

61)

① SL42 (MAT 101)
② 42
RM

GENERAL REGISTER OFFICE

THE
REGISTRAR GENERAL'S
STATISTICAL REVIEW
OF
ENGLAND AND WALES
FOR THE YEAR
1961

SUPPLEMENT ON CANCER



BRITISH LIBRARY
11 AUG 1967
OF POLITICAL AND
ECONOMIC SCIENCE

LONDON
HER MAJESTY'S STATIONERY OFFICE

Price 7s. 6d. net

1878/4

GENERAL REGISTER OFFICE

**STUDIES ON
MEDICAL AND POPULATION
SUBJECTS**

No. 19

**Regional and Social Factors
in Infant Mortality**

by
C. C. Spicer, M.R.C.S., L.R.C.P., Dip. Bact., Dip.S.S.
and
L. Lipworth, M.B., Ch.B., B.Sc.

This study gives the results of a special investigation carried out by the General Register Office into the pattern of over 14,000 stillbirths and over 17,000 infant deaths registered in England and Wales in the twelve months April 1964 to March 1965.

The factors studied in the investigation were social class of father, parity and age of mother, and the geographical region to which the birth was assigned. The detailed tables, which it is hoped will be of value to research workers who may wish to make a further study of the subject, are prefaced by a short commentary which draws attention to the more significant findings and describes the methods adopted in the enquiry—in particular, those adopted for the statistical analysis of the data.

Price 7s. 6d. net (By post 7s. 11d.)

Published by

HER MAJESTY'S STATIONERY OFFICE

and obtainable from the Government Bookshops in London (post orders to P.O. Box 569, S.E.1), Edinburgh, Cardiff, Belfast, Manchester, Birmingham and Bristol, or through any bookseller

GENERAL REGISTER OFFICE

THE
REGISTRAR GENERAL'S
STATISTICAL REVIEW
OF
ENGLAND AND WALES
FOR THE YEAR
1961

SUPPLEMENT ON CANCER

LONDON

HER MAJESTY'S STATIONERY OFFICE

1967

ACKNOWLEDGEMENT

The survival data contained in this volume has been derived mainly from material produced for the International Symposium on the End Results of Cancer Therapy held in Sandefjord, Norway, in September 1963. The National Cancer Institute of the United States Public Health Service kindly undertook the processing of cancer registration material for a number of the countries participating in the Symposium, and made available to the General Register Office tabulations relating to England and Wales. The Registrar General recognises the valuable contribution towards the production of this volume thus provided by the National Cancer Institute and is most grateful to them for their generous assistance.

General Register Office,
Somerset House,
London, W.C.2.

October 1966

TABLE OF CONTENTS

	<i>Page</i>
The National Cancer Registration Scheme	
Progress in Cancer Registration since 1953.....	1
Scope of the Present Report	
Survival analysis.....	3
Incidence of cancer in England and Wales, 1961.....	3
Definitions.....	3
Survival in the second five years after treatment.....	5
Effect of delay in cancer of the breast.....	9
Survival in cancer of the cervix.....	15
Carcinoma of the uterine corpus.....	19
Cancer of the prostate.....	23
Malignant disease of the testis.....	27
Trends in the prognosis of chronic leukaemia.....	31
Diagrams	
Diagram 1. Breast cancer. 5-year crude survival percentages.....	10
Diagram 2. Localised cancer of prostate. Age-corrected survival percentages. Under 70 years of age.....	25
Diagram 3. Chronic lymphatic leukaemia. Comparison of age-corrected survival percentages.....	33
Text Tables	
Table 1. Five- and ten-year survival percentages for confirmed cases of different sites by sex and stage of the disease - 1948-49 registrations.....	6

	<i>Page</i>
Table 2. Cancer of the breast. Numbers of patients registered in 1954-55 and 5-year survival percentages by symptomatic history.....	12
Table 3. Cancer of the breast. Percentages of patients registered in 1950-53 for durations of symptomatic history by each clinical stage. Estimated 5-year survival percentages.....	12
Table 4. Cancer of the cervix (confirmed and not confirmed) 1952-53 registrations. Age-corrected 5-year survival rates by age, stage and form of treatment.....	16
Table 5. Cancer of the cervix. Mortality by social class, 1949-53.....	17
Table 6. Cancer of the cervix, 1949 registrations. 5-year survival rates (crude and age-corrected) and percentage with localised disease by social class.....	18
Table 7. Numbers and percentages of cases of carcinoma of the uterine body by stage and form of treatment.....	19
Table 8. Five-year age-corrected survival percentages of carcinoma of the uterine body by age and treatment category (confirmed and not confirmed).....	21
Table 9. Five-year age-corrected survival percentages of carcinoma of the uterine body by clinical stage and treatment category.....	21
Table 10. Five-year age-corrected survival percentages of cancer of the prostate by age, stage and form of treatment.....	23
Table 11. Five-year age-corrected survival percentages among non-localised cases of cancer of the prostate for two periods by age and form of treatment.....	24
Table 12. Five-year age-corrected survival percentages of confirmed cases of malignant disease of the testis by stage and form of treatment.....	29
Table 13. Numbers of patients with chronic lymphatic and myeloid leukaemia and proportions by method of treatment.....	31
Table 14. Chronic lymphatic and chronic myeloid leukaemia, two- and five-year age-corrected survival percentages.....	32

Appendix Tables

	<i>Page</i>
Appendix Table A. Registrations of newly diagnosed cases of cancer among males by site and age. England and Wales, 1961.....	36
Appendix Table B. Registrations of newly diagnosed cases of cancer among females by site and age. England and Wales, 1961.....	38
Appendix Table C. Registrations of newly diagnosed cases of cancer among males by site and age. Urban areas of England and Wales, 1961.....	40
Appendix Table D. Registrations of newly diagnosed cases of cancer among females by site and age. Urban areas of England and Wales, 1961.....	42
Appendix Table E. Registrations of newly diagnosed cases of cancer among males by site and age. Rural areas of England and Wales 1961.....	44
Appendix Table F. Registrations of newly diagnosed cases of cancer among females by site and age. Rural areas of England and Wales, 1961.....	46
Appendix Table G. Cases of cancer of selected sites by age, sex and stage of growth. Percentages of cases staged. England and Wales, 1961.....	48
Appendix Table H. Cases of cancer of selected sites by sex, showing the total number staged and the number of early growths without clinical involvement of lymphatic glands. England and Wales, 1961.....	60
Appendix Table J. Cases of cancer of the breast (females only) staged in accordance with the system recommended by the International Union against Cancer, by age. England and Wales, 1961.....	61
Appendix Table K. Cases of cancer of the cervix by age and International stage. England and Wales 1961.....	62

THE NATIONAL CANCER
REGISTRATION SCHEME

Progress in Cancer Registration since 1953

The history of the National Cancer Registration Scheme was described in the *Supplement on Cancer* to the Registrar General's *Statistical Review of England and Wales for 1953*. Since that year the coverage has continued to increase, and by January 1962, all the hospital regions in England and the Welsh Hospital Board had established registries. The practice, initiated by the General Register Office in 1957, of sending copies of death entries with mention of cancer to the relevant regional registries has likewise spread to all regions which require them. It would be incorrect to assume, however, that this has played more than a minor part in the improvement in coverage; this is largely dependent on the support of hospital staff, medical and recording, as well as the enthusiasm of the regional registries.

The figures in the following table compare the registration rates for 1953 and 1961. It should be pointed out that comparisons between the two years for each region are affected to some extent by a change in the basis of assignment of cases. For the earlier year, the rates are based on the registrations within each region whilst those for 1961 show the incidence among the populations resident in each hospital region.

Table showing the registration rate per 1,000 population by hospital regions for 1953 and 1961

Hospital Region	1953 Registrations	1961 Registrations by region of domicile
Newcastle	1.7	2.6
Leeds	1.3	2.7
Sheffield	1.2	2.5
East Anglia	1.6	2.8
N.W. Metropolitan	1.5	} 2.7
N.E. "	1.3	
S.E. "	1.1	
S.W. "	1.4	
Wessex	1.4	
Oxford	2.4	2.7
South Western	2.3	3.0
Wales	1.0	2.3
Birmingham	1.6	2.6
Manchester*	1.1	-
Liverpool	2.0	2.8
All Regions	1.5	2.4

*Manchester region was not participating in the Scheme in 1961.

There is reason to believe that the coverage is very much better for age-groups below 65 years for all malignant diseases (except of the skin, for which coverage is a special problem as explained below). Several regional registries have found from a comparison of copies of death entries mentioning cancer with registrations that it is the elderly patient who is frequently not admitted to hospital. This was shown, too, in figures collected by the South Western Regional Cancer Bureau and published in their Annual Report for 1954. Skin cancer is often dealt with in out-patients' departments, and though strenuous efforts are made to obtain notifications of all patients with malignant disease of the skin, it is generally more difficult to do so when patients are not admitted to hospital.

There is varying coverage in different age-groups but an important example between the under and over 65 years groups is the case of carcinoma of the cervix. There were 1.8 times as many registrations in 1961 as deaths due to this cause under the age of 65 compared with the corresponding ratio of 1.5 to 1 for all ages. (These ratios would be somewhat higher for 1962 and later years following the inclusion in the Scheme of the Manchester hospital region.)

Region	1961	1962	1963
North	1.2	1.3	1.4
North West	1.1	1.2	1.3
West Midlands	1.0	1.1	1.2
East Midlands	0.9	1.0	1.1
East of England	0.8	0.9	1.0
West of England	0.7	0.8	0.9
South West	0.6	0.7	0.8
South East	0.5	0.6	0.7
London	0.4	0.5	0.6
Manchester	0.3	0.4	0.5
Liverpool	0.2	0.3	0.4
All Regions	1.0	1.1	1.2

SCOPE OF THE PRESENT REPORT

Survival analysis

This report contains survival analyses for a number of specific sites based on 1952-53 registrations and using, in certain instances, 1948-49 cases for purposes of comparison. The sites selected are cancer of the cervix (with survival shown by social class for 1949 patients), uterine body, prostate, testis and leukaemia. There is also an examination of survival in the second five years after treatment for several sites, based on 1948-49 registrations, and discussion of the effect of delay on prognosis in breast cancer, based on 1954-55 registrations.

Incidence of cancer in England and Wales, 1961

The 1961 registrations of newly diagnosed cases of cancer in England and Wales form the basis of the incidence figures by site, age, sex and area (urban or rural) shown in the Appendix Tables, as well as of the staging of the growths.

If the population at risk is limited to the 41.7 million people of England and Wales in 1961 domiciled outside the Manchester Hospital Region, (which did not join the Scheme until 1962) the figures presented probably cover a high percentage of the diagnosed cases, particularly those under the age of 65 years. In the *Report of the Chief Medical Officer of Health, 1957, Part II*, it was suggested that the yearly incidence of all forms of cancer, including those cases which never attended hospital, was probably about 3 per thousand of the population, although this may be an underestimate and was itself a correction of a previous figure of 2.5 per thousand. Latterly the figure of 3.1 per thousand has been used to represent complete coverage. (This figure has recently been exceeded in some areas of the South Western Region.) This would mean that the 111,613 registrations in 1961 correspond to a coverage of 86 per cent of the 41.7 millions of people defined above.

Definitions

The following definitions are provided to assist in the understanding and interpretation of this report.

Stage: For much of the commentary, two stages only are identified, viz: "localised" and "not localised". Broadly, a "localised" (or "early") growth is one "limited to the organ of origin". For a growth within the oral cavity, "localised" (or "early") is defined as one which has an estimated diameter of less than 4 cms.

In Appendix Tables G and H, the stage groupings used are defined as follows:-

- EP_o, EP_s. An early growth with (s) or without (o) clinical involvement of lymphatic glands.
- LP_o, LP_s. A late stage growth - (i.e. the original growth had extended to adjoining organs, or firm fixation had occurred; or in the case of the oral cavity the growth exceeded 4 cms. in diameter) - with (s) or without (o) clinical involvement of lymphatic glands.

Metastases present: Metastases were detected in organs other than lymph glands (irrespective of the stage of the primary growth).

The stages used for the tumours of the cervix uteri in Appendix Table K are those recommended by the World Health Organisation.

The T.N.M. system of staging breast cancer used in Appendix Table J is that recommended by the International Union against Cancer.

Survival rates are calculated from the proportions surviving each year. Age-corrected rates, or the relative survival rates, refer to results where correction has been made for the risk due to competing causes of death, such as heart disease, the incidence of which varies with the age and sex of the patient. The reason for this adjustment is that all deaths in patients treated for cancer are considered failures, as it is impossible in many cases to find out how much the malignant disease contributed to the fatal outcome. As an example of the method, if 60 per cent of treated cases survive five years and the expected survival for five years of the population at large with the same age distribution as the patients is 95 per cent as shown by national life tables, then the corrected survival is $\frac{60}{.95} = 63$ per cent.

SURVIVAL IN THE SECOND FIVE YEARS AFTER TREATMENT

It is customary to calculate survival rates in cancer as the percentage surviving five years after treatment, possibly because it was previously considered that, in general, patients surviving five years were cured. The period of survival usually considered as that indicating eradication of the growth, however, is measured by the time taken for the annual death rate of a group of sufferers to fall to the level of that of the general population with the same age distribution. This period is frequently more than ten years and indeed the annual survival may never attain the level of the general population, as in the cases of patients with mammary cancer, in whom there is a tendency to malignant disease of the remaining breast. Nevertheless the prognosis tends to improve with each year survived.

Survival figures for the first and second quinquennia for several sites are presented below. All the results are confined to cases confirmed by histology, in view of the long period over which the survival is measured. The percentages of patients shown to have survived the second five years are based on the number who were alive at the commencement of the sixth year after treatment. The results for the second quinquennium confirm the much better prognosis of patients in this period. Prostatic cancer shows the poorest 5-10- year survival (age corrected rate 67.5 per cent for all stages) in spite of fair results in the first five years compared with other sites. For this reason it has been advocated that in comparisons of treatments of prostatic cancer, 10-year survival figures ought to be considered as well.*

The clinical stage of any malignant growth at the time of treatment had much less effect on the prognosis in patients who had already survived five years than it had in the first five years, although patients with localised growths in general still showed better results. A notable exception was cancer of the large intestine in both sexes, where the 5-10 year survival was better in cases with disease that had not been considered to be localised.

*Hudson, P. "Hormonal control of prostatic cancer". *Cancer*, vol. 6. 1959, Butterworth and Co. Ltd., London.

Table 1. Five- and ten-year survival percentages for confirmed cases of cancer of different sites by sex and stage of the disease - 1948-49 registrations

Site	Clinical stage	5-year percentage survival			5-10-year percentage survival		
		No. of cases	Crude survival (actual percentage surviving)	Age-corrected survival	No. of cases	Crude survival (actual percentage surviving)	Age-corrected survival
Tongue (Males)	All stages	523	24.9	33.4	129	57.7	79.9
	Localised	227	41.5	56.1	93	59.6	82.4
	Not localised	296	12.2	16.3	36	52.7	73.4
(Females)	All stages	208	37.1	43.9	76	69.7	88.3
	Localised	120	49.8	59.1	59	71.1	89.8
	Not localised	88	19.6	23.2	17	64.7	82.8
Oesophagus (Males)	All stages	501	2.4	3.1	12	91.6	100.0
	Localised	83	4.8	6.2	4	100.0	100.0
	Not localised	418	1.9	2.5	8	87.5	100.0
(Females)	All stages	247	3.4	4.0	8	75.0	87.4
	Localised	58	10.3	11.9	6	66.6	76.1
	Not localised	189	1.2	1.4	2	100.0	100.0
Stomach (Males)	All stages	1,208	9.2	11.0	109	66.8	80.6
	Localised	302	21.9	25.4	64	70.1	84.4
	Not localised	906	5.0	6.1	45	62.2	75.2
(Females)	All stages	710	9.7	11.0	68	68.3	77.6
	Localised	163	26.7	29.7	43	69.7	77.3
	Not localised	547	4.6	5.3	25	65.4	77.7
Large intestine (Males)	All stages	886	27.5	34.6	242	65.1	85.5
	Localised	379	45.0	56.7	170	63.3	84.4
	Not localised	507	14.3	18.1	72	69.4	87.9
(Females)	All stages	1,098	31.5	35.8	341	75.6	88.8
	Localised	494	48.8	55.2	238	74.3	87.5
	Not localised	604	17.3	19.8	103	78.6	91.8
Rectum (Males)	All stages	1,507	30.6	38.3	459	64.2	85.2
	Localised	745	43.7	54.4	325	66.1	87.1
	Not localised	762	17.9	22.5	134	59.7	80.7
(Females)	All stages	955	34.5	39.2	324	71.9	85.3
	Localised	480	53.0	59.7	249	74.5	87.8
	Not localised	475	15.9	18.2	75	63.3	76.6
Lung and bronchus (Males)	All stages	2,741	3.7	4.2	102	67.6	76.9
	Localised	425	14.8	16.5	63	69.8	80.3
	Not localised	2,316	1.7	1.9	39	64.1	71.7

Table 1 continued

Site	Clinical stage	5-year percentage survival			5-10-year percentage survival		
		No. of cases	Crude survival (actual percentage surviving)	Age-corrected survival	No. of cases	Crude survival (actual percentage surviving)	Age-corrected survival
Lung and bronchus (Females)	All stages	385	2.3	2.5	9	100.0	100.0
	Localised	38	10.5	11.0	4	100.0	100.0
	Not localised	347	1.4	1.6	5	100.0	100.0
Breast (Females)	All stages	6,909	48.4	53.3	3,326	68.0	77.9
	Localised	2,667	65.1	71.2	1,723	73.5	83.7
	Not localised	4,115	37.4	41.2	1,532	62.3	71.3
Uterine corpus	All stages	1,017	51.5	57.8	520	78.1	89.3
	Localised	551	62.2	69.8	341	79.3	90.6
	Not localised	372	30.6	34.7	112	71.4	82.2
Uterine cervix	All stages	4,448	37.4	40.6	1,651	76.3	85.6
	Localised	2,189	50.7	54.7	1,105	78.3	87.5
	Not localised	2,180	23.0	25.2	497	70.9	80.8
Ovary	All stages	1,085	21.8	23.5	232	78.7	86.0
	Localised	283	50.2	53.7	139	81.0	88.5
	Not localised	802	11.7	12.6	93	75.2	82.3
Testis Seminoma	All stages	168	53.5	56.5	89	88.4	95.1
	Localised	107	67.2	70.7	71	92.7	98.3
	Not localised	61	29.5	31.3	18	72.2	82.4
Teratoma	All stages	78	47.4	49.6	36	91.5	96.0
	Localised	47	65.9	69.7	30	93.3	97.2
	Not localised	31	19.3	19.9	6	83.3	90.2
Prostate	All stages	686	25.8	38.1	176	43.6	67.5
	Localised	262	34.3	53.9	90	38.2	61.6
	Not localised	316	12.7	18.6	40	38.5	59.0
Melanoma (Males)	All stages	142	37.9	46.7	52	72.9	91.3
	Localised	86	50.6	63.2	42	68.8	85.8
	Not localised	56	18.3	22.1	10	90.0	100.0
(Females)	All stages	178	51.5	58.0	90	75.1	83.9
	Localised	117	63.2	70.4	74	73.7	82.7
	Not localised	61	28.9	33.1	16	81.2	89.4

EFFECT OF DELAY IN CANCER OF THE BREAST

Although early treatment is always advocated in malignant disease, there is by no means a universal agreement that length of delay in reporting after onset of symptoms greatly affects the prognosis. Among the factors affecting the time of onset of symptoms, the degree of malignancy between cancers of the same organ (Bloom 1950)¹ must be mentioned since highly malignant growths tend to occur more frequently among patients who report with breast cancer soon after they become aware of symptoms and more slowly growing tumours among those who report late. (Sutherland 1960)².

The experience of 21,018 cases of female breast cancer registered in 1954-55 in England and Wales was examined to find what relationship, if any, existed between duration of symptoms before reporting and prognosis as shown by the 5-year survival percentage.

One step in the investigation was to determine the relationship of the stage of advancement of the breast cancer to both the delay and the eventual survival. It has been shown from cases registered in 1945-47³ that provided the growth was found to be localised on reporting, the prognosis was not affected by the delay. In the case of late primary growth the survival was better in patients who either reported within two months of symptomatic onset or postponed reporting for more than a year than in patients whose period of delay was intermediate. MacKay and Sellers⁴ in a study of breast cancer registrations in the Ontario Cancer Clinics found that within each stage of spread, survival seldom varied with delay. The records of a further 27,083 patients with breast cancer registered in 1950-53 were therefore examined for the effect of delay in reporting on the clinical stage of spread. The findings from this investigation, viz. in general that early reporting is worthwhile, were compared with those obtained from the registrations of breast cancer in 1954-55, as mentioned above.

Over 99 per cent of the female cases of breast cancer registered in 1954-55 were followed up for five years. The duration of symptomatic history was not stated in 1,891 cases, leaving 91 per cent of the cases for analysis.

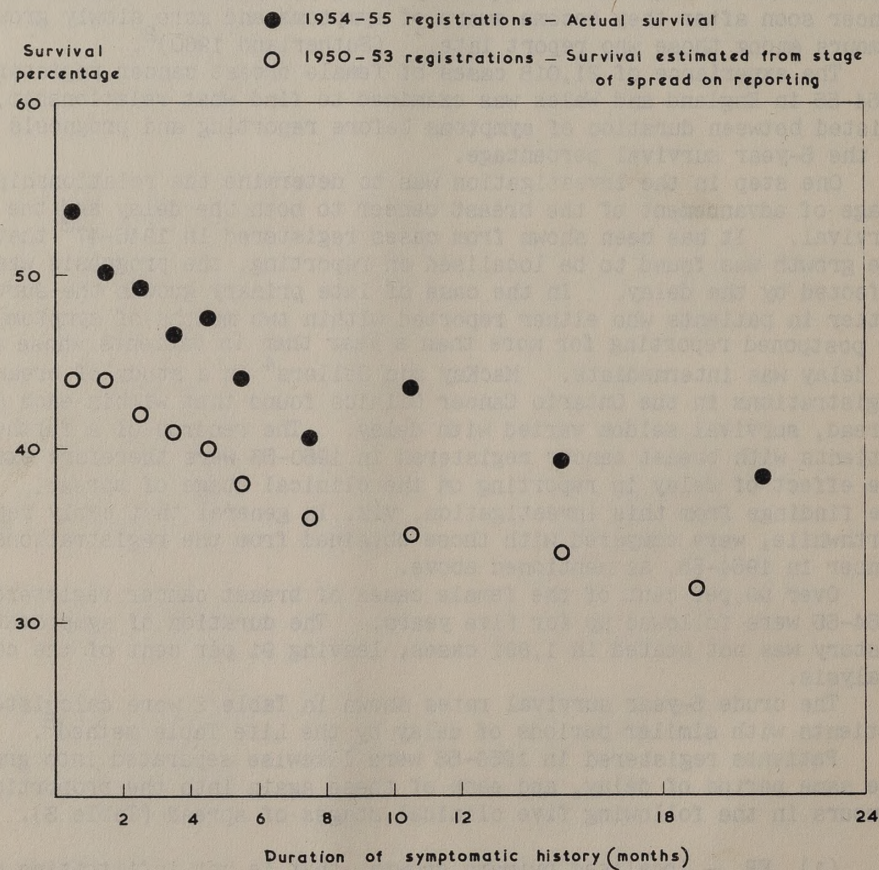
The crude 5-year survival rates shown in Table 2 were calculated for patients with similar periods of delay by the Life Table method⁵.

Patients registered in 1950-53 were likewise separated into groups with the same period of delay, and each of these again into the proportions with tumours in the following five clinical stages of spread (Table 3).

- (1) EP₀ - localised primary growth, that is not infiltrating neighbouring structures apart from the skin in the region of the growth, and without lymph gland involvement.
- (2) EP_S - localised primary growth but with involvement of axillary lymph glands.
- (3) LP₀ - late primary growths, no lymph gland involvement.
- (4) LP_S - late primary growths with axillary lymph gland involvement.
- (5) Met.- clinical evidence of metastases.

For radically treated patients registered in 1945-47 the average 5-year survival percentage is known for each of these stages separately⁵. By applying these survival figures to the percentage of cases in the corresponding clinical stage at each duration an expected 5-year survival percentage was obtained for patients registered in 1950-53 as shown in Table 3. The survival at each duration calculated in this way from the clinical staging distribution is compared with the actual survival of patients registered in 1954-55 in Diagram 1.

Diagram 1
BREAST CANCER. 5-YEAR CRUDE SURVIVAL PERCENTAGES



It can be seen from Table 2 that, as delay before seeking treatment increased, the prognosis deteriorated from a 5-year survival of 54 per cent in those reporting in the first month to 38 per cent in those delaying over two years. Diagram 1 also shows that the change in prognosis was most noticeable in the early months, both in the actual survival of the patients registered in 1954-55 and in the expected survival of those registered in 1950-53.

It appears from Diagram 1 that the actual survival and that derived from the clinical stage follow a similar course but the calculated survival of patients registered in 1950-53 is consistently less than that observed in patients registered in 1954-55. This is in keeping with the improved prognosis in later years in England and Wales since the survival figures used for the calculation were those of patients registered in 1945-47 when the overall 5-year crude survival was 33 per cent as against 44 per cent in 1954-55.

If the results shown in Diagram 1 are valid it appears that speed in initiating radical treatment is particularly important in patients who give a history of recent onset, though delay at any stage may be harmful. However, unusually rapid growth of the tumour, with early onset of pain or skin involvement, may force some patients to seek medical attention soon after the onset of symptoms and, therefore, the deterioration in the prognosis in groups of patients who report after increasing periods of delay may give a false picture of the rate of spread of the tumour in the average case. For example, if in a group of patients with the same duration of symptoms those reporting without further delay are those with more advanced tumours, then the prognosis of the whole group could have been greatly improved if the less advanced cases had reported earlier also, rather than later when they had reached a more serious stage of the disease.

A further weakness of methods used to analyse the effect of delay on the prognosis in malignant disease is that they are not directly applicable to the results in cases diagnosed at cancer detection centres where the tumour is frequently in the pre-symptomatic stage. For example, in rectal cancer, excellent results were obtained at the Cancer Detection Centre, Minnesota (Gilbertsen V. A., Wangenstein O. H. 1964)⁵ whereas in registrations of rectal cancer in England and Wales in 1945-47 the prognosis improved with the length of symptomatic history³. On the other hand, the 5-year crude survival of 89 per cent in 44 cases of mammary cancer in patients regularly seen at this Cancer Detection Centre would appear to confirm the finding of the above analysis that the deterioration in prognosis is greater in the early history of the average growth.

MacKay and Sellars⁴ suggested that the absence of the effect of delay on survival of patients in each stage of spread indicated that the stage of spread rather than the previous rate of growth determined the outcome. The adverse effect of delay on the prognosis as shown both from the clinical stage of growths of patients reporting after various periods of delay (Diagram 1) and their survival rates is in keeping with this.

Table 2. Cancer of the breast
 Numbers of patients registered in 1954-55 and 5-year survival percentages by duration of symptomatic history

Duration of symptomatic history (months)	Number of patients	5-year survival percentages
0-	958	53.69
1-	2,845	50.17
2-	2,460	49.25
3-	2,006	46.61
4-	1,385	47.59
5-	1,024	44.09
6-	2,415	40.71
9-	908	43.50
12-	1,793	39.30
18-	668	38.34
24 and over	2,667	37.51
Not stated	1,891	35.63
All durations	21,018	43.83

Table 3. Cancer of the breast
 Percentages of patients registered in 1950-53 for durations of symptomatic history by each clinical stage
 Estimated 5-year survival percentages

Duration of symptomatic history	Stage				Metastatic cases	All cases	Estimated 5-year survival percentage
	EP ₀	EP _s	LP ₀	LP _s			
Months	%	%	%	%	%	Number (=100%)	
0-	46.0	23.7	5.9	17.7	6.7	1,139	44
1-	44.7	24.7	5.6	20.8	4.2	3,502	44
2-	41.0	22.5	6.3	24.4	5.8	3,181	42
3-	38.7	20.9	7.6	27.1	5.7	2,591	41
4-	35.6	19.4	8.7	29.7	6.6	1,708	40
5-	33.5	19.8	8.3	29.5	8.9	1,295	38
6-	28.6	17.9	9.2	33.1	11.2	3,217	36
9-	25.9	18.5	9.3	34.4	11.9	1,327	35
12-18	24.4	14.5	10.5	38.5	12.1	2,726	34
18-20	19.7	15.4	10.7	42.8	11.4	598	32
21 and over	20.3	10.4	13.9	39.2	16.2	4,085	31
Not known	31.4	12.1	12.0	30.0	14.5	1,694	36

The 5-year crude survival rates of cases of breast cancer registered in 1945-47 were 60 per cent for stage EP₀, 43 per cent for stage EP_s, 35 per cent for stage LP₀, 22 per cent for stage LP_s, and 5 per cent for metastatic cases. The estimated survivals shown were obtained by summing the products of these survivals with the proportion in the corresponding stage. For example, in those with delay of less than 1 month, $(\frac{46.0}{100} \times 60) + (\frac{23.7}{100} \times 43) + (\frac{5.9}{100} \times 35) + (\frac{17.7}{100} \times 22) + (\frac{6.7}{100} \times 5) = 44.$

References

1. Bloom, H. J. C. (1950). Prognosis in Carcinoma of the breast, *British Journal of Cancer*. Vol. 4.
2. Sutherland, R. (1960). *Cancer - the significance of delay*. Butterworth and Co. Ltd., London.
3. *Supplement on Cancer to the Registrar General's Statistical Review of England and Wales for 1952*. H.M.S.O.
4. MacKay, E. N., Sellers, A. H. (1965). Breast cancer at the Ontario cancer clinics 1938-1956: a statistical review. *Canad. Med. Assoc. J.* Vol. 92. No. 13.
5. *Int. Symp. End Results of Cancer Therapy*, NCI Monograph No. 15, Bethesda, 1964.

SURVIVAL IN CANCER OF THE CERVIX

5,580 cases (confirmed and unconfirmed) of cancer of the cervix were registered in 1952-53. In 50 per cent of these patients the disease was considered to be localised on clinical examination, i.e. showing no evidence of spread beyond the upper third of the vagina or the inner half of the parametrium. The remainder were classified as having non-localised growths, only two stages of spread being used in the analysis. Ninety per cent of all patients had had histological confirmation of their neoplasm.

Methods of treatment

Three quarters of the patients were treated by radiotherapy, this proportion applying equally to those with early growths and to those where the disease was no longer localised. A further 16 per cent of all patients with localised disease had surgery with radiation and 8 per cent surgery only. Of those with more advanced disease, on the other hand, 12 per cent were recorded as having had no known treatment.

End results

Thirty-eight per cent of all cases with cancer of the cervix survived five years, the age-corrected survival, which adjusts for the increased risk of death from other causes at older ages, being 42 per cent. For localised cases the age-corrected survival was 59 per cent compared with 24 per cent for the patients with more advanced disease. It can be seen from Table 4 that these results were significantly better than those of the patients registered in 1948-49, and that this was also true for all patients treated by surgery or surgery combined with radiation.

The poorer result recorded for all patients 65 years of age and over taken together (Table 4) when compared with younger age-groups can be accounted for by the smaller proportion of localised cases (43 per cent as compared with 50 per cent for all ages combined) in this age-group, for no clear trend with age can be shown in each of the separate stages.

Survival after different forms of treatment was probably affected by the selection of cases, the best results following surgery for which the five-year age-corrected survival was 62.0 per cent as compared with 55.6 per cent for surgery combined with radiation and 41.2 per cent for radiation.

Although numbers in the different age and treatment groups were small and differences not statistically significant, 55 patients aged 65 years and over treated by surgery did not do as well as almost the same number treated by surgery and radiation and hardly better than those treated by radiation alone (Table 4).

Social class and survival in cancer of the cervix

The question of a possible relationship between the social class of patients with cervical cancer and their prognosis is important for two reasons. First, as shown in Table 5, taken from the *Registrar General's Decennial Supplement for England and Wales for 1951**, death rates due to

* *The Registrar General's Decennial Supplement, England and Wales, 1951, Occupational Mortality, Part II, Vol. 2, Tables.* H.M.S.O. 1958.

Table 4. Cancer of the cervix (confirmed and not confirmed). 1952-53 registrations. Age-corrected 5-year survival rates by age, stage and form of treatment.

Age	Stage	All forms 2 s.e.	Surgery 2 s.e.	Radiation 2 s.e.	Surgery and radiation 2 s.e.	No known form of treatment 2 s.e.	
0-34	ALL	46.6 ± 5.9	56.9 ± 18.2	40.4 ± 7.5	58.3 ± 11.4	27.4 ± 38.2 (6 cases)	
	Localised	57.5 ± 7.3	68.9 ± 21.4	48.5 ± 9.6	70.1 ± 12.3	100.0 ± 00.0 (2 cases)	
	Not localised	26.4 ± 8.9	35.6 ± 29.5	26.7 ± 11.1	25.4 ± 19.6	0.0 ± 00.0 (4 cases)	
35-44	ALL	42.9 ± 3.4	67.6 ± 10.6	35.7 ± 4.1	58.8 ± 7.3	5.0 ± 9.6	
	Localised	58.2 ± 4.5	79.8 ± 10.6	50.6 ± 6.0	64.4 ± 8.1	0.0 ± 0.0 (1 case)	
	Not localised	22.4 ± 4.4	30.4 ± 20.7	20.3 ± 4.9	41.0 ± 14.8	5.2 ± 10.0	
45-54	ALL	42.1 ± 2.6	66.0 ± 9.9	40.1 ± 2.9	54.1 ± 7.2	6.0 ± 5.7	
	Localised	59.9 ± 3.7	86.3 ± 9.3	55.7 ± 4.4	65.7 ± 8.5	34.5 ± 32.5	
	Not localised	24.5 ± 3.1	25.0 ± 15.4	26.1 ± 3.6	31.3 ± 11.4	1.8 ± 3.6	
55-64	ALL	43.1 ± 2.6	63.1 ± 12.1	44.3 ± 3.0	52.2 ± 8.9	0.0 ± 0.0	
	Localised	61.5 ± 3.8	76.5 ± 13.8	60.6 ± 4.2	62.4 ± 11.1	0.0 ± 0.0	
	Not localised	25.3 ± 3.2	37.1 ± 20.0	27.8 ± 3.7	35.2 ± 13.6	0.0 ± 0.0	
65-98	ALL	38.0 ± 3.3	44.2 ± 16.4	42.1 ± 3.8	54.1 ± 17.4	3.4 ± 3.4	
	Localised	57.0 ± 5.4	59.3 ± 24.5	57.1 ± 5.8	76.6 ± 21.8	11.2 ± 21.5	
	Not localised	23.3 ± 3.7	28.5 ± 20.4	28.6 ± 4.6	18.9 ± 20.1	2.8 ± 3.2	
All Ages	ALL	1948-49	37.6 ± 1.4	53.9 ± 7.5	39.1 ± 1.5	47.1 ± 4.8	1.7 ± 1.4
		1952-53	42.0 ± 1.4	62.0 ± 5.7	41.2 ± 1.6	55.6 ± 4.0	3.4 ± 2.1
	Localised	1948-49	55.1 ± 2.1	56.9 ± 10.5	55.3 ± 2.4	55.9 ± 6.2	12.6 ± 16.8
		1952-53	59.4 ± 2.0	77.9 ± 6.2	56.3 ± 2.4	65.8 ± 4.7	22.7 ± 17.9
	Not localised	1948-49	21.8 ± 1.6	33.3 ± 13.0	24.5 ± 1.9	27.4 ± 7.6	1.1 ± 1.1
		1952-53	24.2 ± 1.7	30.5 ± 9.0	26.3 ± 2.0	32.9 ± 6.7	1.8 ± 1.6

Table 5. Cancer of the cervix - mortality by social class, 1949-53

Social Class	Standardised Mortality Rate 20-64 years		Proportional Mortality Rate 65 years and over	
	Married women	Single women	Married women	Single women
I Professional, etc. occupations	64	(40)	81	(167)
II Intermediate occupations	75	61	89	111
III Skilled occupations	98	87	100	98
IV Partly skilled occupations	105	121	97	98
V Unskilled occupations	134	115	125	(175)

Note: Rates in italics are based on less than 50 deaths. Rates in brackets are based on less than 10 deaths.

this disease are very much higher in the lower social classes, this trend being clearly evident in married females of all age-groups and in single females under 65 years of age. This raises the question whether this social class gradient in the death rate is due to a higher incidence or poorer survival in the lower social classes. Secondly, it has been found that the prognosis of cases with cancer of the cervix is much better in the U.S.A. than in England and Wales; for example, the crude five-year survival rates in 1950-54 was 52.3 per cent in the Connecticut Cancer Registry figures as against 38.1 per cent here in 1952-53, and it has been suggested that this may be accounted for by significant social class differences in the survival figures of England and Wales*. However, this comparison must be treated with reserve because it compares the results obtained in two entirely different geographical areas.

For the year 1949, occupation was included in the information received by the cancer registry. Although many of the notifications described the patient's occupation simply as "housewife", 1,008 registrations of cervical cancer received in that year gave either the husband's or the patient's occupation. These were separated into social class categories using the same classification of occupations as the 1951 *Decennial Supplement*, and the survival experience of these patients is shown in Table 6 as both crude and age-corrected rates. Social Classes I and II have been combined because of small numbers. The results show no well-defined effect of social class on the survival of women with localised disease. Amongst the remainder, however, the prognosis shows a clear social class gradient, but in the reverse direction to what might have been expected, in that the women of Social Class V fared better than those of Classes I and II. The survival of all social classes and stages combined, is similar to that of England and Wales in 1948-49 (Table 4).

* *Int. Symp. End Results of Cancer Therapy*, NCI Monograph No. 15. Bethesda, 1964.

Table 6. Cancer of the cervix, 1949 registrations. 5-year survival rates (crude and age-corrected) and percentage with localised disease by social class.

Social Class	Localised disease 5-year survival			All others 5-year survival			All stages 5-year survival			Percentage with localised disease
	Number	Crude rate	Age- corrected rate	Number	Crude rate	Age- corrected rate	Number	Crude rate	Age- corrected rate	
I and II	65	57.65	62.06	69	17.33	19.07	134	36.76	40.02	48.5
III	220	56.19	59.05	259	20.08	21.70	479	36.63	39.08	45.9
IV	89	59.55	62.73	104	23.08	24.70	193	39.90	42.39	46.1
V	88	52.27	55.52	114	25.44	26.96	202	37.13	39.39	43.6
All Social Classes	462	56.28	59.49	546	21.42	23.06	1,008	37.37	39.90	45.8

C A R C I N O M A O F T H E U T E R I N E C O R P U S

In 1952-53, 1,896 cases of carcinoma of the uterine body were notified, 1,761 (93 per cent) of these having had histological confirmation of the tumour.

Nearly two-thirds (64 per cent) of all cases (confirmed or unconfirmed) were considered to have clinically localised disease, that is without evidence of spread to adjacent or distant viscera. The age distribution and proportion with localised disease in each age-group was as follows:

Age-group	Per cent of cases	Per cent with localised growths
0-44	6	69
45-54	23	67
55-64	39	67
65-98	32	57
All ages	100 (1,896)	64

These figures indicate that patients who were 65 years and over were more likely to have advanced disease than younger patients.

Choice of treatment

Table 7 shows that 46 per cent of patients were treated by surgery, 24 per cent by surgery and radiation therapy, and 23 per cent by radiation therapy alone. The last includes a combined attack on the tumour by intra-uterine radium and external irradiation.

Table 7. Numbers and percentages of cases of carcinoma of the uterine body by stage and form of treatment

Clinical Stage	All treatments		Surgery		Surgery and radiation		Radiation		No known treatment	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Localised	1,212	100	650	54	303	25	236	19	23	2
Not Localised	684	100	217	32	147	21	202	30	116	17
All Stages	1,896	100	867	46	450	24	438	23	139	7

2 cases only received chemo-hormone treatment.

Results

The five-year age-corrected survival of 67 per cent was in keeping with the comparatively good prognosis known to be associated with malignant disease

of the uterine body. This figure increased to 79 per cent if cases with localised disease only were considered. The following were the results for the different age-groups:

Age-group	All stages		Localised cases		Not localised cases	
	%	2 s.e.	%	2 s.e.	%	2 s.e.
0-44	76.5	± 8.4	97.2	± 4.7	30.7	± 16.2
45-54	76.4	± 4.3	85.8	± 4.5	57.4	± 8.5
55-64	69.2	± 3.8	79.8	± 4.2	47.6	± 6.9
65-98	50.8	± 5.3	66.4	± 7.1	28.9	± 7.0
All ages	66.5	± 2.5	79.3	± 2.9	43.0	± 4.3

The poorer age-corrected survival of patients 65 years of age and over is shown separately in the two stages of spread and is in keeping with the suggestion in the *Supplement on Cancer to the Registrar General's Statistical Review of England and Wales for 1953* that the malignancy of the tumour tended to increase with age. The extremely favourable survival of patients under 45 years of age with localised disease is noteworthy; 70 of the 73 surviving five years after treatment. In all but five the diagnosis had been confirmed by histology. However, Willis* has pointed out the difficulty of distinguishing in a minority of histological sections between atypical hyperplasia and commencing carcinoma.

Results in different forms of treatment

From Table 8 it can be seen that the results for all stages and ages combined were slightly better after surgery (five-year age-corrected survival of 80 per cent) than after surgery combined with radiation therapy (corresponding survival figure 76 per cent). Selection of cases may have been responsible for this as well as for the comparatively poor results obtained after radiation therapy alone. It is interesting that the five-year age-corrected survival of 23 patients (18 confirmed by histology) with localised disease and subjected to no known treatment was 69 per cent, compared with 56 per cent for early cases treated by radiation therapy. However, the difference was not statistically significant, and when all stages are considered the corresponding survival figure for patients given no known treatment was only 13 per cent.

Table 8 also shows results for different forms of treatment in various age-groups. The figures suggest that in elderly patients, surgery with radiation therapy is the best method in localised cases. Again the finding on which this is based is not significant and may be the result of random variation.

* Willis, R. A. (1953) *Pathology of Tumours*. Butterworth and Co. Ltd., London.

Table 8. Five-year age-corrected survival percentages of carcinoma of the uterine body by age and treatment category (confirmed and not confirmed)

Age-group	Clinical stage	All treatments		Surgery		Surgery and radiation		Radiation	
		%	2 s.e.	%	2 s.e.	%	2 s.e.	%	2 s.e.
0-44	Localised	97.2	± 4.7	96.8	± 6.2	100.0	± 0 (22 cases, no deaths)	81.2	± 36.3 (5 cases)
	Not localised	30.7	± 16.2	60.9	± 31.4 (10 cases)	16.8	± 30.8 (6 cases, 5 deaths)	20.2	± 25.6 (10 cases)
45-54	Localised	85.8	± 4.5	91.9	± 5.0	83.5	± 8.3	62.7	± 17.6
	Not localised	57.4	± 8.5	69.4	± 13.1	74.8	± 13.5	37.0	± 18.7
55-64	Localised	79.8	± 4.2	86.4	± 5.1	78.8	± 8.3	59.9	± 11.6
	Not localised	47.6	± 6.9	70.5	± 11.4	61.9	± 13.6	29.3	± 11.8
65-98	Localised	66.4	± 7.1	73.3	± 10.0	80.8	± 15.6	49.0	± 12.5
	Not localised	28.9	± 7.0	49.7	± 15.3	46.4	± 21.3	22.4	± 10.6
ALL AGES	Localised	79.3	± 2.9	85.8	± 3.6	82.4	± 5.2	56.4	± 7.8
	Not localised	43.0	± 4.3	64.0	± 7.6	61.3	± 9.0	27.2	± 7.1
	All stages combined	66.5	± 2.5	80.4	± 3.3	75.6	± 4.7	43.1	± 5.5

Comparing the survival of 1952-53 registrations with that of patients registered in 1948-49, it can be seen from the following figures (Table 9) that there was improvement in the later period after surgery, surgery combined with radiation therapy, and after radiation therapy alone.

Table 9. Five-year age-corrected survival percentages of carcinoma of the uterine body by clinical stage and treatment category

Period	Clinical stage	All cases		Surgery		Surgery and radiation		Radiation	
		%	2 s.e.	%	2 s.e.	%	2 s.e.	%	2 s.e.
1948-49	Localised	69.2	± 4.5	81.6	± 6.0	75.2	± 9.0	50.3	± 8.2
	Not localised	32.2	± 4.8	57.8	± 11.5	54.2	± 13.1	23.8	± 6.8
1952-53	Localised	79.3	± 2.9	85.8	± 3.6	82.4	± 5.2	56.4	± 7.8
	Not localised	43.0	± 4.3	64.0	± 7.6	61.3	± 9.0	27.2	± 7.1

The improvement in the survival of the 1952-53 registrations for all treatments combined is statistically significant for localised and advanced cases separately ($P < .01$). It should be pointed out that coverage was poorer before 1950, most of the notifications being from radiation centres and therefore probably of more advanced cases. However, this would not apply to the improvement after treatment by radiation or radiation combined with surgery.

CANCER OF THE PROSTATE

In 1952-53, 2,398 cases (confirmed and unconfirmed by histology) of cancer of the prostate were registered in England and Wales, of which 59 per cent were 70 years of age or over. Forty-two per cent of this older age-group were considered to have clinically localised disease, i.e. no evidence was found of spread to tissues surrounding the prostate or of metastases, and 40 per cent in the group under 70 years of age.

Choice of treatment

Seventy per cent of patients with localised disease were treated by surgery and the majority of the remainder by chemotherapy or hormones. This last group is not further subdivided but it is doubtful whether other forms of treatment besides administration of oestrogens and endocrine gland ablation were used in significant numbers of cases.

In patients where the disease was not considered clinically to be localised, only 34 per cent were subjected to surgery and 41 per cent to chemotherapy or hormone treatment, while 7 per cent were given radiotherapy.

It is more than likely that most patients who were surgically treated were subsequently given hormone therapy.

End results

Twenty-two per cent of patients survived five years, the age-corrected survival rate (allowing for the greater incidence of competing causes of death in older patients) being 34 per cent. In spite of the same correction for age, the results in those 70 years of age and over were poorer, particularly for cases with localised disease, as the following figures show:-

Age-group	All stages		Localised		Not localised	
	%	2 s.e.	%	2 s.e.	%	2 s.e.
0-69	38.9	± 3.6	64.9	± 6.2	21.9	± 3.8
70-98	29.7	± 3.6	44.4	± 6.5	18.8	± 3.9

Table 10. Five-year age-corrected survival percentages of cancer of the prostate by age, stage and form of treatment

Stage	Age-Group	Surgery		Chemo-hormones		Radiation	
		%	2 s.e.	%	2 s.e.	%	2 s.e.
Localised	0-69	(268)	61.7 ± 7.6	(93)	73.9 ± 12.4	(7)	86.3 ± 41.2
	70-98	(431)	47.5 ± 7.9	(135)	42.0 ± 13.2	(7)	30.7 ± 56.9
Not Localised	0-69	(177)	26.8 ± 7.7	(248)	28.3 ± 6.5	(61)	9.5 ± 8.2
	70-98	(296)	22.1 ± 7.1	(324)	21.2 ± 6.6	(37)	13.4 ± 14.9

(numbers of cases shown in brackets)

Turning to the results for different methods of treatment, it is seen in Table 10 that, contrary to the fact that it might be expected that surgery was reserved for cases with more favourable outlook, treatment by chemo-hormones was followed by a better age-adjusted 5-year survival rate than surgery in localised cases under 70 years of age, though the difference was not statistically significant. Diagram 2 shows that this was mainly due to a highly significant difference in survival in the first year after treatment ($P < .001$) in favour of patients who had been treated by chemo-hormones. This raises the question as to whether post-operative deaths might have affected the survival after surgery.

For patients registered in 1948-49, ten-year age-corrected survival rates are available and comparison of the results after these two forms of treatment in patients of the corresponding age- and stage-group is as follows:-

	Surgery		Chemo-hormones	
	%	2 s.e.	%	2 s.e.
5-year age-corrected survival	(124) 68.3	± 11.0	(68) 66.0	± 14.6
10-year age-corrected survival	(124) 41.3	± 13.1	(68) 28.6	± 15.0

(numbers of cases shown in brackets)

It can be seen that the survival was similar for the two forms of treatment in the first five-year period, but at the end of 10 years the figures suggested that the prognosis was better after surgery, although this difference was not statistically significant and possibly due to random fluctuation. Diagram 2 shows separately the survival curves of the younger patients with early prostatic cancer registered in 1948-49 after these two forms of treatment. Again the larger mortality in the first year after surgery is evident, as well as the tendency for the survival curve in prostatic cancer to maintain its downward slope thus indicating that in this type of malignant disease the age-corrected annual death rate remains high for an unusually long period after treatment. For this reason both 5-year and 10-year survival rates should be considered in comparing results in prostatic cancer.

Comparison of the results in non-localised cases after radiotherapy with those after chemo-hormones shows consistently better results after the latter form of treatment. (Table 11).

Table 11. Five-year age-corrected survival percentages among non-localised cases of cancer of the prostate for two periods by age and form of treatment

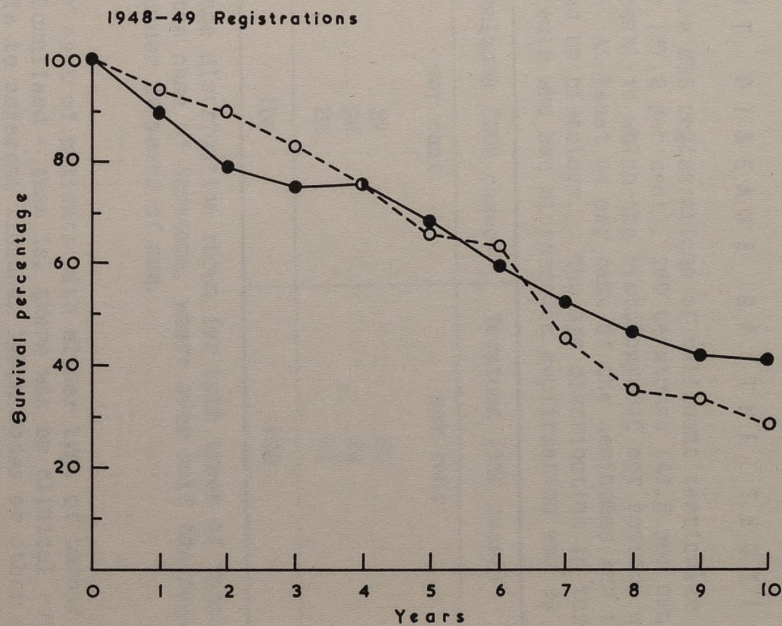
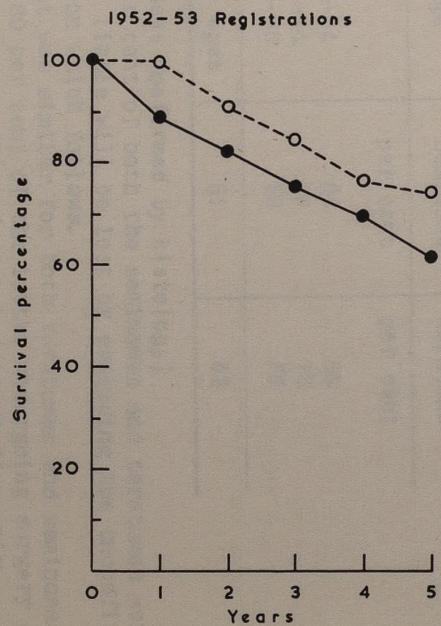
Age-group	Period	Chemo-hormones		Radiation therapy	
		%	2 s.e.	%	2 s.e.
0-69	1948-49	(194) 24.7	± 7.1	(54) 10.9	± 9.3
	1952-53	(248) 28.3	± 6.5	(61) 9.5	± 8.2
70-98	1948-49	(179) 20.8	± 8.7	(18) 9.3	± 18.1
	1952-53	(324) 21.2	± 6.6	(37) 13.4	± 14.9

(numbers of cases shown in brackets)

Diagram 2

LOCALISED CANCER OF PROSTATE, AGE-CORRECTED SURVIVAL PERCENTAGES,
UNDER 70 YEARS OF AGE

Surgery ●—●—● Chemo-hormones O--O--O



MALIGNANT DISEASE OF THE TESTIS

In 1952-53 there were 386 registrations of malignant testicular tumours, comprising 221 seminomas (57.2 per cent), 160 teratomas (41.5 per cent) and 5 other cases (1.3 per cent) in which the histology did not conform with either of these groups. At least 94 per cent of the seminomas and teratomas separately were confirmed by histology. The age distribution in three broad age-groups of those patients who had microscopic confirmation was as follows:-

Age	Seminoma (208 cases)	Teratoma (152 cases)
	per cent	per cent
0-34	29	55
35-44	38	24
45-98	33	21
All ages	100	100

The typical young age distribution shown for both types of tumour was particularly marked in the case of teratoma, where over half the registrations were of patients under 34 years of age.

Stage

In just over 60 per cent of patients with either type of tumour the growth was found to be localised - that is, there was no clinical evidence of spread from the testis to adjacent tissues, lymph nodes or other organs. The proportion of localised tumours in cases with histological confirmation in three age-groups was as follows:-

Age	Seminoma	Teratoma
	per cent	per cent
0-34	66	55
35-44	59	73
45-98	59	66
All ages	61	62

Choice of treatment (cases confirmed by histology)

As more than 94 per cent of both the seminomas and teratomas were confirmed by histology, little will be lost by excluding the unconfirmed cases from the discussion which follows.

Choice of treatment was similar for both teratomas and seminomas, 74 per cent of the former and 80 per cent of the latter undergoing surgery combined with radiation, the remainder surgery (mainly) or radiation only.

End results of treatment (histologically confirmed cases, 1952-53 registrations)

Sixty-five per cent of cases with seminoma and 53 per cent with teratoma were alive after five years, the age-corrected figures for this period of survival being 69 per cent and 55 per cent respectively.

Table 12 shows that the prognosis was affected by the clinical stage of the growth, the five-year age-corrected survival for patients with localised teratomas being 72 per cent and 84 per cent for cases with early seminoma.

Survival in various age-groups

From the following figures it can be seen that prognosis was also better in patients who were 45 years of age and over compared with younger patients. This remains true even when crude survival figures are used which do not correct for the higher incidence of competing causes of death in older patients.

Age	Seminoma			Teratoma		
	No. of cases	Crude survival percentages	Age-corrected survival percentages and 2 s.e.	No. of cases	Crude survival percentages	Age-corrected survival percentages and 2 s.e.
0-34	61	61.8	62.3 ± 12.6	83	51.8	52.2 ± 11.0
35-44	78	64.9	66.1 ± 11.0	37	45.9	46.6 ± 16.6
45-98	69	68.1	77.8 ± 12.8	32	62.5	71.5 ± 19.5

With regard to results after different forms of treatment it can be seen from the figures for the 1952-53 registrations in Table 12 that for all stages combined the survival after surgery was poorer than after surgery with radiation therapy.

Trends in survival results, 1948-49 and 1952-53

Comparison of results obtained in cases of seminoma treated in 1952-53 with the results in 1948-49 registrations showed a significant improvement in the survival of patients of all stages combined treated by surgery combined with radiation in the later period ($P < .01$). Only 7 cases in 1948-49 and 15 in 1952-53 with histological confirmation were treated by radiation alone, but if cases without biopsy are included, the improvement in results after this form of treatment was also significant ($P < .05$). This may be due to the more widespread use of megavoltage radiotherapy in the later period, as high energy machines are particularly advantageous in radiation of deep seated areas of the body such as the lymph drainage system of the testis. It is note-worthy that the improvement in the case of teratoma, which is less responsive than seminoma to radiation therapy, is much less spectacular.

RESULTS IN THE TREATMENT OF CHRONIC LEUKAEMIA

Table 13 shows the numbers of patients with chronic lymphatic and myeloid leukaemia registered in 1948-49 and 1952-53 and the registrations treated by radiation, chemotherapy and registration with both.

Table 13. Numbers of patients with chronic lymphatic and myeloid leukaemia and proportions by method of treatment

Cases	Number	Per cent treated by		
		Radiation	Radiation and chemotherapy	Chemotherapy only
Chronic lymphatic leukaemia				
1948-49 registrations	220	64	14	22
1952-53 registrations	273	52	14	34
Chronic myeloid leukaemia				
1948-49 registrations	155	68	5	27
1952-53 registrations	223	54	5	41
Chronic lymphatic leukaemia (continued)				
1948-49 registrations	127	68	11	21
1952-53 registrations	223	44	22	34
Chronic myeloid leukaemia (continued)				
1948-49 registrations	124	67	12	21
1952-53 registrations	223	52	12	36

TRENDS IN THE PROGNOSIS OF
CHRONIC LEUKAEMIA

Table 13 shows the numbers of patients with chronic lymphatic and myeloid leukaemia registered in 1948-49 and 1952-53 and the proportions treated by radiation, chemo-hormones and radiation with chemo-hormones.

Table 13. Numbers of patients with chronic lymphatic and myeloid leukaemia and proportions by method of treatment

Chronic lymphatic leukaemia

Males

	Number	Per cent treated by		
		Radiation	Radiation and chemo-hormones	Chemo-hormones only
1948-49 registrations	233	66	6	3
1952-53 registrations	385	52	14	8

Females

1948-49 registrations	155	63	8	2
1952-53 registrations	232	54	8	12

Chronic myeloid leukaemia

Males

	Number	Per cent treated by		
		Radiation	Radiation and chemo-hormones	Chemo-hormones only
1948-49 registrations	137	66	11	2
1952-53 registrations	223	44	19	9

Females

1948-49 registrations	174	67	12	3
1952-53 registrations	265	52	19	9

The figures refer to the treatment used initially and give no indication of therapeutic methods employed later on in the course of the disease. It would be fair to say, however, that patients registered in 1952-53 were subject to improved methods of radiotherapy and supportive treatment and many more eventually received chemo-therapy than the small percentage appearing in Table 13. This is much less likely to be true of those registered in 1948-49.

Results

The two- and five-year age-corrected survival of patients registered with chronic lymphatic and chronic myeloid leukaemia in 1948-49 and 1952-53 are presented in Table 14. The results are also shown for patients undergoing radiotherapy and those given no initial treatment, the numbers in these categories being large enough for analysis.

Table 14. Chronic lymphatic and chronic myeloid leukaemia, two- and five-year age-corrected survival percentages (± 2 standard errors shown for five-year survival)

(a) Males

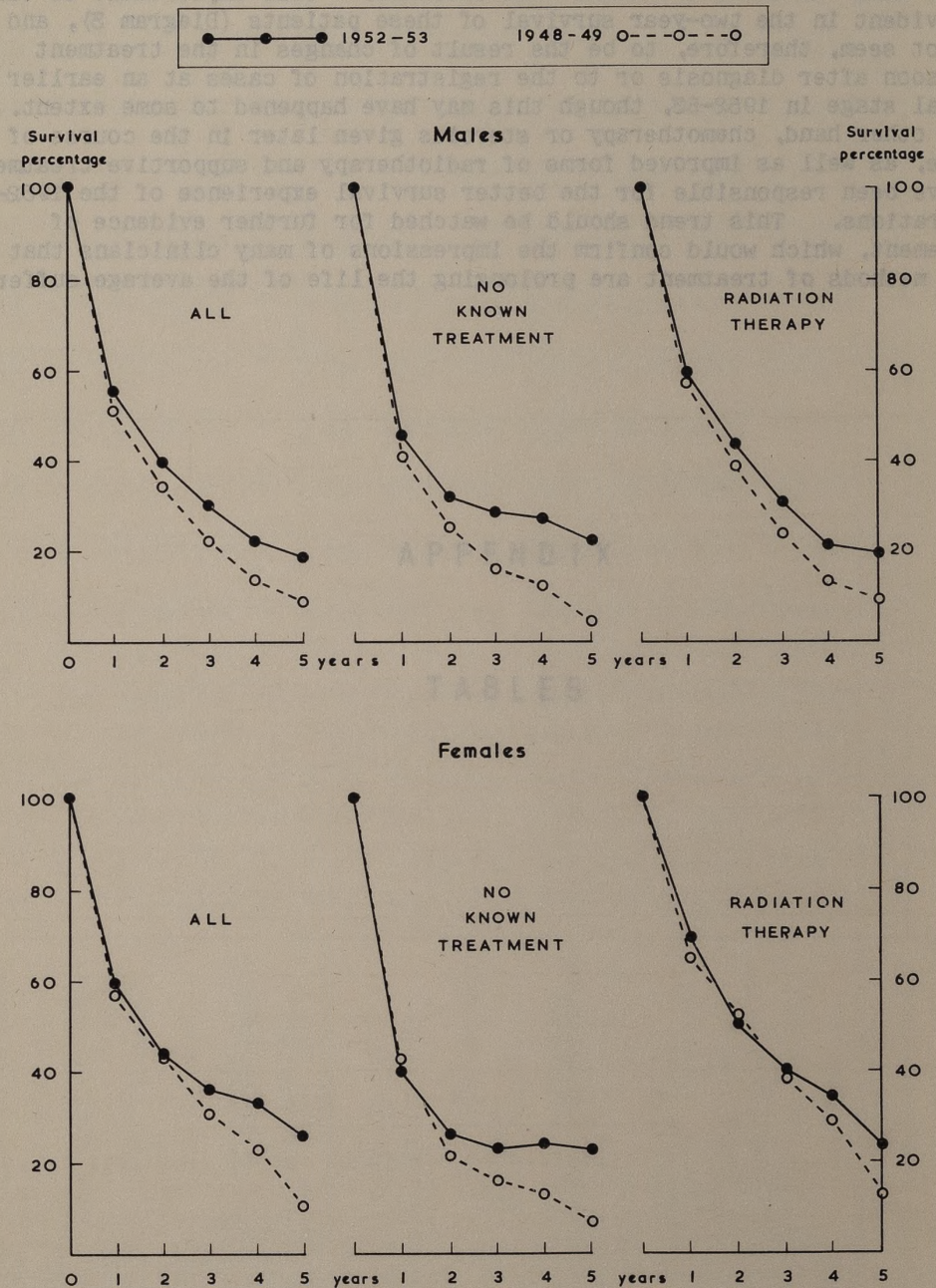
Survival period		All cases	Cases treated by radiation	Cases with no known treatment
Chronic lymphatic				
2-years	1948-49	34.3	38.7	24.9
	1952-53	39.5	43.4	31.6
5-years	1948-49	8.2 \pm 3.9	9.2 \pm 5.1	4.3 \pm 6.0
	1952-53	18.5 \pm 4.5	19.5 \pm 6.4	22.2 \pm 10.2
Chronic myeloid				
2-years	1948-49	35.0	34.4	12.1
	1952-53	30.5	35.2	10.6
5-years	1948-49	5.7 \pm 4.2	4.9 \pm 4.8	0.0 \pm 0.0
	1952-53	7.0 \pm 3.6	6.9 \pm 5.4	0.0 \pm 0.0

(b) Females

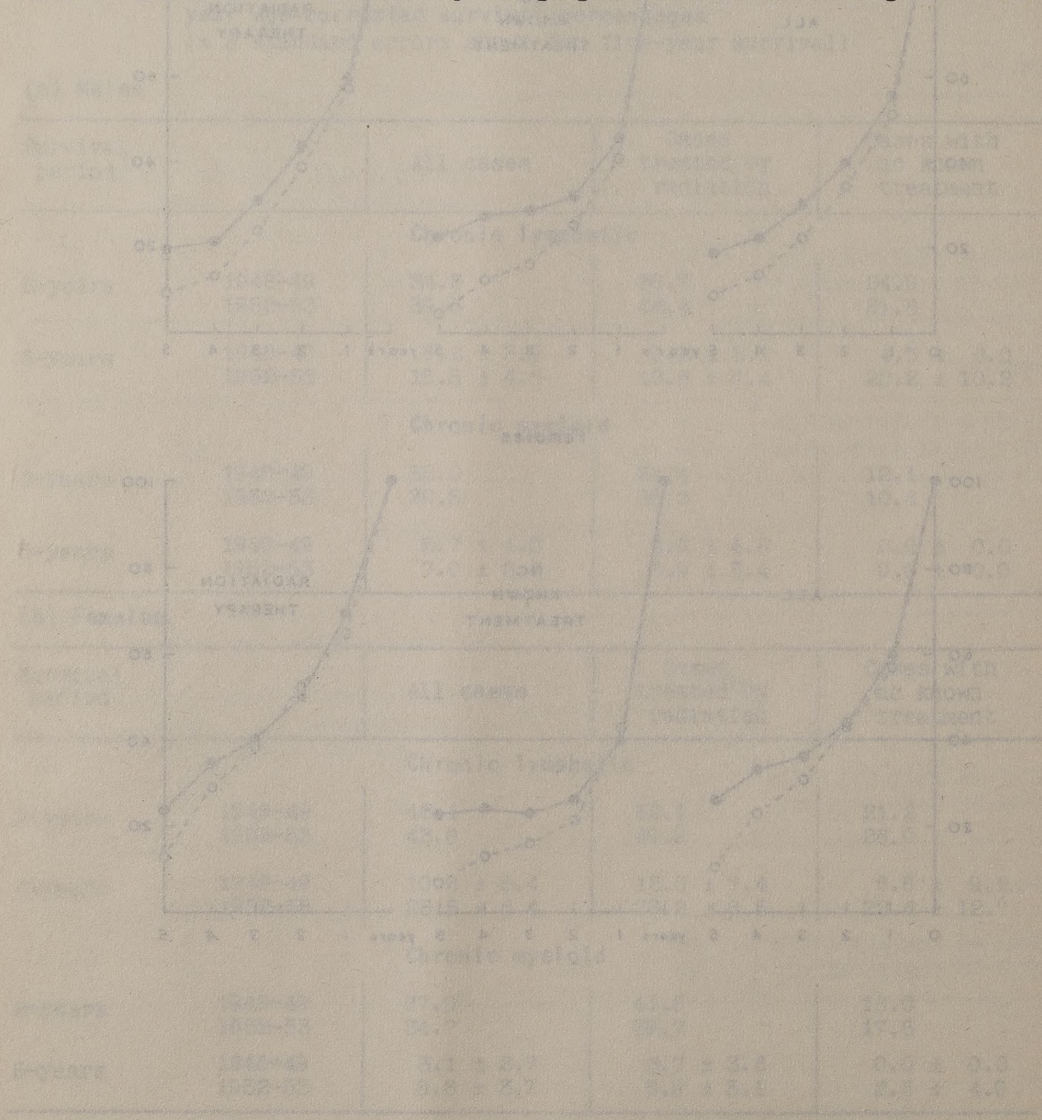
Survival period		All cases	Cases treated by radiation	Cases with no known treatment
Chronic lymphatic				
2-years	1948-49	43.1	52.1	21.2
	1952-53	43.8	49.9	26.0
5-years	1948-49	10.6 \pm 5.4	13.0 \pm 7.4	6.8 \pm 9.2
	1952-53	25.5 \pm 6.4	23.2 \pm 8.5	22.6 \pm 12.7
Chronic myeloid				
2-years	1948-49	37.0	41.8	18.0
	1952-53	34.7	39.7	17.8
5-years	1948-49	3.1 \pm 2.7	3.7 \pm 3.6	0.0 \pm 0.0
	1952-53	8.8 \pm 3.7	8.9 \pm 5.1	2.5 \pm 4.9

Diagram 3

CHRONIC LYMPHATIC LEUKAEMIA. COMPARISON OF SURVIVAL PERCENTAGES (AGE CORRECTED) OF 1952-53 REGISTRATIONS WITH THOSE OF 1948-49



An interesting finding of the analyses is the statistically significant improvement ($P < .05$) in the five-year survival for chronic lymphatic leukaemia of patients registered in 1952-53 compared to those registered before 1950 shown in males and females separately. This is also apparent in male cases treated initially by radiotherapy, as well as those of either sex for whom "no known treatment" was recorded. This improvement is far less evident in the two-year survival of these patients (Diagram 3), and does not seem, therefore, to be the result of changes in the treatment given soon after diagnosis or to the registration of cases at an earlier clinical stage in 1952-53, though this may have happened to some extent. On the other hand, chemotherapy or steroids given later in the course of the disease, as well as improved forms of radiotherapy and supportive treatment, may have been responsible for the better survival experience of the 1952-53 registrations. This trend should be watched for further evidence of improvement, which would confirm the impressions of many clinicians that modern methods of treatment are prolonging the life of the average sufferer.



APPENDIX

TABLES

Appendix Table E. Registrations of newly diagnosed cases of cancer among males by site and age

Rural areas of England and Wales, 1961

ICD No. and site description	Age-group																		Age not stated	All ages
	0-	5-	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	60-	65-	70-	75-	80-	85 & over		
140 Lip	-	-	-	-	-	-	1	4	5	10	12	26	30	22	32	29	14	7	1	193
141 Tongue	-	-	-	-	-	-	-	-	2	1	6	4	7	5	8	8	9	3	-	53
142 Salivary gland	-	-	-	1	1	5	-	3	4	5	-	4	1	3	6	1	2	1	-	37
143 Floor of mouth	-	-	-	-	-	-	-	-	-	-	-	1	2	6	-	6	4	2	-	21
144 Other mouth (specified and unspecified)	-	-	-	-	-	-	-	-	-	1	3	5	5	11	8	9	8	2	-	52
145 Oral mesopharynx	-	-	-	-	-	-	-	-	-	-	2	5	2	12	3	8	2	3	-	37
146 Nasopharynx	-	-	1	1	-	-	-	-	-	2	4	2	3	2	1	1	-	1	-	18
147 Hypopharynx	-	-	-	-	-	-	1	-	-	-	4	7	3	4	4	4	3	2	-	32
148 Pharynx (unspecified)	-	-	-	-	-	-	-	-	1	1	-	-	4	-	-	2	1	2	-	11
150 Oesophagus	-	-	-	-	-	-	-	1	2	13	14	25	31	24	47	32	21	11	-	221
151 Stomach	-	-	-	-	-	-	3	6	26	41	87	113	180	160	169	122	72	23	1	1,003
152 Small intestine, including duodenum	-	-	-	-	-	-	-	1	2	2	3	3	4	3	5	1	-	-	-	24
153 Large intestine, except rectum	-	-	-	-	1	5	3	6	15	29	41	60	96	110	100	83	71	22	-	642
154 Rectum	-	-	-	-	1	1	6	6	11	23	44	79	92	111	101	99	58	19	-	649
155 Biliary passages and liver (specified primary)	2	-	-	-	-	2	2	1	1	2	7	14	20	22	9	11	7	4	-	104
191 Rodent ulcer	-	-	-	-	2	-	11	18	40	59	87	105	135	142	125	102	69	42	6	943
191 Other malignant neoplasm of skin	-	-	-	-	1	2	6	9	22	27	29	47	61	58	78	38	40	-	-	418
192 Eye	3	-	-	-	-	-	-	-	1	2	2	3	2	4	1	1	1	-	-	20
193.0 Brain - malignant neoplasm, other than glioma	1	-	1	-	-	1	-	-	1	2	2	1	2	2	-	-	-	-	-	13
193.0 Brain - gliomas (not specified as benign)	6	5	3	3	2	3	7	6	11	9	29	27	31	16	4	1	2	-	-	165
223 Brain - benign neoplasm	-	3	1	1	1	2	3	3	1	3	5	6	4	3	2	-	1	-	-	39
193.1-9 Other parts of nervous system - any type of neoplasm	-	1	3	2	2	-	2	1	3	5	6	4	2	2	4	-	-	-	-	37
194 Thyroid gland	-	-	-	-	-	2	-	1	2	-	1	4	2	3	5	1	-	-	-	21
195.0 Suprarenal gland - malignant neoplasm	1	1	-	-	-	-	-	-	-	-	-	-	1	1	-	-	1	-	-	5
224 Suprarenal gland - benign neoplasm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
195.1-8 Other endocrine glands - malignant neoplasm	-	-	-	-	1	-	1	1	1	2	-	-	-	3	-	-	-	-	-	9
224 Other endocrine glands - benign neoplasm	2	-	-	-	1	-	1	1	2	3	-	1	1	-	-	-	-	-	-	12
196 Bone	3	1	4	8	-	2	2	2	2	5	4	4	3	4	2	1	2	-	-	49
197 Connective tissue	-	-	-	-	2	1	1	3	2	2	3	4	8	6	4	1	1	2	-	40
198 Lymph nodes (secondary and unspecified)	-	-	-	-	-	1	-	-	2	3	6	8	3	6	5	5	1	2	-	42
199 Other and unspecified sites	1	-	-	-	-	1	2	5	6	8	12	28	28	34	29	19	14	5	1	193
200.0 Reticulum cell sarcoma	-	1	3	1	1	2	2	2	2	3	5	6	8	6	4	5	3	-	-	54
200.1 Lymphosarcoma	1	2	1	4	2	3	1	5	2	5	9	8	11	8	3	7	3	1	-	76
201 Hodgkin's Disease	-	-	6	4	6	11	12	6	5	9	11	14	11	12	7	3	5	1	-	123
202 Other forms of lymphoma (reticulososis)	-	-	1	1	2	2	3	-	3	5	2	6	5	3	2	2	1	-	-	38
203 Multiple myeloma (plasmocytoma)	-	-	-	-	-	-	2	1	5	7	5	7	8	3	14	5	1	-	-	58
204.3 part Lymphatic leukaemia - acute	10	4	4	3	-	-	-	-	1	3	1	2	4	1	2	3	-	-	-	38
204.0 Lymphatic leukaemia - chronic and unspecified	-	1	-	-	1	-	-	1	1	-	2	10	12	15	8	18	5	1	-	75
204.3 part Myeloid leukaemia - acute	2	1	7	2	-	2	5	3	4	2	6	4	8	6	5	1	5	-	-	63
204.1 Myeloid leukaemia - chronic and unspecified	-	-	-	-	-	1	-	1	-	4	6	7	3	5	2	4	2	1	-	36
204.2 part Monocytic leukaemia - acute	-	-	-	-	1	2	-	3	1	-	1	2	2	1	4	2	-	-	-	19
204.2 part Monocytic leukaemia - chronic and unspecified	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	1	-	3
204.3 part Leukaemia - cell type not stated - acute	2	-	1	-	-	1	-	-	-	1	-	-	-	2	-	3	-	-	-	10
204.4 Leukaemia - other stated and unstated cell type	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	2
200.2 & 205 Other lymphoid tissue and mycosis fungoides	-	1	-	-	-	-	-	1	1	-	1	1	1	1	-	-	-	1	-	8
Premalignant conditions - all sites	-	-	-	-	-	-	-	-	-	-	-	1	1	1	2	3	-	-	-	8
Doubtful malignancy - all sites	-	-	-	-	-	-	-	-	1	1	-	-	-	1	2	-	-	-	-	5
All sites	41	21	35	35	39	66	125	167	289	489	831	1,268	1,615	1,622	1,526	1,207	712	342	14	10,444

Appendix Table H. Cases of cancer of selected sites by sex, showing the total number staged and the number of early growths without clinical involvement of lymphatic glands

England and Wales,
1961

Site description	Males			Females		
	Total	No. staged	EP ₀ cases	Total	No. staged	EP ₀ cases
Base of Tongue (ICD No. 141.0)	42	21	2	9	4	-
Tonsil (ICD No. 145.0)	106	63	16	55	22	3
Nasopharynx (ICD No. 146)	102	51	3	39	23	4
Pyramidal fossa (ICD No. 147 part)	119	75	9	35	22	3
Post cricoid region (ICD No. 147 part)	31	21	4	142	98	30
Nose (internal) and nasal cavities (ICD No. 160.0)	47	21	14	24	16	11
Eustachian tube and middle ear (ICD No. 160.1)	25	17	10	14	8	5
Malignant melanoma of skin of head and neck (ICD Nos. 190.0-190.4)	67	38	23	96	55	43
Malignant melanoma of skin of trunk (ICD No. 190.5)	55	35	13	65	38	25
Malignant melanoma of skin of limbs (ICD Nos. 190.6 and 190.7)	94	56	24	297	170	113
Other malignant neoplasm of skin of head and neck (ICD Nos. 191.0-191.4)*	1,032	660	545	495	302	263
Other malignant neoplasm of skin of trunk (ICD No. 191.5)*	117	78	45	138	93	57
Other malignant neoplasm of skin of limbs (ICD Nos. 191.6-191.7)*	390	248	189	272	182	131
Spinal cord (including gliomas not specified as benign) (ICD No. 193.1)	14	10	2	24	12	-
Suprarenal gland (ICD No. 195.0)	32	19	1	30	16	3
Bones of skull and face (ICD No. 196.0)	50	26	8	36	17	4

* Excludes cases of rodent ulcer.

Appendix Table J. Cases of cancer of the breast
(females only) staged in accordance
with the system recommended by the
International Union against Cancer,
by age

England and Wales,
1961

Category	Age-group									Age not stated	Total
	0-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75 and over		
T1 with N0 and M0	-	-	-	11	78	136	79	69	39	-	412
T2 with N0 and M0	-	-	1	10	76	182	192	159	105	-	725
Stage I											
Total	-	-	1	21	154	318	271	228	144	-	1,137
Percentage	-	-	100	28.8	42.3	39.2	33.4	35.0	30.0	-	35.6
T1 with N1 and M0	-	-	-	7	33	35	31	29	7	-	142
T2 with N1 and M0	-	-	-	12	58	129	143	88	59	-	489
Stage II											
Total	-	-	-	19	91	164	174	117	66	-	631
Percentage	-	-	-	26.0	25.0	20.2	21.4	18.0	13.8	-	19.8
T1 with N2 and M0	-	-	-	1	1	2	2	5	-	-	11
T1 with N3 and M0	-	-	-	1	1	1	2	-	-	-	5
T2 with N2 and M0	-	-	-	2	4	15	16	7	14	-	58
T2 with N3 and M0	-	-	-	-	4	4	9	6	4	-	27
T3 with N0 and M0	-	-	-	3	23	82	72	68	65	-	313
T3 with N1 and M0	-	-	-	13	40	96	89	80	66	-	384
T3 with N2 and M0	-	-	-	2	7	21	27	31	24	1	113
T3 with N3 and M0	-	-	-	3	6	9	16	13	10	-	57
T4 with N0 and M0	-	-	-	1	1	7	13	7	10	1	40
T4 with N1 and M0	-	-	-	2	9	12	18	14	7	-	62
T4 with N2 and M0	-	-	-	-	2	5	16	15	11	-	49
T4 with N3 and M0	-	-	-	-	2	7	11	6	3	-	29
Stage III											
Total	-	-	-	28	100	261	291	252	214	2	1,148
Percentage	-	-	-	38.4	27.5	32.2	35.8	38.7	44.7	100	35.9
T1 with any N and M	-	-	-	1	2	6	2	2	2	-	15
T2 with any N and M	-	-	-	1	3	13	16	12	14	-	59
T3 with any N and M	-	-	-	1	8	30	30	20	22	-	111
T4 with any N and M	-	-	-	2	6	19	28	20	17	-	92
Stage IV											
Total	-	-	-	5	19	68	76	54	55	-	277
Percentage	-	-	-	6.8	5.2	8.4	9.4	8.3	11.5	-	8.7
All stages											
Total	-	-	1	73	364	811	812	651	479	2	3,193
Percentage	100	100	100	100	100	100	100	100	100	100	100
Categories not stated	-	-	4	55	326	624	620	552	351	2	2,534

Appendix Table K. Cases of cancer of the cervix by age and International stage

England and Wales,
1961

International stage	Age-group									Age not stated	Total	% of all cases staged
	0-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75 and over			
I	-	-	1	44	171	151	142	71	22	1	603	27
II	-	-	2	19	183	229	219	129	65	-	846	37
III	-	-	-	9	94	162	147	105	65	3	585	26
IV	-	-	-	4	25	54	49	66	20	-	218	10
Total cases staged	-	-	3	76	473	596	557	371	172	4	2,252	100
Stage not stated	-	-	-	24	143	184	172	114	63	1	701	
Total	-	-	3	100	616	780	729	485	235	5	2,953	

GENERAL REGISTER OFFICE

**STUDIES ON
MEDICAL AND POPULATION
SUBJECTS**

No. 20

**Accuracy of Certification of
Cause of Death**

**A report on a survey conducted in 1959 in 75
hospitals of the National Health Service to
obtain information on the extent of agreement
between clinical and post-mortem diagnoses**

by

M. A. Heasman, M.R.C.S., L.R.C.P., D.P.H.

and

L. Lipworth, M.B., Ch.B., B.Sc.

The report of an investigation into the correlation between clinical and post-mortem diagnoses in which the clinicians and pathologists in 75 teaching and non-teaching hospitals in England and Wales participated.

The results of the enquiry in relation to national mortality statistics and to selected causes of death are discussed in the report.

Price 21s. 0d. net (By post 21s. 8d.)

Published by

HER MAJESTY'S STATIONERY OFFICE

and obtainable from the Government Bookshops in London (post orders to P.O. Box 569, S.E.1), Edinburgh, Cardiff, Belfast, Manchester, Birmingham and Bristol, or through any bookseller

© Crown copyright 1967

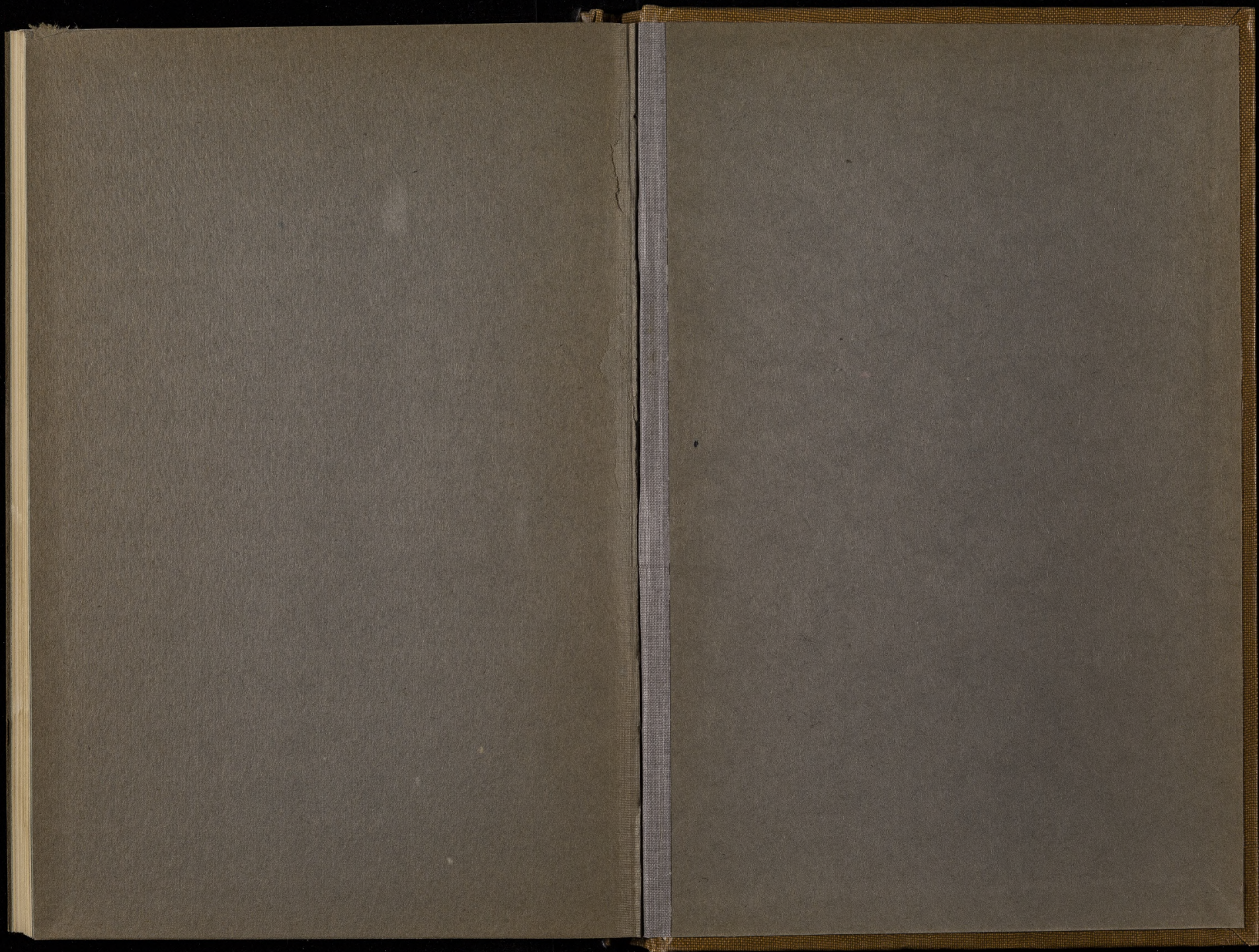
Printed and published by
HER MAJESTY'S STATIONERY OFFICE

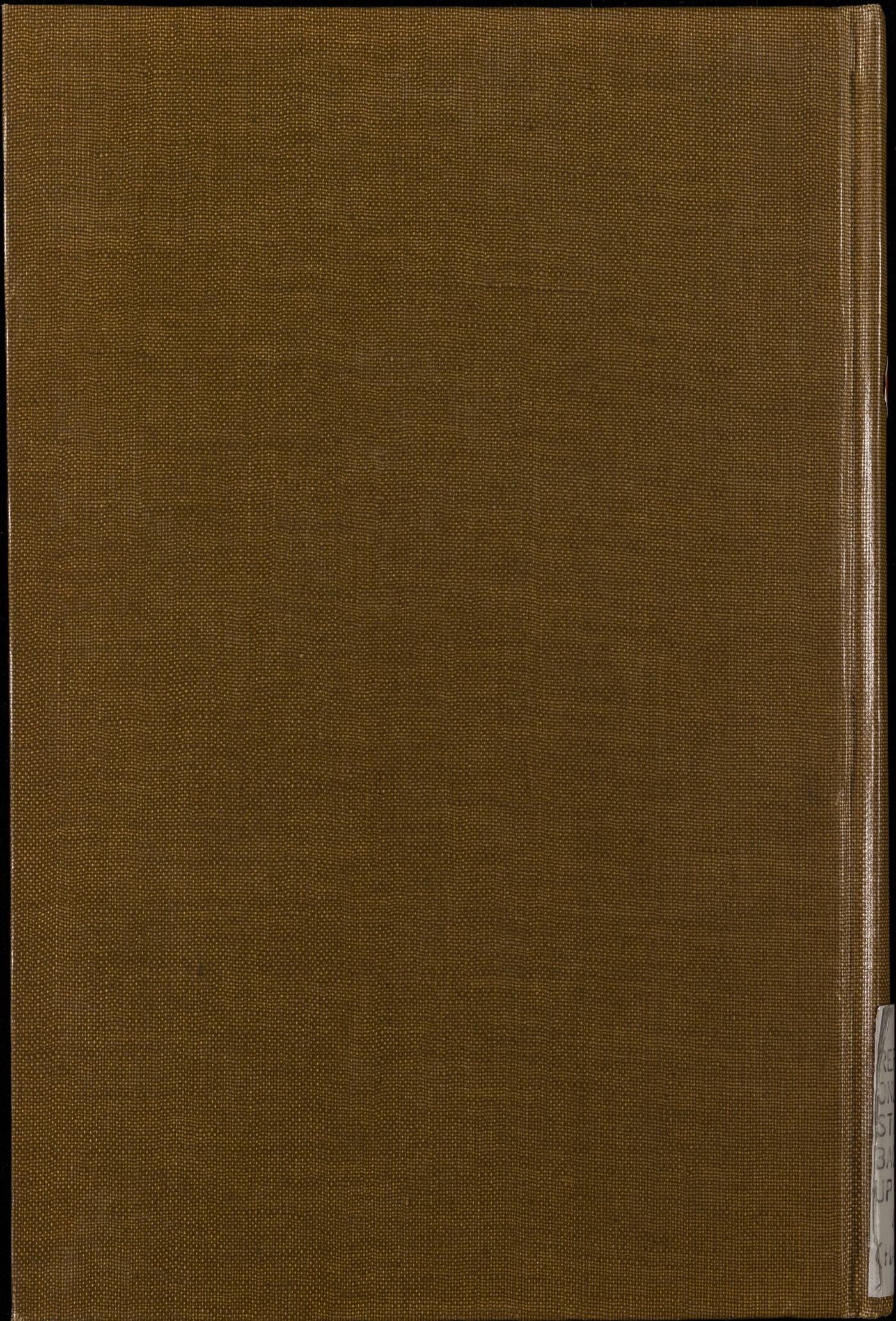
To be purchased from
49 High Holborn, London w.c.1
423 Oxford Street, London w.1
13A Castle Street, Edinburgh 2
109 St. Mary Street, Cardiff
Brazennose Street, Manchester 2
50 Fairfax Street, Bristol 1
35 Smallbrook, Ringway, Birmingham 5
7 - 11 Linenhall Street, Belfast 2
or through any bookseller

Printed in England

S.O. Code No. 70-765-0-61

30





RE
ON
ST
BA
UP
X