more per month is suggestive of an impending toxæmia, the probability of its occurrence varying directly with the amount of the sudden increase.
3. Every patient should weigh regularly throughout pregnancy, and be instructed to consult her doctor if the monthly gain is 5 pounds or more.

Summary

1. The variations in weight of 211 patients, fifty-two of whom developed toxæmia, have been investigated and analysed.
2. The average gain of the toxæmic patients was found to be definitely more than that of the normal patients. Moreover, a sudden abnormal increase in weight was of great value in foretelling a toxæmia; 63 per cent. of the cases which gained more than 8 pounds in one month became toxæmic, whereas the incidence of toxæmia in those cases with a normal monthly gain was only 0.9 per cent.
3. If a patient gained more than 5 pounds in a particular month it did not invariably signify that a toxæmia would develop, but 98 per cent. of the toxæmic cases showed this abnormal gain.
4. This abnormal increase in weight appeared, on the average, one month before the albuminuria, and was as a rule an earlier sign than a raised blood pressure.
5. The type and duration of labour did not appear to be affected by increased weight of the mother. Loss of weight a few days before labour was noted in only 36 per cent. of the cases.
6. It was concluded that systematic weighing of patients during the ante-natal period is of definite value in foretelling, and perhaps avoiding, the toxæmias of pregnancy.

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LUPUS VULGARIS *

WITH SPECIAL REFERENCE TO ITS TREATMENT WITH THE FINSSEN-LOMHOLT LAMP

BY

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Lupus vulgaris, though not a common disease, constitutes a serious social and economic disability. Sufferers from this disease are apt to be shunned by their fellow beings, while if the disease is extensive there is difficulty in obtaining employment. As a result, the patient is dependent for maintenance on the public authorities, or on his family, with possible hardship to them.

Lupus patients also suffer considerable hardship even in connexion with holidays. If the disease is at all extensive they get admission to hotels and boarding houses with difficulty, and if they take private rooms they are looked at askance, and it is made clear that they are not really welcome. Because of this these patients not infrequently prefer to remain at home. They have, therefore, not the same chance of getting their health built up, and so the disease tends to spread more rapidly.

Incidence

In Scotland lupus is not a common disease. I am indebted to dermatological colleagues in other towns for furnishing me with statistics relating to the incidence of lupus as they see it in their clinics. In Glasgow during the last few years the number of lupus cases has varied from 0.3 to 2.1 per cent. of all new cases of skin disease. In Dundee the number has been 0.4 per cent., in Aberdeen 0.78 per cent. In the Royal Infirmary of Edinburgh the incidence has varied from 0.6 to 1 per cent. in the last five years, the number of new cases of skin disease being about four thousand per annum. The incidence of lupus as seen in Edinburgh is definitely less than it was ten to fifteen years ago, when the percentage varied from 2.8 to 4. The tendency to decrease is seen in other Scottish towns also. The reason for this decrease I shall discuss later. The percentage of lupus cases seen in some clinics in England is about the same as it is in Scotland, though other clinics have about double our percentage. The disease shows the same tendency to diminish, and I have little doubt that the same causes responsible for this decrease are found in England as in Scotland.

Sex Incidence.—Lupus vulgaris is more common in females than in males, the incidence being twice to three times as great in women as in men. This greater incidence among women is not limited to this country, but is seen fairly constantly throughout the world.

Age Incidence.—Lupus usually begins in childhood or early adolescence. Cases are seen where the disease begins after middle life, but these are not common. In an analysis of 294 cases in the Royal Infirmary I found that the age period 6 to 10 years shows the greatest number—no fewer than seventy-three cases, or almost 25 per cent., occurring during that time. Before the age of 5 years forty-five cases occurred, and of these a good many began during the first year of life, several beginning about eight months and generally after some illness such as measles. The age period 10 to 15 years accounts for fifty cases. Thus we see that more than half the cases begin during the school life of the child.

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