## EXPENDITURE ON LIVING, WESTERN AUSTRALIA, 1917-18.

1. General.-In September, 1917, the Government of Western Australia appointed a Royal Commission of Inquiry into the cost of the necessaries of life in that State. This Commission presented an interim report in January, 1918, and its final report at the end of Mareh, 1918. One of the terms of reference in the proclamation ordering this inquiry instructed the Commission to investigate the effects of recent fluctuations of prices upon the standard of living of wage-earners and others. Steps were taken to obtain from householders, budgets shewing their weekly expenditure in detail. Forms were prepared and widely distributed. An organiscr was appointed for one month to tour the State, giving lectures and addresses in all the principal centres, and bringing the importance of the budgets before all classes. To quote the words of the final report of the Commission, "the response has been utterly disappointing, the houscholders sending in returns being too few in number to admit "of any safe gencral conclusions being drawn." Before it was known how far the effort to sccure these returns had been successful, the Commonwealth Statistician (Mr. G. H. Knibbs) was requested to undertake the necessary analyses of the returns. The Minister for Home and Territories (Hon. P. MeM. Glynn, K.C., M.P.) sanctioned the granting of the request, and the budgets were accordingly forwarded by the Commission to the office of the Commonwealth Statistician. The report when completed was forwarded to the Western Australian Government. At the request of that Govermment it is published in the following pages.
2. The Householders' Budgets.--The budgets distributed made provision for the record of income, expenditure, and other particulars for a single week, and householders were asked to fill in the necessary particulars on thirteen of thesc, viz., for a period of thirteen weeks. The budgets were to be forwarded at the end of each week to the Secretary of the Royal Commission. Dach budgel. contained four pages. On the first page particulars were to be inserted as to name, address, age, income, and occupation of all the inmates of the house. The second and third pages provided for the filling in of details of expenditure and also quantities purchased of articles of food for each day of the week. A footnote to these pages gave instructions that all foodstuffs were to be weighed and the weights inserted in the column provided. On the fourth page provision was made for recording expenditure on housing accommodation, fuel and light, drapery, clothing and boots, other miscellaneous expenditure, and' for recording particulars of foodstuffs obtained otherwise than by purchase.

Tabulation and Classification.-The original intention was to. distinguish between metropolitan and country results, and between occupations, but owing to the very swall number of budgets returned the classification was necessarily restricted, and this was found to be impracticable. The returns have therefore been classified according to. income only. -

4: Family Conditions. (i.) General Membership.-It has already been stated that only a small number of those to whom budgets were distributed completed the full thirteen weeks' record. A number 'of other families, however, kept the record for varying periods of from one week upwards. The total number of families who sent in returns which could be tabulated according to family conditions were only 66 in number. The following table shews the component members of these families, classified according to income :-

Membership of Families comprised in Returns.


It will be seen that of the 66 families none was without a husband, and only two without a wife.
(ii.) Conditions as to Children.-The following table shews the averngee number of children in each, income-group, together with the number of children earning wages, and those not earning wages (i.e., either at home or at school), classified in age-groups. The table also shews the number of children 14 years of age and over, and under 14 years :-

Conditions of Families as to Children.


The number of children under 6 years of age numbered 95 , or nearly 40 per cent. of the total number of children. This result is almost identical with that obtained in the $1910-11$ inquiry, and the November, 1913 inquiry of the Commonwealth Statistician.

The proportion of the children at work (numbering 21) was 8.9 percent. of the total ; while the number of those at home or at school was 216 , or 91.1 per cent. of the total.
5. Incomes. (i.) Sources of Incomes.-The sources of the family incomes are shewn in the following table, classified according to income. Of the total number of families included, 44 ( $66 \frac{2}{3}$ per cent.) derived their
total income from the husband only ; while 22 ( $33 \frac{1}{3}$ per cent.) received, in addition to the income of the husband, income from one or more of the other sources indicated in the table.

Sources of Incomes.

| Families having Weekly Incomes | Famplies havang <br> Incomes from Husbands only. |  | Families having Incomes from more ,than one Source. |  |  |  | Total Framilies having Incomes from more thad one Source. |  | Total$\begin{gathered}\text { Number } \\ \text { of } \\ \text { Famílies }\end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | No. | Percent $\underset{\text { all }}{\text { ane }}$ Families In Group | From Husband and 1other Sources. | From Whe and other Sources. | From and other Sources | MiscelInneous and otlier Sources. | No. | $\begin{gathered} \text { Percent- } \\ \text { age on } \\ \text { all } \\ \text { Families } \\ \text { in Group } \end{gathered}$ |  |
| Under x 3 | 3 | 100.00 | - | - | - |  |  |  |  |
| £3 \& under ¢3 108. | 16 | 94.12 | 1 | - | - | 1 | 1 | 5.88 | 17 |
| ¢5 109. \& under 54 | 12 | 75.00 | 4 | 1 | 3 | 1 | 4 | 25.00 | 16 |
| ¢4 ¢ under ¢4 103. | ${ }_{6}^{5}$ | 45.45 | ${ }^{6}$ | 1 |  | 2 | 3 | 54.55 | 11 |
|  | $\stackrel{0}{2}$ | 66.67 20.00 | ${ }_{8}^{8}$ | 1 | 2 | 2 | $\stackrel{3}{3}$ | 83.38 80.00 | 9 10 |
| Alt Families | 44 | 68.67 | 22 | 3 | 15 | 6 | 22 | 33.33 | 66 |

(ii.) Average Incomes.-The following table shews the average weekly income of the budgets of $\mathbf{6 5}$ families tabulated for each of the incomegroups specified, and also the general average for all the budgets. Owing to insufficiency of information with regard to income, the budgets of one family had to be omitted :-

## Average Incomes of Families.

| Particulars. | Webely budget of families having incomes of- |  |  |  |  |  | Gentital Average |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Under £3. | $\begin{gathered} £ 3 \\ \& \text { under } \\ £ 3 \text { 10s. } \end{gathered}$ | E3 10s. \& under £s. | £4 <br> \& under ¢ 4 10s. |  £5. |  |  |
| Average Weekiy Income Aver. Persons in Family |  |  | $\begin{array}{ccc} f & \mathrm{~s} . & \mathrm{d} . \\ 15 \\ 15.44 \end{array}$ | $\begin{array}{ccc} \hline & 5 & \mathrm{c}_{1} \\ 4 & 3 & 9 \\ & 6.00 \end{array}$ | $\begin{array}{ccc} f & \mathrm{~s} . & \mathrm{d} . \\ 4 & 12 & \\ \hline & 6.33 \end{array}$ | $\begin{array}{ccc} f & 8 . & d \\ 6 & 18 & 11 \\ 7,00 \end{array}$ | $\begin{array}{lll} \begin{array}{lll} f & \text { s. } & d \\ 4 & 9 & + \\ \hline & 5.72 \end{array} \end{array}$ |

The general averages of the incomes in the two inquiries conducted by the Commonwealth Statistician were in 1910-11 54 13s. Id., and in 1913 £3 16s. 8d.
6. Expenditure. (i.) Relative to Income.-The total number of weekly budgets returned by the 65 families was 483 , and in the following table the average weekly expenditure furnished in these 483 budgets' is summarised, together with the average incomes :-

Relation of Income to Expenditure.

| Particulars. | Weekly budoet of Pamiles mayina Incomis of- |  |  |  |  |  | General Average. for all Families. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Under £3. | $\begin{gathered} \text { £3 } \\ \text { \& under } \\ \mathfrak{E 3} \text { 10s. } \end{gathered}$ | $\begin{aligned} & \text { ES 10s. } \\ & \text { E under } \\ & \text { £4. } \end{aligned}$ |  | $\begin{aligned} & £ \pm 10 \mathrm{~s} . \\ & £ \text { under } \\ & £ 5 . \end{aligned}$ |  |  |
| Income Expenditure |  |  | $\begin{array}{cccc}\text { f } & \text { g. } & \text { d. } \\ 3 & 15 & 3 \\ 4 & 2 & 9 \\ 9\end{array}$ | (rrrr |  | crrr\|r | $\begin{array}{rrrr}\text { \& } & \text { s. } \\ 4 & \text { d. } \\ 4 & 4 \\ 4 & 12 & 4\end{array}$ |
| Difference, | -12 11 ${ }^{\text {4 }}$ | $\begin{array}{ll}-5 & 9^{*}\end{array}$ | -7 7* | -11 $8^{8 *}$ | -11 $5^{*}$ | 156 | -3 3* |

[^0]The results obtained in the above table are so far unsatisfactory as to raise doubts whether the budgets received can－possibly be regarded as representative．There is an excess of expenditure over income in all the groups excepting the last－－$£ 5$ and over．The period to which many of the returns relate includes the months of December and January；two months in which probably the expenditure，is greater than usual owing to， the holiday scason，and during this scason there may be an absence of income for several days．Whether these factors are sufficient to account for the unsatisfactory result of this tabulation it is ctifficult to ascertain． In none of the budgets received was there any apparent atterúpt made by those filling them in to compare the income and expenditure．Conse－ guently those farnishing the budgets offer no explanation on the matter． The results．s shewn in the table cannot be regarded as representative，in the aggregate，of the sections of the community to which they refer．The following tabulations of expenditure are necessarily subject to the same uncertainty． in view of the unsatisfactory result shewn in the preceding table．
（ii．）General Anolysis of Expenditure．－Selecting what may be con－ sidered as the four most important heads of expenditure，viz．，housing： food，clothing，and fuel and light，and grouping all other expenditure under the heading＂Other Items，＂，an analysis of the average weekly expenditure is given in the followinge table．The results are shewn both as actual averages and as percentages on the total expenditure：

Analysis of Average Weelly Expenditure per Family．

| Weakly lhadgets having 1ncomes of－ | Homsmg．＊＊ | Furd． | Clothitrg． | Fueland | Other Itans． | Total Fxpend iture． | A veraga Persous per F＇anily |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |

Wembli Rapenolture．

Under 53.
fis and under E 310 ．
f3 10s．and unter © +
44 and under $E 410$ ．
i4 10s，and hnder $2:$
IS and over
Seneral Awornge

| \＆＊．4． | 4 s．${ }^{\text {d }}$ d | 2 \％．d． | is d． | \＆\＄．d． | 4 \＆． 6. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1） i 5 | 2 1） 8 | （0） 20 6 | $0 \quad \therefore \quad 1$ | 01011 | 3117 | 5.50 |
| 11 ¢ $\quad 5$ | 1 1＊ | 01011 | 118 3 | 1100 | 3 9 4 | 4.76 |
| 0 10 8 | 115 | 0120 | 0 3 0 | 1111 | ＋${ }^{\text {\％}}$ | 5.4 .1 |
| 0 ） 4 | ${ }_{-2} 610$ | 0 J3 9 | $0 \quad 128$ | 1711 | $\pm 15$ | 6.011 |
| 0 0， 7 | 2311 | ${ }_{6} 19$ | $1) \quad \stackrel{4}{19}$ | 11011 | 5 ：$\quad 3 \mathrm{~S}$ | 6．3\％ |
| （1） 10 | $\begin{array}{lll}3 & 5 & 4\end{array}$ | 017 | 0 － 0 | $\because 15$ | 61. | 7.00 |
| 0711 | $2 \quad 0 \quad 3$ | 014 ？ | $0 \geq 11$ | 1611 | 4127 | 5．7\％ |

Jehenentagi：on Total gexpendrture．

|  | －兑 | \％ | 0 | \％ | $\because$ | $\%$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Underis 5 | 1.08 | 50.81 | 14．67 | 4.91 | 93.63 | 100.00 | 5.50 |
| E3 and ander is 10s． | 781 | 419.15 | 15．75 | $\because .89$ | 27.44 | 100.00 | 4.76 |
| sis 103．and under 4 4 | 12.89 | ＋+8.80 | 14.50 | 3.83 | 26.45 | 100.00 | 6.44 |
| c4 and under f4 10\％， | ＋4．4 | 49，08 | 14．41 | $\because 80$ |  | 10000 | 6，00 |
| ¢4 10s，and under $\mathrm{E}^{\text {\％}}$ | t． 1.15 | ＋4．20 | \＄8．49 | ごき | 24.82 | $1 \mathrm{NO.0} \mathrm{\%}$ | 6.0 |
| Es and over ． | 10.57 | \＄7．84 | 14.07 | 3.14 | \＄4．12 | 1690．00 | 7.00 |
| General Average | 8，5\％ | $4+\therefore .48$ | 15，25 | 3.15 | 29.07 | 100.00 | 5．75 |

[^1]Distegarding the expenditure under the heading "Other Items," the cost of food is by far the most important consideration, amounting to over 43 per cent. of the total expenditure. Next comes clothing ( 15.75 per cent.), followed by housing ( 8.55 per cont.); while the expenditure on fuel and light amounts to 3.15 per cent. As regards clothing it may be seen that with the exception of the group " $£ 410 \mathrm{~s}$. and under $55, "$ the percentage of expenditure is fairly even, though the actual amounts vary from 10 s . 6d. por week to 17 s . 1d. per week. The expenditure on fuel and light is farly even, except in the last group, where the average is practically double the average of any other group.

Expenditure on food varies from $£ 1$ 12s. to as much as $£ 2$ (is. 10 d . per week. The result given for the first group (under f3) is unsatisfactory. Ii has already been shewn that the income is stated to be on the average under $£ 3$, while the expenditure is $£ 3$ 11s. 7 d . The probabbility appears to be that either the expenditure has been inflated or that there are some sources of income not incladed in the returns. With regard to the expenditure on housing accommodation, the fact that in many cases no rent at all is paid, while in others only nominal amounts are paid cither in the form of instalments or intorest, prechicles the pessibility of deducing any conclusions of valuc.

Compared with the 1913 inguiry of the Commonwealth Statisticitu, the average weekly expenditure on all items is greater by the amount 19s. 1d. The expenditure on housing accommodation is is. 2d., and on fuel and light 5d. per weok less: while the other items are all greater: food 10 s ., clothing, 4 s . 7 d ., and other items, ©s. 1d. per week more.
....) kixpenditure on Clothing.-In the budgets provision was made for recording separatoly the cxpenditure upon clothing for husband, wife and children :-

Expenditure on Clothing : Amounts Expended by Men, Women, and Childres.

|  | + | Not of bindgets | Averaghamount Spent wiekia on |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Weekse Budpets haring Incortes ul- | : No. of !'amilics. |  | Men. | Women. | Chist ren. | $\begin{aligned} & \text { House } \\ & \text { hoplt } \\ & \text { Lancle. } \\ & \text { cte } \end{aligned}$ |  | al. |
| Uader £3.. .. | $\pm$ |  | it di | \% ${ }_{2}{ }^{\text {d }}$ | ¢ $\quad 11$ | s. d. | 10 | ${ }_{6}{ }^{1}$ |
| S3 athe under 23 Lim. | 17 | 16.4 | - | 411 | 310 | 197 | 10 |  |
| s\% 10s. and under i4... | 16 | 116 | - 0 |  | $\pm 1$ | 10 | 124 |  |
| Ef and under $5 \pm 10$. | 14 | 76 | $\stackrel{11}{\square}$ | $\pm 9$ | $\square$ | 1 I | 13 |  |
| Lt 10, and under sis | $\square$ | 108 | : ${ }^{3}$ | $\begin{array}{cc}5 & 11 \\ 8 & 7\end{array}$ | 7 7 3 |  | 10 |  |
| st and ower | 119 | 102 | + ${ }^{+}$ | 8. | : | 1 | 17 |  |
|  | 65 | 18:3 | 33 | 5 | + 10 | 1 | 4 |  |

It will be seen that of the total expenditare of 14 s . $7 \mathrm{~d} ., 3 \mathrm{~s}$. 3 d . is spent on the average by the husband, 5 s .5 d . by the wife, 4 s .10 d . on the children, and 1s. Id. for household linen, ctc. As already stated the average number of children per family was 3.82 , therefore the expenditure per child for clothing amounted on the average to just over 1s. 2d.
(iv.) Expenditure on Olher Items.-The table bereunder shews the average weekly expenditure per weekly budget on items other than housing, food, elothing, and fuel and light. The percentage of each item on the total expenditure is also shewn. It may be seen that, disregarding the last item (miscellaneous) the most important item in the table is expenditure on insurance, which is followed in the order named by medical expenses; charity; other household requisites; contributions to benéfit societies; fares; sports and amusements; tobacco, soap, starch, etc., equal ; alcoholic beverages ; and education fees and books. Compared with the 1913 inquiry of the Commonwealth Statistician, the expenditure on all the items shews an increase with the exception of education fees and books. The percentages of the expenditure approximates very closely to those of the 1913 inquiry.

## Analysis of "Miscellaneous Expenditura": Amounts and Percentage on Total Expenditure.



Expenditúre.


Percentage on, Total Expenditure.


7. Standard of Living. (i.) General.-The terms of reference in the proclamation ordering the inquiry instructed the Commission to investigate the effects of recent fluctuations of prices upon the standard of living of wrge eamers and others. The Budgets distributed-it was expected-i:.
would provide the necessary data for arriving at some conclusion as to the present standard of living. The budgets received, numbering 498, have been carefully analysed in order to see how far they indicate the standard of living at the time the inquiry was made. It is, of course, impossible to compare this with the standard of any previous period, as no such inquiry has provionsly been held. All that is possible, therefore, is to compare it with the standard furnished by experts and others. In the course of the inquiry several expert witnesses were called to give evidence as to the amounts of various food stuffs necessary to provide for the proper nourishment of the family. It is customary in dealing with this matter to give the standard for a "man" unit, and when comparing the consumption of families with each other to reduce them to their equivalent " man' units.

The weights applied to each sex and age group in arriving at this result are those used for a somewhat similar purpose by the Commonwealth Statistician in his inquiries of 1910-11 and 1913. These weights were selected after a careful study had been made of reports and other available information bearing on the matter, both from a physiological, economic, and anthropometric standpoint.

The weights selected for each class were as follows :-

| Purtic | ars |  | Males. |  | Temales. |  | Childron.' |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Age In years |  | . | Over 17 | 13-10 | Over 17 | 13-10 | 10-1.2 | 6-9 | 2-5 | Under 2 |
| Weight | - |  | , 100 | \$0 | 80 | 70 | 65 | 60 | -35 | 20 |

By using these relativ, mumbers the total number of persons in each income group can be reduced to the equivalent " man" units and are as follows:-

| Familtes having Weekly Incomes of - | Total Families. | No. of Weekly Budgets. | Total Persons. | A verage Pemons per Family. | Total <br> "Man" <br> Units. | Average "Man * <br> Units per Pamily. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Under 53 | 3 | 32 | 19 | 6.33 | 147.80 | 4.29 |
| £3 and under £3 10 s . | 17 | 104 | 81 | 4.76 | 384.40 | 3.23 |
| £3 109, and under £4 .. | 16 | 116 | 87 | 5.44 | 395.90 | 3.41 |
| £ 4 and under £4 10s. | 11 | -76 | 166 | 6.00 | 291.95 | 8.84 |
| £ 410 s . and under $£ 5$ | 9 | 68 | 57 | 6.83 | 304.85 | 4.48 |
| £5 and over. . . | 10 | 102 | 70 | 7.00 | 458.64 | 4,50 |
| All Framllies | 66 | 498 | 380 | * 5.76 | 1938.54 | * 4.00 |

* Welghted averago.

It should be observed that one family which has been excluded in the analysis as to income and expenditure is included in the analysis as to standard of living.
(ii.) Food Requirements.-The President of the English Board of Trade instructed a Committee of the Royal Society to Report upon the Food Supply of the United Kingdom. This Committee presented its report
in 1917 ${ }^{\text {² }}$. The Committee in the first place investigated the extent and character of the food supply in normal times. Included in this investigation was the question of the standard requirements of the normal adalt male as regards each of the constituents of food requisite for healthy aetivity. The report states. "A full consideration of the dictary requivements of a nation for the most part engaged in active work has convincel the Committee that these requirements cannot be satisfactorily met. on a less supply in the food as purchased than 100 grammes protein, 100 grammes fat, 500 grammes carbohydrate, equal approximately to 3400 calories per ' man' per day, a ' man' being an average workman, 'doing an average days work.: This was the standard adopted by the Committee referred to.

During the sittings of the Royal Commission in Western Austratic. Professor Dakin stated during the course of his evidence that the standard diet per " man" unit should be 100 grammes protein, 80 grammes fal, 600 grammes carbohydrate, equal approximately to 3020 calories per " man' jer day:
he weekly budgets furnished in the investigation have been carefully analysed in order to ascertain the amounts of protein, fat, and carkshydrate contained in the food consumed. In this analysis the values given in the report of the Committee of the Royal Society have beon adopted.
(iii.) Standard of Living. The following table gives for each incomegloup the respeciive average amounts of protein, fat, and carbohydrate contained in the food consumed, as well as the average calorios or heatunits. $\dot{T}$

## Average Amounts per " Man" Unit per Day of Protein, Fat and Carbobyirate, and Calorific Values of the same, in Various Income-Groups.

| luconte droups. | OCCEPATIONS. <br> (W'eekly Ludgets.) |  | Protein. | tut. | Carionhydrate. | Cibloriter. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Sedentary. | Munual Workets. |  |  |  |  |
|  |  |  | Grammes. | Grammes. | Girammes. |  |
|  | 14. | 3 | 113 | 110 113 |  | 3,61:3 |
| -3 10n. and under \&4 | 15 | 102 | 110 | 116 | 578 | 3,874 |
| 54 and under fit 10 s . | T | 76 | 111 | 1늬) | 598 | 3,850. |
| i'4 103. and under 5 St | 5 | 6* | 106 | 194 | 510 | 3,67: |
| ef aud nver . | 58 | 46 | 90 | 107 | 405 | 3,261 |
| .th Group: | 90 | 408 | 10.4 | 110 | 517 | \$,69\% |

The above table shews that taking the average of all the budgets submitted, the standard of living so far as it relates to food is practically equal to the estimate of Professor Dakin, and higher than that formulatei by the Committee of the Royal Society.

[^2]The only group which falls below either estimate is that relating to incomes of f 5 and over per week, and it will be seen that in this group the percentage of "sedentary" workers is considerably greater thin in any other group. In this connection it may be pointed out that the consensus of expert opinion points to the fact that persons not engaged in muscular work require less calories than those so engaged. Professor Dakin, during the sittings of the Royal Commission, made the assertion that a clerk should not require more than 2500 or 2700 calorics.
(iv.) Quantities of Various Foods constumed-During the course of his evidence, Professor Dakin furnished what he considered to be an appropriate menu per " man" unit per day, as follows :-

| Bread | 1 lb. : | Meat | 1 lb . |
| :---: | :---: | :---: | :---: |
| Oatmeal | 2 ozs. | Beans | $\stackrel{1}{1} \mathrm{lb}$. |
| Rice | 2 ozs. | Potatoes | E 1b. |
| Milk | $\pm$ pint | Jam | 1 oz . |
| Butter | 5 ozs. | Syruip | 1 oz |

Tha following table gives a comparison of this ment with the avorage of the 498 weekly budgets analysed -

> Consumption of Food per "Bian" Unit per Day. Professor Dakin's Estimate of Requiraments and Average of the Budgets Analysed.


It will be scen that the averyge per " man" unit actually consumed according to the analysis of the budgets, approximates very closely to Profeseor Dakin's estimate. The only item in which there is any appreci able difference is fruit, and this is probably accounted for by the fact that the inquiry was made cluring a period when fruit was in season and readily procurable at reasonable prices. Professor Dakin estimated that the menu submitted by him if'carried out for a week would give 3679 calories a day. It will be seen that the actual average consumption which approximates so very closely to the menu referred-to, also gives dalorific valuen practically similar, as would obviously be expected.


[^0]:    * The negative sign indicates an excess of expenditure over income

[^1]:    ＊The figuros given refer to alt famllies，incluting those who owned their own houses，or who lived sent free；do less than 196 of the tamily weekly budgets contain no expenditure on rent．The averuge rent paid by．those who rented housed varter iboin 0 s .8 d ．to 9 s ．id．，while the average ts S ．id．

[^2]:    * Cd. 8421.

    A calorie is the quantlty of heat required to roise a kilogramme of water one degree centigrade and tis ia raokoned that, in ao far an they are oxidiged it tho liviag body, protelns and carboliydratea bive rice to $\mathbf{4 , 1}$ calories, and fat to 9.5 calonies per gramme.

