



Health (Fluoridation of water supplies) Act, 1960: Report on the incidence of dental caries in school children, and on the analyses of public piped water supplies, in Dublin, Kildare and Wicklow Health Authority areas in 1961

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HEALTH (FLUORIDATION OF WATER SUPPLIES) ACT, 1960

REPORT

ON THE INCIDENCE OF DENTAL CARIES IN SCHOOL CHILDREN, AND ON THE ANALYSES OF PUBLIC PIPED WATER SUPPLIES, IN DUBLIN, KILDARE AND WICKLOW HEALTH AUTHORITY AREAS IN 1961

Presented by the Minister for Health



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PART II.



HEALTH (FLUORIDATION OF WATER SUPPLIES) ACT, 1960.

PART I

Survey of the incidence of dental caries in pupils attending full-time day schools in the

Dublin, Kildare and Wicklow health authority areas.

Section 2 of the Health (Fluoridation of Water Supplies) Act, 1960, empowers the Minister for Health to make Regulations as to the manner in which and the extent to which health authorities shall arrange for the fluoridation of water supplied to the public by sanitary authorities through pipes. Before making such Regulations in respect of any health authority, the Minister must, under the same Section of the Act, cause to be made :

a survey of the incidence of dental caries in a representative sample of pupils attending fulltime day schools in the functional area or functional areas of the health authority or health authorities to whom the regulations relate, and

cause to be presented to each House of the Oireachtas a report on the survey so made.

In accordance with these requirements this report of the results of a survey carried out by the Medical Research Council of Ireland, together with the copy of the Council's report on the results of the survey, attached as an Appendix to this report, is presented to each House of the Oireachtas.

The procedure adopted in making the survey was as described in pages 4 to 11. Particulars of the numbers, classified by age and otherwise, of the pupils to whom it relates are given in pages 8 to 12 and in the Tables of the Council's report.

The survey discloses an extremely high incidence and prevalence of dental caries among children attending full-time day schools in the City and County of Dublin and in the Counties of Kildare and Wicklow. It also discloses that the incidence and prevalence were uniformly high throughout those three areas.

From the age of 15 years upwards, only one child was recorded as entirely free of caries experience in the permanent dentition. The data given in the report of the Medical Research Council do not disclose the early or incipient stages of dental decay and, consequently, they must be accepted to be an understatement of the complete position in regard to dental caries among the children surveyed.

DEPARTMENT OF HEALTH

November, 1961.

MEDICAL RESEARCH COUNCIL OF IRELAND

Report on dental caries survey in the Dublin, Kildare and Wicklow health authority areas, 1961.

The Health (Fluoridation of Water Supplies) Act, 1960, requires, *inter alia*, that, before making regulations as to the manner in which and the extent to which health authorities shall perform their functions under the Act, the Minister for Health "shall cause to be made a survey of the incidence of dental caries in a representative sample of pupils attending full-time day schools in the functional area or functional areas of the health authority or health authorities to whom the regulations relate. . . "

At the request of the Minister for Health, Mr. Sean MacEntee, and in compliance with the provisions of the Health (Fluoridation of Water Supplies) Act, 1960, the Medical Research Council of Ireland, having undertaken to survey the incidence of dental caries, presents this report of the first phase covering the health authority areas of Dublin, Kildare and Wicklow.

In view of the expressed desire of the Minister that the first phase be carried out with the minimum lapse of time and the comparatively short time available before the commencement of annual school summer vacations, a team of ten, and subsequently twelve, dental examiners was recruited from personnel having experience in the public dental services. Each member of the team was provided with the assistance of trained recorders.

In order that all members of the survey team should be familiar with the appropriate procedures and techniques a preliminary course of instruction of one week's duration was conducted under the direction of Miss L. Cunniffe, B.D.S. whose personal experience in the Council's dental caries survey of 1952 and previous training in London under Dr. G. J. Parfitt, Eastman Dental Clinic, and Miss J. Forrest, Senior Dental Officer, Ministry of Health, suitably qualified her for this task.

Dental Examination

The dentists were supplied with the necessary portable equipment, and with charts (Appendix I) on which the results of the dental examination could be entered. Sites of caries were located by careful exploration with standardised detachable probes.

The system of grading the degrees of caries which was adopted followed that used by the British

Ministry of Health in similar surveys in Britain. Six grades were recognised :--

Grade 1: Discoloration without destruction of enamel believed to be caused by caries.

Grade 2: Pitting of enamel.

- Grade 3: Deep pitting reaching into dentine.
- Grade 4 : Cavity into dentine.
- Grade 5: Large cavity penetrating deeply into dentine, generally of a few years' standing and with pulp involvement.
- Grade 6: Cavity with definite and unmistakable evidence of periapical infection fistula on buccal gingiva or possibly on palatal mucosa in case of upper molar involvement.

Grades 1 and 2 cannot be estimated with assurance by the visual and tactile procedures and the estimate of Grade 3 was not deemed to be capable of accurate assessment within the survey procedure employed. Only lesions coming within Grades 4, 5 and 6 were recorded, and this was done as one single group referred to as DMF (meaning decayed, missing and filled).

A standard system of recording was adopted to indicate the teeth present, the extent of caries or of filling in an affected tooth, the teeth lost by reason of caries, and those lost for other reasons.

Up to the age of five it was assumed that any missing deciduous teeth were lost through caries. From five to eight years it is normal for deciduous incisors to have been shed but it was assumed that any missing deciduous canines or molars had been lost through caries.

It will be understood that the survey, in aiming at recording only such lesions as could reliably be established by this procedure, has not disclosed the maximum number of incipient lesions of the Grades omitted which special examination techniques must otherwise have discovered. Consequently it will be understood that the figures recorded must necessarily be an understatement of the incidence of the disease to be found in the school child population of which the sample is representative.

Size of Sample

In order to get some preliminary ideas as to the accuracy to be expected from samples of different sizes at various ages it was necessary to obtain some information regarding the averages and variability in the numbers of DMF (decayed, missing and filled) teeth which were likely to be found. The obvious source for such material was the records of the Dental Caries Survey carried out by the Medical Research Council of Ireland in September - December, 1952, and reported in "Dental Caries in Ireland", published by the Council in 1955.

This inquiry had included only children aged 5 to 6, 7 to 8, and 12 to 13 years of age and the published data for the frequency distribution of the numbers of children examined by number of DMF teeth found included as "decayed" all cases where Caries Grade 3 was recorded. Since in the current survey it had been decided not to include this grade of caries as "decayed" it was not possible to use the published data which covered 704, 803, and 758 children in the respective age groups to obtain the required information. Instead, it was necessary to rely on the sub-sample of 231 children (33 boys and 39 girls aged 5 to 6 years, 45 boys and 44 girls aged 7 to 8 years and 30 boys and 40 girls aged 12 to 13 years) in the 1952 Survey who were involved in the investigation of the relationship of various social factors to dental decay. The records of these cases had been put on punched cards by the Central Statistics Office and it was possible to utilise these records to get estimates of the parameters required under the conditions operating in the present inquiry. In view of the relatively small numbers available and of the lack of evidence of differences between the sexes in regard to amount of dental decay the calculations were made for all the children (boys and girls) in each age group.

The results of the calculations, on the basis of definitions used in the present inquiry, of the averages and standard deviation at each age from these data are shown in Table I.

Confining attention to permanent teeth the "confidence intervals" at various levels for the mean DMF can be calculated at each specified age for samples of different sizes. Such calculations showed that for samples of 200 the 95 per cent and 99 per cent "confidence intervals" for the mean DMF had ranges of ± 0.05 and ± 0.07 at age 5 to 6 years, ± 0.17 and ± 0.23 at 7 to 8 years and ± 0.44 and ± 0.59 at 12 to 13 years of age. Naturally the ranges in question were narrower for larger samples and wider for smaller, varying approximately inversely with the square root of the size of the sample. Bearing in mind the limitation of the resources available and the accuracy required, as measured by the size of the confidence intervals at different ages, for varying sizes of sample, the Committee decided that they would envisage the examination in each health authority

		Deciduo	us Teeth	Permanent Teeth							
Age	Age No. of Average No. of DMF Teeth 5 to 6 72 7.00 5 to 7 89 5.90 2 to 13 70 0.44	Average No. of DMF Teeth	Standard Deviation of No. of DMF Teeth	Average No. of DMF Teeth	Standard Deviation of No. of DMF Teeth						
5 to 6	72	7.00	4.812	0.11	0.358						
6 to 7	89	5.90	3.778	1.01	1.234						
12 to 13	70	0.44	0-985	4.41	3.151						

Table I. Average Numbers of DMF Teeth and standard deviations in sub-sample from 1952 Dental Caries Survey.

area of a minimum of 3,000 children. These would range in age from about 4 to 18 years and, therefore, on the average there would be about 200 in each age group. The numbers would tend to exceed 200 during most of the primary school period (up to 14 years of age) and tend to be fewer from 14 years of age onwards, where the numbers at each year of age attending full-time day schools (usually secondary or vocational at that age) would decline. The Minister for Health indicated his desire for greater accuracy in the Dublin area and requested a sample of 1 in 20 of the children in this region, giving a total of approximately 7,000 children.

Selection of Sample

As the survey was to be confined to children attending day schools the sample had to be picked from the school records made available by the Department of Education. These records differed according to the type of school, and were not very suitable from the point of view of providing a sampling frame. In addition most of the records available related to dates about a year earlier than the period of the survey. The procedure for selecting children for examination differed to some extent between primary, secondary and vocational schools, but was designed to give every child attending a day school in the health authority area an equal chance of inclusion in the sample. The Department of Education records used to form the sampling frame related to total numbers of pupils on the rolls, but not to the numbers present in school on any particular day. The numbers of children for examination were, therefore, decided by reference to total numbers on the rolls whereas it was of course possible to examine only those children who were present when the school was visited by the dentist, and in respect of whom the parents', or guardians', consent had been obtained.

The procedure adopted in the case of a particular school was to write to the Principal Teacher explaining the purpose of the survey, indicating the groups of children which had been selected for examination and enclosing sufficient Consent Forms for issue to these children. The children

were to be asked to obtain their parents' signatures on these forms and to return them before the date scheduled for the dental examination. There were, in many cases, considerable discrepancies between the numbers used in the sampling frame and the numbers of children actually in the class at the time of the examination and many difficulties were found in the way of procuring a complete return of all the Consent Forms issued. In particular, it frequently happened that children who had been issued with Consent Forms were absent when the dentist came to carry out the examination. In addition, co-operation in the survey was voluntary and a small number of parents were unwilling to have their children examined. It was of course appreciated that failure to achieve a complete return of all the Consent Forms issued might introduce some bias into the results, and reasonable efforts were made to obtain the consent of parents and to ensure that every child selected for inclusion in the survey would be examined. In order to obtain a sample of the required size it was necessary to allow a margin of the totals recorded on the rolls to cover contingencies of this sort. It was assumed that about 80 per cent. of the children for whom Consent Forms were issued to the teachers would be examined. This proved to be approximately the case in practice.

As already stated, in the case of the Dublin health authority area the sample of children to be examined was set at one in twenty. Assuming that 80 per cent. of the children selected would be examined, it is evident that the number of children selected initially from the rolls should be one in sixteen of the total. In the case of the primary schools the sample was, therefore, selected as follows :

The schools were first of all classified according to numbers of pupils on the rolls. All the schools with 1,000 or more pupils were taken and approximately one-sixteenth of the pupils on the rolls were selected. Half the schools with between 500 and 1,000 pupils were taken and approximately one-eighth of the pupils were selected. A quarter of the schools with between 200 and 500 pupils were taken and approximately one-fourth of the pupils were selected. One-eighth of the schools with under 200 pupils were taken and approximately half of the pupils were selected. The selection of the schools to be included was made by reference to a list of random numbers.

In selecting the children for examination once the schools had been chosen a number of factors had to be considered. It was desirable that the dentist making the examination should as far as possible have one or more complete day's work in a school so that travelling between schools during school hours should be reduced to the minimum. It was necessary, also, that the instructions for the selection of children within the schools be as simple as possible. The school authorities had to be informed of the groups of children to be given Consent Forms several days before the examination was due to take place. For this reason complete classes were selected as far as possible, while, for convenience, in the case of three of the smaller schools, all the pupils were taken. The choice of classes was made in such a way that taking, for example, schools of between 500 and 1,000 pupils the distribution of pupils by standards in the sample selected was as nearly as possible the same as in the total of schools of 500 to 1,000 pupils. A slightly different procedure was adopted in the case of secondary schools. These were selected using cumulative totals of the numbers of day-pupils on the rolls, so that the probability of the selection of a school was proportional to its size. A fixed number of pupils was then selected from each of the chosen schools so that the probability of the selection of any particular child was inversely proportional to the size of the school. This procedure ensured that each day-pupil in each Dublin secondary school had an equal chance of being included in the survey, and was also applied in the case of junior departments of secondary schools, and vocational schools.

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As absenteeism and loss of Consent Forms was expected to be higher among the infant classes extra numbers were selected for this group. The procedure outlined above gave a sample covering a total of 8,637 children on the rolls and the extra number of Consent Forms issued was 855. The number of children examined was 7,245.

The total numbers in the various types of school (based on records a year earlier than the period of the survey), and the numbers of pupils who were examined and their records included in the analyses in the Dublin Health Authority area were as shown in Table II.

Type of School	Total number of day pupils on rolls, mid-1960	Number of children examined	No. of schools covered by survey.
Primary	109,400	5,898	92
Secondary	17,600	847	27
Certified junior departments of secondary schools	6,100	270	13
Vocational	4,600	202	8
Certified private schools	500	28	1
Total	138,200	7,245	141

Table II. Schools and Pupils in the Dublin Health Authority area sample.

The procedure used in selecting the samples for Co. Kildare and Co. Wicklow was similar to that applied in the Dublin Health Authority area, although since the total numbers of children attending day schools in these counties were much lower than in Dublin, the fraction of the total to be selected was much larger.

In the case of Co. Kildare, it was found that by taking a sample of exactly one-quarter of the total of children attending day schools, a sample of the desired size would be obtained, assuming that 80 per cent. of the children selected could be examined. One-quarter of the schools with under 200 pupils were selected, by reference to a list of random numbers, and all the children present in these schools were issued with Consent Forms. All the schools with 200 or more pupils were taken, and approximately one-quarter of the pupils were chosen, keeping to complete classes, in such a way that the totals by classes of the sample for all these schools constituted almost exactly one-quarter of the total number of children on the rolls. This yielded a total sample of 3,683 children on rolls.

In the case of County Wicklow an initial sample of 3,720 was selected, giving the correct proportions in Primary, Secondary and Vocational Schools. In the case of primary schools with under

200 on the rolls approximately one-third of the schools were chosen, and all the children in each selected school were examined. In such schools with 200 or more pupils on the rolls all schools were visited and the appropriate proportion of children was selected.

In the Counties of Kildare and Wicklow it became apparent at an early stage that in many cases fewer children were present in the schools at the time at which the examination was carried out than was anticipated on the basis of the information available. Strict adherence to the original plans would have considerably reduced the sample size and, therefore, a further random selection of schools and classes was made, adding 710 children in County Kildare and 570 in County Wicklow. The total numbers of day pupils on the rolls in County Kildare and numbers examined are shown in Table III.

Type of School	Day pupils on rolls — mid-1960	Number Examined	No. of Schools
Primary	13,230	2,809	45
Secondary	915	215	7
Vocational	647	117	3
Total	14,792	3,141	55

Table III. Schools and Pupils in the Kildare Health Authority Area Sample

The total numbers on the rolls, numbers examined and numbers of schools involved in County Wicklow are shown in Table IV.

Table IV. Schools and Pupils in the Wicklow Health Authority Area Sample

Type of School	Day pupils on rolls — mid-1960	Number Examined	No. of Schools
Primary	10,111	2,700	51
Secondary (including junior departments)	1,425	255	5
Vocational	712	177	4
Total	12,248	3,132	60

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While it would have been desirable to ascertain the number of consent forms actually issued to children so as to assess the amount of "non-response", suitable arrangements to secure this information were impossible in the circumstances of the survey. Arrangements have been made to obtain this information in future surveys. The numbers of consent forms issued to the schools were related to 1960 school roll figures which predated the time of the actual survey and in many cases it was only at the time of examination that the roll was found to be less than had been anticipated. Apart from this factor of consent forms reaching fewer children than had been intended, many other factors militated against getting as high a response as had been expected. Principal among these were :---

- (a) a general decrease in school attendance towards the end of the school year. This was particularly noticeable in senior classes following the certificate examinations;
- (b) reduced attendance on the day immediately following school sports, educational tours, visits to exhibitions, etc.;
- (c) reduced attendance because of illness or because the older pupils were helping with farm work.

The numbers of children examined in the three areas represent the following percentages of the numbers of consent forms issued to the schools in each case :- Dublin - 77%, Kildare - 72%, Wicklow - 73.5%.

Maintenance of Uniform Standard of Recording of Caries

To ensure as far as possible the continued maintenance of a uniform standard of recording the incidence of dental caries throughout the survey, the presence of two dentists in the larger schools was availed of periodically to carry out "check" examinations. 103 such checks were made, 66 in Dublin, 21 in Kildare and 16 in Wicklow (see section on Consistency of Recording). Separate charts were completed by each dentist and any variations were discussed under the guidance of Miss Cunniffe. Frequent discussion during the period of the survey also contributed to the maintenance of the desired uniformity.

Consistency of Recording

As already mentioned 103 children were examined twice by separate dentists and the recording and summarisation of the results were separately carried out.

It was not possible systematically to plan the number of such examinations carried out by each dentist so as to make it feasible to assess subjective variation, and the numbers for any pair of dentists were not sufficiently large to come to any conclusions as to their relative standards. It is possible to compare the summarised results of the duplicate examinations and in the aggregate the results were as follows for the 103 cases :--

Deciduous Teeth	Decayed	Missing	Filled	D.M.F.	Intact	Total
Original	236	39	2	277	417	694
Check	238	37	2	277	417	694
Permanent Teeth						
Original	344	105	45	494	1,319	1,813
Check	351	107	49	507	1,306	1,813

Field Work

Only pupils whose parents or guardians had indicated their consent in writing were examined. In the larger schools, where less than the total number on the roll in particular classes were selected, the Principal of the school was asked to distribute the "parents consent forms" to the pupils at random. The co-operation of teachers generally was a notable aspect of the survey, particularly in view of the many interruptions in the normal work of the schools during the Summer term.

Examinations in the selected schools were commenced on the 15th May, 1961, and were completed on the 30th June, 1961. The schools selected in each area are listed in Appendix II.

Recruitment of Dentists

Miss L. Cunniffe was seconded to the Council by the Galway County Manager to train the other dentists making up the survey team and to supervise the field-work. Miss Cunniffe visited London in April, 1961, for discussions with dental officers of the Ministry of Health on methods of recording at present in use. In addition to Miss Cunniffe, eight dentists were released by their health authorities and one dentist who had been recently in the local health authority service was employed. At a later stage in the survey, to ensure its completion in the limited time available, it was considered advisable to recruit two additional dentists, who were released by their health authorities for a period of two weeks.

A list of the dentists who carried out the field work is contained in Appendix III.

Recruitment of Recording Assistants

It was arranged that each dentist should have the services of two assistants, one of whom recorded the details as dictated by the examining dentist, while the second assistant was responsible for sterilising the instruments and collecting the children in the various age-groups, according to the sample, and entering the remaining details (name, date of birth, home address, etc.) on the charts.

The assistants were instructed in recording procedure by Miss Cunniffe at the Crumlin Clinic, Dublin.

Table XIII. Number of cases rejected from inquiry classified by area, sex and cause of rejection.

	AREA													
C	Dul	olin	Kil	dare	Wic	klow	Trend							
Rejection	Boys	Girls	Boys	Girls	Boys	Girls	Iotai							
Gross Hypoplasia	2	- 6	2	2	3	3	18							
Cleft Palate	-	-	1	2	-	-	3							
Nervousness and other reasons	1	2	1	1	-	2	7							
TOTAL	3	8	4	5	3	5	28							

Results of Examinations

For the children examined the basic data in respect of 7,245 (3,705 boys and 3,540 girls) in the Dublin Health Authority area, of 3,141 (1,493 boys and 1,648 girls) in the Kildare Health Authority area, and of 3,132 (1,565 boys and 1,567 girls) in the Wicklow Health Authority area are included in Tables V to X. These tables show for each area, for boys and girls, the distribution by number of DMF (decayed, missing, filled) teeth found at each year of age separately for the deciduous and permanent dentitions. Tables XI and XII give the standard deviations of the distributions and the standard deviations of the averages for each group. In addition to the data included in Tables V to X, 103 children were examined independently by two dentists and these duplicate records were kept apart to be used for the purpose of assessing the accuracy of the methods employed in the inquiry. Of these 103 cases, 66 (31 boys and 35 girls) were in Dublin, 21 (9 boys and 12 girls) were in Kildare and 16 (8 boys and 8 girls) were in Wicklow. Finally, a small number (28) of cases even though available for examination were rejected from the inquiry and the numbers of these and the cause of their rejection are shown in Table XIII.

It will be observed that per 1,000 children examined $1 \cdot 3$ cases of gross hypoplasia and $0 \cdot 2$ cases of cleft palate were found in the three areas compared.

The following table gives the number of children (boys and girls) at each year of age, the records of which are included in the computation of averages etc.

Table XIV.	Number of c	hildren ((girls a	and b	boys) a	it each	year	of	age	for	which	numbers
	of DMF teeth	h are rec	orded	in ea	ich are	a.						

		D	ublin		Kild	are		Wi	cklow		Three	Areas
Age	Boys	Girls	Total Children									
3	5	4	9	1	2	3	-	1	1	6	7	13
4	125	59	184	12	27	39	26	39	65	163	125	288
5	240	335	575	76	104	180	80	87	167	396	526	922
6	407	406	813	189	198	387	167	137	304	763	741	1,504
7	440	405	845	181	175	356	185	162	347	806	742	1,548
8	373	353	726	144	169	313	175	182	357	692	704	1,396
9	381	361	742	172	163	335	156	166	322	709	690	1,399
10	330	337	667	162	151	313	162	161	323	654	649	1,303
11	298	310	608	138	171	309	144	166	310	580	647	1,227
12	306	310	616	133	150	283	176	167	343	615	627	1,242
13	262	301	563	113	145	258	115	131	246	490	577	1,067
14	140	119	259	77	94	171	74	84	158	291	297	588
15	161	96	257	31	47	78	59	38	97	251	181	432
16	126	82	208	22	29	51	19	23	42	167	134	301
17	59	32	91	21	7	28	10	10	20	90	49	139
18	15	7	22	8	7	15	6	-	6	29	14	43
Not avail- able	37	23	60	13	9	22	11	13	24	61	45	106
Total	3,705	3,540	7,245	1,493	1,648	3,141	1,565	1,567	3,132	6,763	6,755	13,518

DIAGRAM I. AVERAGE NUMBER OF D.M.F. TEETH FOUND IN DECIDUOUS DENTITIONS FOR EACH AGE-SEX GROUP (4-14 YEARS OF AGE) IN EACH AREA.



No data are readily available on the distribution by age and sex of the pupils who at the time of the inquiry were attending all the day schools in the areas so it is not possible to decide whether or not the aim of including the same proportion of children (boys and girls) at each year of age has been achieved. It would seem that, in general, among the primary school children a somewhat higher proportion was included of those aged 5 and 6 years last birthday than of those in the later primary school ages. This is due to the facts that relatively larger numbers were selected at these ages and the return of Consent Forms and presence at the time of the examination was better for children in the infant classes than was expected. One would also expect that the numbers of boys and of girls examined would have been about the same in each area. This was roughly true of the three areas combined, though there was some excess in the number of boys examined in Dublin and a corresponding deficit in Kildare.

If 100 children of each sex at each year of age is to be considered adequate then this number was attained for each area in question for all ages in the range 6 to 13 years inclusive. The same is true for both sexes at ages 5 and 14 and for boys aged 4, 15, and 16 in Dublin, as well as for girls aged 5 years in Kildare. It is to be expected that the method of sampling adopted would result in smaller numbers at the younger or older ages since there are normally, in the aggregate, fewer children in day schools at these ages. Though the data are presented for all records available, the reliability of the averages will naturally be less in the groups which included the smaller numbers of children. This is clear from the tables in which the "95 per cent. confidence intervals" for the averages are shown.

As explained on page 4, a single measure of dental caries was used, that is, the average number of decayed, missing and filled (DMF) teeth per child in the samples. This was computed separately for the deciduous and permanent dentitions at each year of age and is given in Table XV for all children in each Health Authority Area. Separate averages for boys and girls are shown in Table XVI.

The trends in these averages for boys and girls in each area are shown in Diagrams 1 and 2 on pages 13 and 15.

The trends in these averages must be related to the ages at which the teeth in the deciduous dentition are shed and those in the permanent dentition erupt. Thus the decline shown in the average number of DMF teeth in the deciduous dentition after 6-7 years of age is due not to a decline in caries incidence but to the shedding of deciduous teeth. In fact, between 5 and 7 years of age the average number of DMF teeth in the deciduous dentitions is a maximum in each health authority area varying for the sexes from about $5\frac{1}{2}$ to $6\frac{3}{4}$ DMF. In the case of the permanent dentitions the corresponding averages increase with age ranging from about $6\frac{1}{4}$ to $7\frac{1}{2}$ DMF teeth at 13 years of age and rising above this level at later ages.

Tables XVII and XVIII show the percentages of boys and girls in each area with various numbers of DMF teeth at different ages. The former table relates to the deciduous dentitions and covers the ages 4 to 9 years, the latter relates to permanent dentitions and covers the ages 8 to 16 years.

It will be observed from these tables that, apart from girls in Kildare at seven years of age only about 4 to 5 per cent. of the children have caries-free temporary dentitions and that at 6 years of age about one-fifth of the children have 10 or more decayed, missing or filled temporary teeth. In the case of permanent teeth the percentage of children with dentitions free of caries drops practically to zero at about 14 years of age and at this stage about one-third of them have 10 or more carious teeth. At the later ages in this range the number of children examined is getting smaller so that one cannot expect complete regularity in the sequences. Nevertheless the continued decline with increasing age in

DIAGRAM 2. AVERAGE NUMBER OF D.M.F.TEETH FOUND IN PERMANENT DENTITIONS FOR EACH AGE-SEX GROUP (4-17 YEARS OF AGE)



the proportion of children with caries-free permanent dentitions is most marked. In fact, of the 911 children aged 15-18 years who were examined in the three areas only one single case of a caries-free permanent dentition was found, while of the 588 children aged 14 years only 7 had caries-free permanent dentitions.

In order to assess the accuracy of the various averages the corresponding "95 per cent. confidence ranges" are juxtaposed with them in Tables XIX and XX, the former giving the data for all children at each age in each area and the latter separately for boys and girls for the corresponding groups. The meaning of such a "confidence range" is that if repeated samples of the same size were drawn from the populations and these intervals or ranges were calculated, ninety-five times out of a hundred the true population averages would fall within the intervals. The calculations were made for ages 4 to 12 years in the case of deciduous teeth and for 6 to 17 years in the case of permanent teeth. No account was taken in these calculations of the limited size of the populations.

SUMMARY

- The survey discloses an extremely high individual incidence and a widespread prevalence of dental caries (decay) among school children attending full-time day schools in the City and County of Dublin and in the Counties of Kildare and Wicklow. It discloses also that the incidence and prevalence were uniformly high throughout the three areas.
- Among the children in the age group 15 to 18 years only one child was recorded as entirely free of caries experience.
- The survey does not disclose the early or incipient stages of dental decay and consequently must be accepted as an understatement of the total amount of caries present.

Acknowledgments

The Council acknowledges its indebtedness to the Managers of the following areas, without whose co-operation in releasing Dental Officers for the fieldwork it would not have been possible to complete the survey in the time available :---

Dublin and Limerick Health Authorities and the County Councils of Galway, Laois,

Tipperary (S.R.), Kildare, Westmeath, Kerry, Offaly, Cavan and Donegal.

The Council also wishes to express its appreciation of the co-operation given by the Central Statistics Office, Dublin, in selecting the sample and carrying out the analysis of the findings, by the Department of Defence, who loaned certain equipment, and by the Department of Education, the School Teachers and the Parents of the pupils concerned.

2nd October, 1961.

Distribution by age and number of decayed, missing and filled deciduous teeth of children examined. TABLE V. **Dublin Health Authority - Boys**

								Nu	mber (of D.M	I.F. tee	th							
Age in years	of Children	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17 or more
3	5	1	1	1	1	-	-	-	1		-							-	
4	125	19	16	17	17	8	5	9	4	7	4	6	3	5	1	2	1	1	—
5	240	23	17	17	17	23	22	19	25	19	11	14	6	12	4	4	1	2	4 (a)
6	407	32	14	27	20	30	34	36	43	55	28	30	13	12	13	7	7	3	3 (b)
7	440	22	10	20	22	40	38	55	48	69	49	18	21	11	7	4	2	3	1
8	373	34	49	47	50	53	42	36	19	19	8	7	7	1	1			-	
9	381	71	58	62	46	51	27	32	15	8	6	-4	1					-	
10	330	102	77	51	37	21	23	11	3	4	1				-	-			
11	298	150	49	38	30	16	6	5	1	2		1							
12	306	233	43	15	7	5	2	1							-		-		-
13	262	235	16	6	4	1	-	-	-		-	_			-				-
14	140	131	5	2	1	1		-	-	-					-				
15	161	159	2			-				-					-		-		
16	126	124	2				-								-	-		-	
17	59	58	1	-			-	-										-	-
18	15	15	-							-	-								
Not												-			1.000		1000		-
available	37	8	5	5	4	2	2	2	2	2	1		1	1	_ 1		1	-	
Totals	3,705	1,417	365	308	256	251	201	206	161	185	108	80	52	42	27	17	12	9	8

17

Dublin Health Authority - Girls.

	Number							Nu	mber (of D.M	f D.M.F. teeth								
Age in years	of Children	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17 or more
3	4	1	1	1	_	1	-	-	-		-	-	-	-	-	-	-	-	
4	59	13	5	4	5	3	2	4	5	3	2	5	2	3	1	2		-	17.00
5	335	42	22	18	30	39	17	34	29	27	21	17	15	.9	3	0		4	2 (c)
6	406	36	20	20	25	46	32	33	33	52	42	18	15	10	2	4	3	2	4 (d)
7	405	19	13	26	24	30	45	34	58	01	34	24	14	17		2			
8	353	38	39	60	52	54	34	31	17	13	0	4	3		1		1	-	_
9	361	76	53	52	55	37	32	23	9	11	0	4	3		_			-	-
10	337	129	69	49	-40	24	12	0	2					-	-			-	-
11	310	204	51	23	13	7	9	1	Z			-						-	-
12	310	263	19	16	0	2	4	-	-									-	-
13	301	283	11	1		-									-			-	-
14	119	116	1	2		-			-			_						-	_
15	96	95	1			-												-	
16	82	79	3			-			-			_			-			-	
17	32	32		-		-						_	1		-			-	
18	7	7			-	-				100	_	1	_	100	-			_	-
Not		-										4							
available	23	5	2	3	4	2		3	1	1700	-	- 1	- 1	_			-	_	
Totals	3,540	1,438	310	281	260	245	188	169	156	167	111	73	53	45	14	14	4	6	6

(a) 2 with 17, 1 with 19, 1 with 20. (b) 2 with 18, 1 with 19. (c) 1 with 18, 1 with 20. (d) 3 with 17, 1 with 18.

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а.	8	ł.	
	=	=	

				2010	D.U	unare	rreat	th rat	remor.	uy - 1	uuya	-	-			_		-	_
	Number								Nu	mber o	f D.M	.F. tee	rth						
in years	of Children	0	1	2	3	4	5	6	7	8	9	10	11	12	,13	14	15	16	17 or more
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 Not	$1 \\ 12 \\ 76 \\ 189 \\ 181 \\ 144 \\ 172 \\ 162 \\ 138 \\ 133 \\ 113 \\ 77 \\ 31 \\ 22 \\ 21 \\ 8 \\ 14 \\ 14 \\ 172 \\ 162 \\ 138 \\ 133 \\ 113 \\ 122 \\ 211 \\ 8 \\ 113 \\ $	2 11 18 9 11 17 35 59 100 99 73 30 22 21 7		1 1 4 10 8 8 18 33 18 3 18 3 18 3 1 1 1 1 1 1 1 1 1 1 1 1 1	$ \begin{array}{c cccccccccccccccccccccccccccccccccc$		1 5 12 18 15 17 23 1 1 1 1 1 1 1	25 18 23 17 18 9 4		2655973111111		25653	20431	-563 -	2331			1111111111111	
available	13	4	1	1	1	-	2	1	2	-	1	-		-				-	
Totals	1,493	518	148	114	111	101	86	97	77	89	65	31	19	16	9	5	3		4

TABLE VI. Distribution by age and number of decayed, missing and filled Kildare Health Authority - Boys.

18

Kildare Health Authority - Girls

A	Number	-						is ne	Nu	nber e	f D.M	"F. tee	eth						
in years	of Children	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17 or more
3 4 5 6 7 8 9 10 11 12 13 14 15 16	2 27 104 198 175 169 163 151 171 150 145 94 47 29 7	$ \begin{array}{c} 1\\ 6\\ 13\\ 17\\ 18\\ 12\\ 26\\ 50\\ 107\\ 119\\ 135\\ 90\\ 46\\ 29\\ 7\end{array} $	-1 6 8 6 8 19 25 28 15 7 3 1 -	$\begin{array}{c}1\\3\\6\\10\\12\\8\\19\\23\\14\\10\\1\\-\\-\\-\end{array}$		1 5 12 10 23 20 16 4 3 1 	25 23 16 18 15 6 2 2 		5 12 23 18 19 8 2 1 	-2 6 15 20 16 5 3 			397621	598 1		-	21	1111111111	
18 Not	7	6	-	1	-	=	-		-	-	-	-	-	-	-	-	-	-	-
Totals	1,648	684	127	112	112	95	90	106	88	67	45	50	28	23	12	1	3	2	3

(a) 1 with 20. (b) 1 with 18, 1 with 20. (c) 1 with 19, 1 with 20. (d) 1 with 18.

d di	eciduous	teeth	of	chil	dren	examined.
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A	Number			-				N	umber	of D.	M.F. t	eeth							
in years	of Children	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17 or more
3	-			-				-	-	-	-		-					-	
4	26	5	2	2	1	4	2	2	-	3	1	1	1		1			1	-
5	80	7	5	5	8	4	6	6	4	5	5	6	5	4	4	1	3	1	1
6	167	13	3	8	6	22	15	11	17	22	18	10	6	4	5	3	2	1	1 (a)
7	185	8	15	10	13	11	15	17	24	23	14	11	7	9	- 4	2		1	1 (b
8	175	9	12	14	16	20	31	22	18	15	7	7	1	2	1				
9	156	20	19	22	28	20	16	9	8	9	4	1							
10	162	40	35	23	18	22	8	10	5		1			-		-		-	
11	144	69	31	17	13	6	5	2	1		-								1000
12	176	139	15	10	8	3	1		-						-	1000		-	-
13	115	107	3	2	1	1	1	-	-					-	-			-	
14	74	74							-										
15	59	58	1								-	-	-	-	-			-	-
16	19	19				-			-	-	-			-		-	-	-	
17	10	10		-	-	-		-						-		-		-	-
18	6	6													-			-	
Not																			
available	11	4		1	1	2	-	-	1		2	-			-	-	-	-	
otals	1,565	588	141	114	113	115	100	79	78	77	52	36	20	19	15	6	5	4	3

Distribution by age and number of decayed, missing and filled deciduous teeth of children examined. TABLE VII. Wicklow Health Authority - Boys

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Wicklow Health Authority - Girls.

	Number	1						N	umber	of D.	M.F. 1	teeth						- 05	
in years	of Children	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17 or more
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 Not available	1 39 87 137 162 182 166 161 166 167 131 84 38 23 10 13		$ \begin{array}{r} 5 \\ 7 \\ $	1 3 10 13 10 13 10 30 23 9 5 2 1 1 -	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c} 2 \\ 13 \\ 10 \\ 21 \\ 24 \\ 17 \\ 3 \\ 5 \\ $	$ \begin{bmatrix} 4 & 5 \\ 16 & 12 \\ 26 & 14 \\ 7 & 2 \\ 1 & - - \\ 1 \\ 1 \end{bmatrix} $	$\begin{vmatrix} 2 & 5 \\ 12 & 17 \\ 19 & 10 \\ 5 & 2 \\ 1 & 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1$	4410258851 2	2968832		2771852 1	34871	26521	1-1-3-3 1	12	13		2 (c) 1 (d) 1
Totals	1,567	656	161	113	93	106	88	73	77	58	38	42	23	16	9	4	4	3	3

(a) 1 with 18. (b) 1 with 18. (c) 1 with 18, 1 with 20. (d) 1 with 18,

Am	Mambas										Num	ber o	f D.M	4.F. 1	teeth											
in years	of Children	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24 or more
3 4 5 6 7 8 9 10 11 12	5 125 240 407 440 373 381 330 298 306	5 124 221 266 158 68 54 28 23 12	9 63 78 48 42 28 13 10	1 6 28 81 71 58 39 27 23	1 28 54 61 58 40 31 21				 10 10 18 21	1 3 6 10 15	127 3 19	3510	1	1124	26	23	111	1 2		111111111	111111111	111111111		-	111111111	11111111
13 14 15 16 17 18 Not available	262 140 161 126 59 15 37	4	74321	5521 6	12 7 6 3 	33 9 8 1 2 	38 12 9 6 4 -	31 9 14 11 2 1	28 17 17 9 1 	25 19 14 11 7 1	25 10 12 12 9 1	15 12 16 17 2 3	9 9 12 13 4 1	9 9 10 2 2 1	526642	6 4 9 6 4 1	1 3 7 2 4 1	1 4 3 2	21633	3432	3114	1 2 1	2 1 2	2		 2 (a)
Totals	3,705	972	311	353	325	650	234	158	133	112	101	83	62	50	33	35	21	12	18	12	9	3	6	4	5	3

TABLE VIII. Distribution by age and number of decayed, missing and filled permanent teeth of children examined. Dublin Health Authority - Boys.

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Dublin Health Authority - Girls.

Aaa	Number											Nu	mber	of D	.M.F	. teet	h									
in years	of Children	0	1	2	3	4	5	6	7	8	9	10	11	12.	13	14	15	16	17	18	19	20	21	22	23	24 or more
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 Not available	$\begin{array}{r} 4\\59\\335\\406\\405\\353\\361\\337\\310\\310\\301\\119\\96\\82\\32\\7\\23\end{array}$	$ \begin{array}{c} 4 \\ 58 \\ 296 \\ 248 \\ 119 \\ 47 \\ 23 \\ 16 \\ 9 \\ 8 \\ 2 \\ \\ 8 \\ 8 \end{array} $	$\begin{array}{c c} -1 \\ 20 \\ 56 \\ 75 \\ 60 \\ 19 \\ 17 \\ 19 \\ 8 \\ 4 \\ 1 \\ -1 \\ -1 \\ 2 \\ \end{array}$		$\begin{array}{c} - \\ - \\ 9 \\ 24 \\ 52 \\ 60 \\ 68 \\ 56 \\ 31 \\ 16 \\ 3 \\ 2 \\ 1 \\ 1 \\ - \\ 3 \end{array}$	- 38 76 104 145 120 90 44 26 7 4 1 1 - 5	3 10 25 40 41 47 46 5 5 1 1	1 5 15 24 25 42 15 5 3	14 6 13 26 32 34 15 7 9 4 1 	2 11 8 20 22 38 9 4 9 1		222598781232	1 11067411	1 1 1 1 1 1 1 1	22867511 1		244447551	3412 1	412 1	aaaaa						b)
Totals	3,540	838	282	315	343	664	218	194	152	124	95	70	42	41	33	34	32	11	8	10	13	7	6	4	2	2

(a) 1 with 24, 1 with 28. (b) 1 with 24, 1 with 25.

TABLE IX. Distribution by age and number of decayed, missing and filled permanent teeth of children examined.

Kildare Health Authority - Boys

Ame	Number											Nu	mber	of D	.M.F	. teet	h									
in years	of Children	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24 or more
3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	1	-	-
5	76	60					100			-			-		-	Annual C	-		-	And a second	-	-				-
6	180	126	31	11	11	6				-			-		-			-			100	-		-	-	-
Ť	181	67	32	26	24	32	4	_						_		_		-	_	-	_	-			-	_
8	144	31	16	30	27	33	1	3	1	1		_	1											100	_	
9	172	28	21	20	32	54	2	6	2	2			-				1223				_					_
10	162	15	14	22	17	54	12	7	5	8	2	2	_		2			-	2		_					
11	138	10	8	18	20	43	17	7	7	6	Ĩ	_		1			1				_	_	_			_
12	133	5	7	11	11	26	15	28	9	5	4	2	2	2	3	2	1	-			_	-		-	-	
13	113	3	4	10	7	11	18	15	9	6	7	6	6	5	2	3	1	-	-		-	-			-	_
14	77		2	3	4	9	7	9	6	11	2	10		3	4	2	1	-	2		1	-		1	-	_
15	31	-	1	1	2	2	2	3	3	1	4	4	2	1		1	1	2	-		1	-	-			
16	22		1	1	1		2	1	4	3	3	2	2	—		1		1				-		-		
17	21		-	-		1	1	1	1	3	3	2		1	1	1	1	-	2			2	-	1	-	
18	8						1	1		-					1	1	-	-	2	1	-	-	-	1		
Not		1	1.0.0		1.1								0.51	17					1.00	1.0				1	1.00	
available	13	5	2	-	1	2	3			-	-		-	-	1	157		-	-	-		-	1.000		-	-
Totals	1,493	372	142	153	160	276	88	81	47	46	26	28	13	13	13	11	5	3	8	1	2	2		3	-	-

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Kildare Health Authority - Girls

Age	Number											Nu	mber	of D	.M.F	. teet	h									
(in years)	of Children	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24 or more
3	2	2		_	-		132													1				1		
4	27	23	1	3	_	_	_						_				1					_	1.200			
5	104	88	$\hat{7}$	5	2	2			-		1						1			1000					-	
6	198	128	22	23	14	10			1	_	_		_				_	_				_	_			-
7	175	71	24	21	24	33	1	1				_			_			_	_		_	_	1	1000		
8	169	28	25	31	36	36	10	î	1	-		-		1			-	_	-		-	_			_	_
9	163	17	14	19	34	52	16	5	1	2	3	-	-	-	-		-	_		_		-			_	_
10	151	10	13	22	15	47	19	6	5	6	2	3	1	1	1	-	-	_				_			_	
11	171	13	7	12	16	47	28	16	6	9	8	2	4	3											_	
12	150	3	7	5	13	28	-19	23	14	7	10	5	3	3	1	2		2	2	1	1			-	1	-
13	145	3	3	8	6	12	21	22	12	13	11	8	8	2	3	3	1	3	4	-	1	1		-	_	
14	94	4	2	4	5	9	7	8	8	10	9	5	7	1	3	2	2	2	1	1	-	1	1		-	2 (a)
15	47			1	1		5	4	7	4	6	4	4	-	4	2	ī	-	1	1	1	_	Ĩ			
16	29			-	1	1	1		1	4	4	2	2	3	2	3			-	1	2			-	1	1
17	7		-			-		-		1		1	1	1		-		1	1	-	1		and i	-	-	_
18	7		-	-	-			1	-	1000		-	1	1	1		-	-	-	Sec.	1	1	1	-	-	-
Not	1. No. 1	1.1	1.5	1										1.0	1				1.1.1.1							100
available	9	1	3	1	-	1	3		100	-	-		-	-		-	-	-	-		-	-	-		-	
Totals	1,648	397	128	155	167	278	130	87	56	56	53	30	31	16	15	12	4	8	9	4	7	3	3	-	2	3

(a) 1 with 24, 1 with 28,

												Nu	mber	of D	.M.F	. teet	h									
Age in years	of Children	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24 or more
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 Not		25 74 108 39 19 12 7 6 6 2 1 1 1 5	23 34 28 9 12 12 6 5 1 1 1	- $ 3$ 19 26 29 25 28 11 21 6 1 2 $ 1$ $ 1$ $ 2$ $ 1$ $ 2$ $ 1$ $ 2$ $ 2$ $ -$	- 10 19 30 32 27 14 16 10 4 1 1 $-$ 1	1 7 24 24 48 55 55 19 8 4 4 1 2 2	257 135 202 4 3 1 1 1	99 913 23 10 14 10 1 1	1246 10113	22220656212	122 15878 11	1 2461331		. 122341 1			111212	2334				1111111111111111	111111111111111	111111111111111	111111111111111	
available				4	-	-	-	_													-	_			_	-
Totals	1,565	384	134	174	166	302	84	90	47	38	45	21	19	14	14	8	8	9	6	1	-	-	-	-	-	1

TABLE X. Distribution by age and number of decayed, missing and filled permanent teeth of children examined. Wicklow Health Authority - Boys.

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Wicklow Health Authority - Girls.

												Nu	mber	of D	M.F.	. teetl	h									
Age in years	of Children	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24 or more
3	1	1	-			-		-				-	-		-	-	-	-		-			-	-	-	-
4	39	35	2		1	1			-	-		-			-	-	-	-		-				-		
5	87	75	7	1	3	1	-	-	-			-	-	-	-	-	-	-	-	-	-		-			
6	137	99	11	12	10	5		-	-	-		-			-	-	-		-		-		-			
7	162	52	25	32	22	24	.4	1	1		1	-	-	-	-		-	-			-			-		
8	182	35	19	43	25	44	12	3	-	1		-	-			-				-				-		
9	166	19	13	27	27	66	2	7	2	2	1				-					-						
10	161	10	11	22	18	60	13	13	.6	2	1	2	1	-	1		-	1	-	-	-			-		
11	166	7	5	13	18	44	14	22	14	8	1	2.	4	2	2	3	1	1	1	-	-		-	-		1
12	167	7	0	9	0	27	18	20	14	18	8	10	2	2	2	2	0	1		1	1000	1	-			2 (b)
13	131	0	1	4	1	10	17	10	13	10	1	3	2	2	14	4	3	1	1	1	-		1	-	1	
14	84	-	- 1	100	1	2	9	8	8	10	9	9	1	4	3	1	1	3	1	1	2	1		-	-	
15	38		1	2	2	2	0	1	3		3	3	0	1	2	3	2		-			-		1		
16	23		1	1				2	3	2	4	2	1	3	1			2		-	1					-
17	10		-		1	-		-	3	3		-	-	-		-	1	1		-	-	-	-	-		1 (c)
18		-	-				-		-			-	-		-	-			-	-	-				-	
Not available	13	7	-	-	2	2	1	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Totals	1,567	353	103	166	143	297	96	93	67	62	36	34	33	17	13	13	13	10	3	3	3	2	1	1	1	4

(a) 1 with 26. (b) 1 with 24, 1 with 26. (c) 1 with 26.

Table XI. Standard deviations of the distribution of the numbers of DMF deciduous teeth and of the averages at each year of age in the areas in question for (a) boys, (b) girls, (c) boys and girls.

	St	andard deviation distribution	on of	Standard deviation of average				
Age in years	Boys	Girls	Boys and Girls	Boys	Girls	Boys and Girls		
			Dul	blin				
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	2-702 4-041 4-160 3-933 3-289 2-754 2-458 1-950 1-711 0-953 0-569 0-510 0-111 0-126 0-130	2-500 4-388 3-984 3-802 3-162 2-585 2-585 2-549 1-639 1-348 0-879 0-351 0-273 0-102 0-189	$2 \cdot 224$ $4 \cdot 154$ $4 \cdot 059$ $3 \cdot 872$ $3 \cdot 230$ $2 \cdot 676$ $2 \cdot 501$ $1 \cdot 807$ $1 \cdot 557$ $0 \cdot 917$ $0 \cdot 467$ $0 \cdot 419$ $0 \cdot 108$ $0 \cdot 154$ $0 \cdot 105$	1.208 0.361 0.269 0.195 0.157 0.143 0.126 0.107 0.099 0.054 0.035 0.043 0.009 0.011 0.017	$1 \cdot 250$ $0 \cdot 571$ $0 \cdot 218$ $0 \cdot 189$ $0 \cdot 157$ $0 \cdot 138$ $0 \cdot 134$ $0 \cdot 089$ $0 \cdot 077$ $0 \cdot 050$ $0 \cdot 020$ $0 \cdot 025$ $0 \cdot 010$ $0 \cdot 021$ 	0.741 0.306 0.169 0.136 0.111 0.099 0.099 0.092 0.070 0.063 0.037 0.020 0.026 0.026 0.007 0.011 0.011		
			Kild	iare				
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	3.519 4.377 3.997 3.091 3.089 2.706 2.373 1.659 1.333 0.959 0.502 0.359 0.354	1.414 3.898 4.730 3.615 3.561 2.725 2.828 2.152 1.421 0.962 0.488 0.269 0.146 	$1 \cdot 155$ $3 \cdot 740$ $4 \cdot 600$ $3 \cdot 807$ $3 \cdot 328$ $2 \cdot 903$ $2 \cdot 772$ $2 \cdot 283$ $1 \cdot 550$ $1 \cdot 153$ $0 \cdot 734$ $0 \cdot 391$ $0 \cdot 252$ $0 \cdot 561$	1.016 0.502 0.291 0.230 0.257 0.206 0.186 0.141 0.116 0.090 0.057 0.065 0.065	1.000 0.750 0.464 0.257 0.269 0.210 0.222 0.175 0.109 0.079 0.079 0.079 0.040 0.028 0.021	0.667 0.599 0.343 0.194 0.176 0.164 0.151 0.129 0.088 0.069 0.046 0.030 0.030 0.029		
			Wie	klow				
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	4.354 4.587 3.742 3.654 2.776 2.489 2.079 1.570 0.977 0.712 0.130	5.431 4.147 3.958 3.271 2.853 2.280 2.395 1.373 0.898 0.348 0.348 0.109 0.359	$5 \cdot 018$ $4 \cdot 360$ $3 \cdot 844$ $3 \cdot 475$ $2 \cdot 828$ $2 \cdot 399$ $2 \cdot 241$ $1 \cdot 482$ $0 \cdot 939$ $0 \cdot 549$ $0 \cdot 080$ $0 \cdot 247$	0-854 0-513 0-290 0-269 0-269 0-10 0-199 0-163 0-131 0-074 0-066 0-017	0-870 0-445 0-338 0-257 0-211 0-177 0-189 0-107 0-069 0-030 0-012 0-058	0-622 0-337 0-220 0-187 0-150 0-134 0-125 0-084 0-051 0-035 0-006 0-025		

Table XII. Standard deviations of the distribution of the numbers of DMF permanent teeth and of the averages at each year of age in the areas in question for (a) boys, (b) girls, (c) boys and girls.

	St	andard deviati distribution	on of	St	andard deviati average	on of
Age in years	Boys	Girls	Boys and Girls	Boys	Girls	Boys and Girls
			Dui	olin		
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	0.179 0.595 1.194 1.514 1.667 1.937 2.189 2.625 3.601 3.891 4.246 4.438 4.602 4.779 4.673	0.130 0.695 1.357 1.523 1.523 1.811 1.825 2.137 2.587 3.466 3.730 4.797 4.676 4.537 4.983 2.545	0.165 0.655 1.280 1.521 1.740 1.908 2.171 2.613 3.542 3.542 3.834 4.555 4.564 4.555 4.564 4.571 4.824 4.105	0.016 0.038 0.059 0.072 0.086 0.099 0.121 0.152 0.206 0.240 0.359 0.350 0.410 0.622 1.207		0.012 0.027 0.045 0.052 0.065 0.070 0.084 0.106 0.143 0.162 0.283 0.285 0.317 0.506 0.875
			Kild	lare		
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18		0.656 0.811 1.284 1.629 1.749 1.853 2.469 2.680 3.861 4.029 5.186 4.127 5.131 4.071 5.564		0.086 0.086 0.113 0.153 0.153 0.138 0.223 0.180 0.266 0.330 0.479 0.790 0.757 1.139 2.087		0.089 0.059 0.063 0.083 0.101 0.101 0.101 0.151 0.141 0.210 0.238 0.364 0.479 0.679 0.934 1.433
			Wick	low		
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	0.785 0.522 1.141 1.489 1.685 1.947 2.078 2.555 3.096 4.134 3.902 4.013 4.782 4.835 4.274	0.810 0.751 1.138 1.711 1.693 1.749 2.349 3.563 4.292 4.158 3.924 4.597 4.187 6.688	0.795 0.652 1.139 1.608 1.690 1.846 2.224 3.185 3.790 4.160 3.970 4.228 4.412 5.708 4.274	0.154 0.058 0.088 0.109 0.127 0.156 0.163 0.233 0.233 0.233 0.385 0.454 0.522 1.097 1.529 1.745	0.130 0.080 0.097 0.134 0.125 0.136 0.136 0.185 0.277 0.332 0.363 0.428 0.746 0.873 2.115	0.099 0.050 0.065 0.086 0.089 0.103 0.124 0.181 0.205 0.265 0.265 0.316 0.429 0.681 1.276 1.745

	Dublin	Kildare	Wicklow	Dublin	Kildare	Wicklow
Age	De	ciduous Dentitio	ms	Pe	rmanent Dentitio) MIS
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	$2 \cdot 22$ $4 \cdot 66$ $5 \cdot 72$ $6 \cdot 39$ $6 \cdot 48$ $3 \cdot 75$ $2 \cdot 93$ $1 \cdot 69$ $0 \cdot 99$ $0 \cdot 37$ $0 \cdot 12$ $0 \cdot 08$ $0 \cdot 01$ $0 \cdot 02$ $0 \cdot 01$ $0 \cdot 02$ $0 \cdot 01$ $0 \cdot 00$	1.33 4.90 6.25 6.38 5.97 4.96 3.82 2.34 1.06 0.48 0.17 0.08 0.04 0.00 0.00 0.20	3.00 5.62 6.46 6.39 4.73 3.12 2.15 0.96 0.39 0.13 0.01 0.04 0.00 0.00 0.00 0.00	0.00 0.02 0.19 0.81 1.66 2.53 3.24 3.80 4.52 6.11 7.34 8.88 10.04 10.55 11.47 12.09	$ \begin{array}{c} 0.00\\ 0.18\\ 0.26\\ 0.74\\ 1.59\\ 2.40\\ 2.97\\ 3.87\\ 4.24\\ 5.75\\ 6.84\\ 7.93\\ 9.06\\ 9.98\\ 12.00\\ 14.27\end{array} $	0.20 0.20 0.67 1.56 2.32 3.10 3.63 4.83 5.98 6.72 8.34 8.75 9.40 9.95 6.67

Table XV. Average number of DMF teeth (deciduous and permanent dentitions) for all children at each year of age in each area.

Table XVI. Average number of DMF teeth (deciduous and permanent dentitions) for boys and girls at each year of age in each area.

			Deciduou	as Teeth			Permanent Teeth						
	Du	blin	Kildare		Wicklow		Dublin		Kildare		Wicklow		
Age	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	2.60 4.46 5.93 6.61 3.91 2.95 1.87 1.25 0.42 0.17 0.11 0.01 0.02 0.02 0.00	1.75 5.08 5.58 6.17 6.33 3.58 2.90 1.52 0.74 0.31 0.08 0.04 0.01 0.04 0.00 0.00	2.00 4.75 5.66 6.59 4.70 4.05 2.60 1.34 0.57 0.25 0.10 0.06 0.00 0.00 0.13	1.00 4.96 6.68 6.17 5.85 5.18 3.58 2.05 0.84 0.40 0.11 0.05 0.02 0.00 0.00 0.20	- $5 \cdot 00$ $6 \cdot 76$ $6 \cdot 63$ $6 \cdot 39$ $5 \cdot 04$ $3 \cdot 43$ $2 \cdot 27$ $1 \cdot 19$ $0 \cdot 43$ $0 \cdot 17$ $0 \cdot 00$ $0 \cdot 00$ $0 \cdot 00$ $0 \cdot 00$	3.00 6.03 6.18 6.09 6.40 4.43 2.83 2.04 0.75 0.35 0.10 0.01 0.08 0.00 0.00	0.00 0.02 0.15 0.72 1.56 2.43 2.93 3.60 4.30 5.83 7.18 8.22 9.55 10.36 11.49 12.53	0.00 0.02 0.22 0.90 1.77 2.63 3.56 4.00 4.74 6.38 7.47 9.66 10.86 10.86 10.84 11.44	0.00 0.00 0.21 0.68 1.57 2.35 2.76 3.85 3.78 5.23 6.30 7.78 8.52 7.86 11.57	0 0) 0.26 0.30 0.79 1.61 2.45 3.20 3.89 4.61 6.21 7.26 8.05 9.43 11.59 13.29 14.57	0.15 0.14 0.71 1.35 2.20 3.17 3.42 4.20 5.28 6.26 7.55 8.78 9.26 9.40	$\begin{array}{c} 0 & 00 \\ 0 \cdot 23 \\ 0 \cdot 25 \\ 0 \cdot 62 \\ 1 \cdot 81 \\ 2 \cdot 43 \\ 3 \cdot 03 \\ 3 \cdot 85 \\ 5 \cdot 37 \\ 6 \cdot 72 \\ 7 \cdot 11 \\ 9 \cdot 02 \\ 8 \cdot 71 \\ 9 \cdot 52 \\ 10 \cdot 50 \end{array}$	

		D	MF Teeth	- Boys		DMF Teeth – Girls					
Age	None	1-4	5-9	10 or more	Total	None	1-4	5-9	10 or more	Total	
				Du	blin Health	Authorit	y Area				
456789	15·2 9·6 7·9 5·0 9·1 18·6	46.4 30.8 22.4 20.9 53.4 57.0	$23 \cdot 2$ $40 \cdot 0$ $48 \cdot 1$ $58 \cdot 9$ $33 \cdot 2$ $23 \cdot 1$	$ \begin{array}{r} 15 \cdot 2 \\ 19 \cdot 6 \\ 21 \cdot 6 \\ 15 \cdot 2 \\ 4 \cdot 3 \\ 1 \cdot 3 \end{array} $	100 100 100 100 100 100	$22 \cdot 0$ $12 \cdot 6$ $8 \cdot 9$ $4 \cdot 7$ $10 \cdot 8$ $21 \cdot 1$	28.9 32.5 27.3 22.9 58.0 54.6	$27 \cdot 1$ 38 · 2 47 · 3 57 · 3 28 · 6 22 · 4	22.0 16.7 16.5 15.1 2.6 1.9	100 100 100 100 100 100	
				Kildi	are Health	Authority	Area				
456789	16-7 14-5 9-5 5-0 7-6 9-9	33·3 27·6 21·2 23·2 44·4 48·8	41.7 40.8 47.6 62.4 41.0 39.0	$ \begin{array}{r} 8 \cdot 3 \\ 17 \cdot 1 \\ 21 \cdot 7 \\ 9 \cdot 4 \\ 7 \cdot 0 \\ 2 \cdot 3 \end{array} $	100 100 100 100 100 100	22.2 12.5 8.6 10.3 7.1 16.0	$22 \cdot 2$ $24 \cdot 0$ $23 \cdot 2$ $23 \cdot 4$ $33 \cdot 1$ $50 \cdot 3$	$37 \cdot 1$ 29 · 8 46 · 5 52 · 6 55 · 0 30 · 1	18.5 33.7 21.7 13.7 4.8 3.6	100 100 100 100 100 100	
				Wick	low Health	Authorit	y Area				
4 5	19.2	34.6	30.8	15.4	100	20.5	20.5	30·8	28-2	100	

Table XVII. Percentage of boys and girls at ages shown in each area with numbers of DMF teeth in their deciduous dentitions.

6	7.8	23.4	49.7	19.1	100	10.9	23.4	45-3	20.4	100
7	4.3	26.5	50.3	18.9	100	4.3	24-1	52.5	19-1	100
8	5-1	35.4	53.2	6.3	100	8.8	42.8	44.0	4.4	100
9	12.8	57.1	29.5	0.6	100	15.7	62.0	21.1	1.2	100
	10000		1000	10.00	1.000	1000				

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Table XVIII.	Percentage of boys and girls at ages shown in each area with
	numbers of DMF teeth in their permanent dentitions.

		DMF	Teeth -	Boys			DMI	Teeth -	Girls	
Age	None	1-4	5-9	10 or more	Total	None	1-4	5-9	10 or more	Total
				Du	blin Health	Authorit	y Area	-		
8 9 10 11 12 13 14 15 16	$ \begin{array}{r} 18 \cdot 2 \\ 14 \cdot 2 \\ 8 \cdot 5 \\ 7 \cdot 7 \\ 3 \cdot 9 \\ 1 \cdot 5 \\ 0 \cdot 7 \\ 0 \cdot 0 \\ 0 \cdot 0 \\ 0 \cdot 0 \end{array} $	$76 \cdot 1$ $71 \cdot 7$ $69 \cdot 1$ $55 \cdot 7$ $37 \cdot 6$ $21 \cdot 8$ $17 \cdot 9$ $11 \cdot 8$ $5 \cdot 6$	$5 \cdot 7$ $13 \cdot 9$ $20 \cdot 9$ $31 \cdot 5$ $44 \cdot 8$ $56 \cdot 1$ $47 \cdot 9$ $41 \cdot 0$ $38 \cdot 9$	$ \begin{array}{r} 0.0\\ 0.2\\ 1.5\\ 5.1\\ 13.7\\ 20.6\\ 33.5\\ 47.2\\ 55.5 \end{array} $	100 100 100 100 100 100 100 100 100	$ \begin{array}{r} 13 \cdot 3 \\ 6 \cdot 4 \\ 4 \cdot 7 \\ 2 \cdot 9 \\ 2 \cdot 6 \\ 0 \cdot 7 \\ 0 \cdot 0 \\ 0 \cdot 0 \\ 0 \cdot 0 \\ 0 \cdot 0 \\ \end{array} $	$\begin{array}{r} 79 \cdot 9 \\ 76 \cdot 5 \\ 66 \cdot 8 \\ 53 \cdot 2 \\ 26 \cdot 1 \\ 19 \cdot 6 \\ 10 \cdot 1 \\ 8 \cdot 3 \\ 2 \cdot 4 \end{array}$	$5 \cdot 9$ $16 \cdot 3$ $26 \cdot 7$ $40 \cdot 0$ $57 \cdot 4$ $56 \cdot 5$ $49 \cdot 6$ $32 \cdot 3$ $41 \cdot 5$	$ \begin{array}{r} 0 \cdot 9 \\ 0 \cdot 8 \\ 1 \cdot 8 \\ 3 \cdot 9 \\ 13 \cdot 9 \\ 23 \cdot 2 \\ 40 \cdot 3 \\ 59 \cdot 4 \\ 56 \cdot 1 \end{array} $	100 100 100 100 100 100 100 100 100
				Kild	lare Health	Authority	Area			
8 9 10 11 12 13 14 15 16	21.5 16.3 9.3 7.2 3.8 2.7 0.0 0.0 0.0	$73 \cdot 6$ $73 \cdot 8$ $66 \cdot 0$ $64 \cdot 5$ $41 \cdot 3$ $28 \cdot 3$ $23 \cdot 4$ $19 \cdot 4$ $13 \cdot 6$	$4 \cdot 2$ 9 · 9 21 · 0 27 · 5 45 · 9 48 · 7 45 · 5 41 · 9 59 · 1	$ \begin{array}{r} 0.7\\ 0.0\\ 3.7\\ 0.8\\ 9.0\\ 20.3\\ 31.1\\ 38.7\\ 27.3 \end{array} $	100 · - 100 · -	$ \begin{array}{c} 16 \cdot 6 \\ 10 \cdot 4 \\ 6 \cdot 6 \\ 7 \cdot 6 \\ 2 \cdot 0 \\ 2 \cdot 1 \\ 4 \cdot 2 \\ 0 \cdot 0 \\ 0 \cdot 0 \\ 0 \cdot 0 \end{array} $	$\begin{array}{r} 75 \cdot 7 \\ 73 \cdot 0 \\ 64 \cdot 2 \\ 47 \cdot 9 \\ 35 \cdot 3 \\ 20 \cdot 0 \\ 21 \cdot 3 \\ 4 \cdot 3 \\ 6 \cdot 9 \end{array}$	$7 \cdot 1$ $16 \cdot 6$ $25 \cdot 2$ $39 \cdot 2$ $48 \cdot 7$ $54 \cdot 5$ $44 \cdot 7$ $55 \cdot 3$ $34 \cdot 5$	$0.6 \\ 0.0 \\ 4.0 \\ 5.3 \\ 14.0 \\ 23.4 \\ 29.8 \\ 40.4 \\ 58.6$	100 100 100 100 100 100 100 100 100
				Wich	dow Health	1 Authorit	y Area			
8 9 10 11 12 13 14 15 16	$\begin{array}{c} 22 \cdot 3 \\ 12 \cdot 2 \\ 7 \cdot 4 \\ 4 \cdot 9 \\ 3 \cdot 4 \\ 5 \cdot 2 \\ 2 \cdot 7 \\ 0 \cdot 0 \\ 0 \cdot 0 \end{array}$	$73 \cdot 7$ $73 \cdot 1$ $73 \cdot 5$ $64 \cdot 6$ $44 \cdot 3$ $34 \cdot 8$ $18 \cdot 9$ $13 \cdot 6$ $26 \cdot 3$	$4 \cdot 0$ $14 \cdot 1$ $18 \cdot 5$ $25 \cdot 0$ $44 \cdot 3$ $40 \cdot 0$ $55 \cdot 4$ $50 \cdot 8$ $21 \cdot 1$	$ \begin{array}{c} 0.0\\ 0.6\\ 5.5\\ 8.0\\ 20.0\\ 23.3\\ 35.6\\ 52.6 \end{array} $	100 - 100	$ \begin{array}{r} 19 \cdot 2 \\ 11 \cdot 4 \\ 6 \cdot 2 \\ 4 \cdot 2 \\ 4 \cdot 2 \\ 4 \cdot 6 \\ 0 \cdot 0 \\ 0 \cdot 0 \\ 0 \cdot 0 \\ 0 \cdot 0 \\ \end{array} $	$\begin{array}{r} 72 \cdot 0 \\ 80 \cdot 1 \\ 68 \cdot 9 \\ 48 \cdot 2 \\ 28 \cdot 7 \\ 21 \cdot 4 \\ 8 \cdot 3 \\ 18 \cdot 4 \\ 8 \cdot 6 \end{array}$	8.8 8.5 21.8 35.5 46.7 52.7 52.4 34.2 47.8	0.0 0.0 3.1 12.1 20.4 21.3 39.3 47.4 43.5	100 100 100 100 100 100 100 100 100

			Decidu	ous Teeth			Permanent Teeth						
	Dublin H. A.		Kildare H. A.		Wicklow H. A.		Dublin H. A.		Kild	are H. A.	Wicklow H. A.		
Age in years	Average	95% Confi ience Range	Average	95% Confidence Range	Average	95% Confidence Range	Average	95% Confidence Range	Average	95% Confidence Range	Average	95% Confidence Range	
$ \begin{array}{r} 4 \\ 5 \\ 6 \\ 7 \\ 8 \\ 9 \\ 10 \\ 11 \\ 12 \\ 13 \\ 14 \\ 15 \\ 16 \\ 17 \\ \end{array} $	4.66 5.72 6.39 6.48 3.75 2.93 1.69 0.99 0.37	$4 \cdot 06 - 5 \cdot 26$ $5 \cdot 39 - 6 \cdot 05$ $6 \cdot 12 - 6 \cdot 66$ $6 \cdot 26 - 6 \cdot 70$ $3 \cdot 56 - 3 \cdot 94$ $2 \cdot 75 - 3 \cdot 11$ $1 \cdot 55 - 1 \cdot 83$ $0 \cdot 87 - 1 \cdot 11$ $0 \cdot 30 - 0 \cdot 44$	4.90 6.25 6.38 5.97 4.96 3.82 2.34 1.06 0.48	$3 \cdot 69 - 6 \cdot 11$ $5 \cdot 57 - 6 \cdot 93$ $6 \cdot 00 - 6 \cdot 76$ $5 \cdot 62 - 6 \cdot 32$ $4 \cdot 64 - 5 \cdot 28$ $3 \cdot 52 - 4 \cdot 12$ $2 \cdot 09 - 2 \cdot 59$ $0 \cdot 89 - 1 \cdot 23$ $0 \cdot 34 - 0 \cdot 62$	4.62 6.46 6.39 4.73 3.12 2.15 0.96 0.39	$4 \cdot 38 - 6 \cdot 86$ $5 \cdot 79 - 7 \cdot 13$ $5 \cdot 96 - 6 \cdot 82$ $6 \cdot 02 - 6 \cdot 76$ $4 \cdot 43 - 5 \cdot 03$ $2 \cdot 86 - 3 \cdot 38$ $1 \cdot 90 - 2 \cdot 40$ $0 \cdot 79 - 1 \cdot 13$ $0 \cdot 29 - 0 \cdot 49$	$ \begin{array}{c} 0.81 \\ 1.66 \\ 2.53 \\ 3.24 \\ 3.80 \\ 4.52 \\ 6.11 \\ 7.34 \\ 8.88 \\ 10.04 \\ 10.55 \\ 11.47 \end{array} $	0.72-0.90 1.56-1.76 2.40-2.66 3.10-3.38 3.64-3.96 4.31-4.73 5.83-6.39 7.02-7.66 8.32-9.44 9.48-10.60 9.92-11.18 10.47-12.47	0.74 1.59 2.40 2.97 3.87 4.24 5.75 6.84 7.93 9.06 9.98 12.00	0.62-0.86 1.43-1.75 2.20-2.60 2.77-3.17 3.57-4.17 3.96-4.52 5.34-6.16 6.37-7.31 7.21-8.65 8.11-10.01 8.62-11.34 10.09-13.91	0.67 1.56 2.32 3.10 3.63 4.83 5.98 6.72 8.34 8.75 9.40 9.95	0.54-0.80 1.39-1.73 2.14-2.50 2.90-3.30 3.39-3.87 4.47-5.19 5.58-6.38 6.20-7.24 7.72-8.96 7.90-9.60 8.03-10.77 7.29-12.61	

TABLE XIX. Average number of DMF teeth and 95 per cent. confidence ranges for children in each area (deciduous teeth ages 4-12 years, permanent teeth ages 6 to 17 years).

TABLE XX. Average number of DMF teeth and 95 per cent. confidence r

		Dublit	h H. A.			Kildar	е Н. А.		Wicklow H. A.				
	Boys		Girls		Boys			Girls	Boys		Girls		
Age in years	Average	95% Confidence Range	Average	95% Confidence Range	Average	95% Confidence Range	Average	95% Confidence Range	Average	95% Confidence Range	Average	95% Confidence Range	
4 5 6 7 8 9 10 11 12	4.46 5.93 6.61 6.61 3.91 2.95 1.87 1.25 0.42	$3 \cdot 75 - 5 \cdot 17$ $5 \cdot 40 - 6 \cdot 46$ $6 \cdot 23 - 6 \cdot 99$ $6 \cdot 30 - 6 \cdot 92$ $3 \cdot 63 - 4 \cdot 19$ $2 \cdot 70 - 3 \cdot 20$ $1 \cdot 66 - 2 \cdot 08$ $1 \cdot 06 - 1 \cdot 44$ $0 \cdot 31 - 0 \cdot 53$	5.08 5.58 6.17 6.33 3.58 2.90 1.52 0.74 0.31	$3 \cdot 94 - 6 \cdot 22$ $5 \cdot 15 - 6 \cdot 01$ $5 \cdot 80 - 6 \cdot 54$ $6 \cdot 02 - 6 \cdot 64$ $3 \cdot 31 - 3 \cdot 85$ $2 \cdot 64 - 3 \cdot 16$ $1 \cdot 34 - 1 \cdot 70$ $0 \cdot 59 - 0 \cdot 89$ $0 \cdot 21 - 0 \cdot 41$	4.75 5.66 6.59 6.09 4.70 4.05 2.60 1.34 0.57	$2 \cdot 54 - 6 \cdot 96$ $4 \cdot 66 - 6 \cdot 66$ $6 \cdot 02 - 7 \cdot 16$ $5 \cdot 64 - 6 \cdot 54$ $4 \cdot 19 - 5 \cdot 21$ $3 \cdot 64 - 4 \cdot 46$ $2 \cdot 23 - 2 \cdot 97$ $1 \cdot 06 - 1 \cdot 62$ $0 \cdot 34 - 0 \cdot 80$	$4 \cdot 96$ $6 \cdot 68$ $6 \cdot 17$ $5 \cdot 85$ $5 \cdot 18$ $3 \cdot 58$ $2 \cdot 05$ $0 \cdot 84$ $0 \cdot 40$	$3 \cdot 42 - 6 \cdot 50$ $5 \cdot 76 - 7 \cdot 60$ $5 \cdot 66 - 6 \cdot 68$ $5 \cdot 32 - 6 \cdot 38$ $4 \cdot 77 - 5 \cdot 59$ $3 \cdot 14 - 4 \cdot 02$ $1 \cdot 70 - 2 \cdot 40$ $0 \cdot 62 - 1 \cdot 06$ $0 \cdot 24 - 0 \cdot 56$	5.00 6.76 6.63 6.39 5.04 3.43 2.27 1.19 0.43	$3 \cdot 24 - 6 \cdot 76$ $5 \cdot 74 - 7 \cdot 78$ $6 \cdot 06 - 7 \cdot 20$ $5 \cdot 86 - 6 \cdot 92$ $4 \cdot 63 - 5 \cdot 45$ $3 \cdot 04 - 3 \cdot 82$ $1 \cdot 95 - 2 \cdot 59$ $0 \cdot 93 - 1 \cdot 45$ $0 \cdot 28 - 0 \cdot 58$	6.03 6.18 6.09 6.40 4.43 2.83 2.04 0.75 0.35	$4 \cdot 27 - 7 \cdot 79$ $5 \cdot 30 - 7 \cdot 06$ $5 \cdot 42 - 6 \cdot 76$ $5 \cdot 89 - 6 \cdot 91$ $4 \cdot 01 - 4 \cdot 85$ $2 \cdot 48 - 3 \cdot 18$ $1 \cdot 67 - 2 \cdot 41$ $0 \cdot 54 - 0 \cdot 96$ $0 \cdot 21 - 0 \cdot 49$	

(a) Deciduous Teeth ages 4 - 12 years.

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(b) Permanent Teeth, ages 6 to 17 years.

		Dublir	H.A.			Kildar	е Н. А.		Wicklow H. A.				
	Boys		Girls		Boys			Girls	Boys		Girls		
Age in years	Average	95% Confidence Range	Average	95% Confidence Range	Average	95% Confidence Range	Average	95% Confidence Range	Average	95% Confidence Range	Average	95% Confidence Range	
6	0.72	0-60-0-84	0.90	0.77-1-03	0.68	0.51-0.85	0.79	0-61-0-97	0.71	0.54-0.88	0.62	0.43-0.81	
7	1.56	1.42-1.70	1.77	1.62-1.92	1.57	1.35-1.79	1.61	1.37-1.85	1.35	1.13-1.57	1-81	1.55-2.07	
8	2.43	2.26-2.60	2.63	2.44-2.82	2-35	2.05-2.65	2.45	2.18-2.72	2.20	1.95-2.45	2.43	2.18-2.68	
9	2.93	2.74-3.12	3.56	3.37-3.75	2.76	2:49-3:03	3.20	2.91-3.49	3.17	2.86-3.48	3.03	2.76-3.30	
10	3.60	3.36-3.84	4.00	3.77-4.23	3-85	3.41-4.29	3.89	3.49-4.29	3-42	3.10-3.74	3.85	3-48-4-22	
11	4.30	4.00-4.60	4.74	4.45-5.03	3.78	3-42-4-14	4.61	4.21-5.01	4-20	3.78-4.62	5.37	4.82-5.92	
12	5.83	5-42-6-24	6.38	5.99-6.77	5.23	4.70-5.76	6.21	5.59-6.83	5.28	4.82-5.74	6.72	6.06-7.38	
13	7.18	6.71-7.65	7.47	7.05-7.89	6.30	5-65-6-95	7.26	6.60-7.92	6-26	5.50-7.02	7.11	6-39-7-83	
14	8.22	7.51-8.93	9.66	8.79-10.53	7.78	6.83-8.73	8.05	6.99-9.11	7.55	6.65-8.45	9.02	8.17-9.87	
15	9.55	8.86-10.24	10.86	$9 \cdot 91 - 11 \cdot 81$	8.52	6-91-10-13	9.43	8.22-10.64	8.78	7.74-9.82	8.71	7.20-10.22	
16	10.36	9-55-11-17	10.84	9.84-11.84	7.86	6-29-9-43	11.59	9-64-13-54	9.26	6.96-11.56	9.52	7.71-11.33	
17	11.49	10.25-12.73	11.44	9.65-13.23	11.57	9.20-13.94	13.29	9.65-16.93	9.40	5.99-12.81	10.50	5.79-15.21	

Consigned and the state and the second second second	ranges 1	for	boys	and	girls	in	each	area.
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APPENDIX I. MEDICAL RESEARCH COUNCIL OF IRELAND DENTAL CARIES SURVEY, 1961

Sex: M. F.

Ser. No. :.....

TRUE & TOTAL	10.777	1221	100,000	1000
neatin	au	1.11	UKI	1.1

School :	Type of School : National-Infant, Boys, Girls, Mixed ;
Class or Standard :	
Name	Home Address
Date of Birth	
Public Piped Water Supply : Home : Yes, No. If "yes," Local Author	ity Source
School: Yes, No. If "yes," Local Author	ity Source
Reason for non-examination	

DENTAL CARIES CHART



SUMMARY

d	m	f	dmf	Intact	Total

D	М	F	DMF	Intact	Total

APPENDIX II.

Schools selected in each area.

DUBLIN CITY - NATIONAL SCHOOLS

Scoil Muire, Marlboro Street. Scoil Ar Slanaightheora, Denmark Street. Chapelizod No. 2. Kildare Place (Girls). St. Joseph's, West Liffey Street. St. Kevin's Blackpitts (Boys) (Senior). St. Kevin's, Blackpitts (Boys) (Junior). St. Columba's, North Strand. Scoil Cholmchille, Marlboro Street (Boys). The Irish School, Marlboro Street. The Parish School, Finglas. Tranquilla, Upper Rathmines (Boys). Tranquilla, Upper Rathmines (Girls). Scoil na Maidne Muire, Realt na Mara. Harolds Cross (Girls). Haddington Road (Boys). C.B.S., Crumlin. Scoil Chaitriona, Cabra. Our Lady of Good Counsel, Mourne Road. Scoil an Leanbh Iosa, Larkhill. St. Joseph's, Terenure. Scoil Una Naofa, Crumlin. St. Audeon's, Cook Street. Scoil Muire na Freastógála, Walkinstown. Scoil an Chroidhe Naofa, Glasnevin. Inchicore Model School. St. Kevin's, Grantham Street. St. Mary's, Rathmines. Scoil Naomh Peadar (Girls), Phibsboro. Scoil Naomh Peadar (Infants), Phibsboro. Townsend Street Convent. St. Andrew's, Pearse Street. Josephian School, Mountjoy Street. St. Gabriel's, Cowper Street (Infants). St. Gabriel's, Cowper Street. Pro-Cathedral Infant Schools, Lr. Rutland St. St. Clare's Convent, Harold's Cross.

C.B.S., Francis Street. C.B.S. North Brunswick Street. Scoil Muire, Marlboro Street (Girls). St. James's Convent, Basin Lane. Central Model Schools (Girls). King's Inn Street Convent. Golden Bridge Convent, Inchicore. Stanhope Street Convent. Warrenmount Convent. Our Lady of Good Counsel, Mourne Road. Presentation Convent, Terenure. Baggot Street, Convent. George's Hill Convent. Weaver's Square Convent. St. Vincent's Convent, Nth. William Street. St. Brigid's Convent, Haddington Road. James's Street, C.B.S. O'Connell Schools, Nth. Richmond Street. Corpus Christi, Home Farm Road. Scoil Muire Gan Smál, Tyrconnell Road. Scoil Eoin Baisde, Seafield Road, Clontarf. St. Louis (Girls), Rathmines. Scoil Una Naofa, Crumlin. Our Lady of Good Counsel, Mourne Road. Scoil an Leanbh Iosa, Larkhill. Scoil Iosagáin, Ballyfermot. Scoil Muire Ogh, Dolphin's Barn. Dominican Convent School, Ballyfermot. Scoil Aine (Girls), Raheny. Naoi Scoil Ide, Raheny. Loreto Convent, Rathfarnham. Scoil Feargail, Finglas. Scoil na mBraithre Críostaí, Walkinstown. Scoil Muire na Freastógála, Walkinstown. St. Brigid's Junior School, Finglas. St. Raphaels' (2) Junior Girls, Ballyfermot.

DUBLIN COUNTY - NATIONAL SCHOOLS

Clochar San Dominic, Dun Laoghaire.
C.B.S., Dun Laoghaire.
St. Joseph's Convent, Tivoli Road, Dun Laoghaire.
Scoil na Maighdine Muire, Milltown.
Loreto Convent, Dalkey.
St. Mary's Convent, Lucan.
Rush (Girls).
Tallaght (Boys).
Firhouse, Tallaght.
Crumlin (Boys). Kinsealy (Girls). Glenasmole. Kingstown (Mixed). St. Andrew's, Lucan (Lucan No. 2). Newcastle — Lyons. St. John the Baptist, Blackrock. St. Peter and Paul (Girls), Balbriggan. Saggart. Ring, Delahasey, Balbriggan. Booterstown (Mixed). St. Brigid's Blanchardstown.

CITY AND COUNTY DUBLIN - SECONDARY SCHOOLS

Blackrock College. Marian College, Lansdowne Road. Coláiste Caoimhin, Mt. Merrion. Synge Street, C.B.S. Chanel College, Coolock. St. Vincent's C.B.S., Glasnevin. O'Connell Schools, Nth. Richmond Street. St. Joseph's C.B.S., Fairview. St. Joseph's C.B.S., Fairview. St. Paul's, Raheny. De La Salle College, Skerries. James's Street C.B.S. Slí Eblana, Dun Laoghaire. St. Mary's Dominican Convent, Cabra. Holy Faith Convent, Dominick Street.

Loreto College, Crumlin Road. St. Louis High School, Rathmines. St. Mary's Holy Faith Convent, Clarendon Street. Alexandra College, Earlsfort Terrace. Dominican Convent, Sion Hill. Convent of the Sacred Heart, Monkstown. Manor House, Raheny. Convent of the Sacred Heart, Mount Anville. Holy Faith Convent, Haddington Road. Dominican Convent, Muckross Park. Cross and Passion Convent, Maryfield, Drumcondra. Sandymount High School.

Holy Faith Convent, Glasnevin.

JUNIOR DEPARTMENTS

Belvedere College. Loreto Abbey, Dalkey. Loreto College, St. Stephen's Green. Loreto Junior School, Foxrock. Santa Sabina, Sutton. Holy Faith Convent, Clontarf. Holy Faith Convent, Skerries. Ard-Scoil Eanna, Crumlin Road. Presentation Brothers College, Glasthule. High School, Harcourt Street. Loreto Convent, Beaufort, Rathfarnham. Diocesan Girls School, Adelaide Road. Sandford Park, Ranelagh.

PRIVATE SCHOOLS

Rathgar Junior and Kindergarten.

CITY AND COUNTY DUBLIN - VOCATIONAL SCHOOLS

Rathmines Killester. Ringsend. Bolton Street. Cabra. 1, Parnell Square. Balbriggan. Dun Laoghaire.

CO. KILDARE — NATIONAL SCHOOLS

Athgarvan, Curragh. Robertstown, Naas. Scoil Bride, Milltown, Newbridge. Allen, Kilmcague. Scoil Bride, Kill. Kildangan (Boys), Monasterevan. Sallins (Girls), Naas. Crookstown (Boys), Ballitore. Derrinturn (Boys), Carbury. Sallins (Boys), Naas. Kilcock C.B.S. Kildangan (Girls), Monasterevan. Leixlip (Girls). Naomh Muire (Girls), Ballymore Eustace. Naas (2). St. James's, Castledermot. St. Joseph's, Halverstown, Kilcullen. Ballyshannon, Kilcullen. Scoil Phadraig, Johnston Bridge. Cadamstown, Moyvally. Cadamstown, Moyvally. Newtown, Enfield. Churchtown, Athy. Kilshanroe, Enfield. An Cloc Mor, Rathvilly. Scoil Naomh Treasa an Leanbh Iosa, Clongorey Straffan. Timahoe, Coolcarrigan. Prosperous, Naas.

CO. KILDARE - LARGE NATIONAL SCHOOLS

Kildare Monastery. Naas C.B.S. Athy C.B.S.

Convent, Monasterevan. Presentation Convent, Maynooth. Naas Convent, Kildare Convent. St Michael's Convent, Athy. Coill Dubh, Naas. Newbridge (St. Conleth's) Infants. Newbridge (St. Conleth's) Girls.

Naomh Conlaedh, Newbridge. Curragh Camp (Boys). Curragh Camp (Girls). Kilcock Convent. St. Brigid's Convent, Celbridge. St. Brigid's (Girls), Rathangan.

CO. KILDARE - SECONDARY AND VOCATIONAL SCHOOLS

St. Wolstan's, Celbridge. Christian Brothers, Athy. Mercy Convent, Athy. Holy Family Convent, Newbridge. Mercy Convent, Naas. C.B.S. Naas. St. Joseph's Academy, Kildare. Technical School, Athy. Technical School, Naas. Technical School, Newbridge.

CO. WICKLOW - NATIONAL SCHOOLS

St. Patrick's, Avoca. Kilmacanogue, Bray. Holy Rosary, Ashford. Scoil Muire agus Gearoid, Enniskerry. Scoil Lorcáin Naofa, An Tochar. Delgany. Moneystown, Roundwood. Valleymount. Aughrim (Boys). Rathdrum (Boys). Clochar Bride, Kilcoole, Holy Faith Convent, Newtownmountkennedy. Knockanarigan, Donard. Kilcommon, Tinahely. Blessington No. 1. Trooperstown, Moneystown. Killoughter, Ashford. Rathdrum, No 2. Donoughmore, Donard.

Stratford Lodge, Baltinglass. Ath na Ceartan, Roundwood. Clara Vale, Rathdrum. Davidstown, Donard. Wicklow No. 2, Wicklow. Barraniskey, Avoca. Brittas Bay. Ballyduff, Ashford. Johnstown, Arklow. Glendalough. Cuttlestown, Enniskerry. Newcastle No. 1. Lacken, Blessington. Ballintemple, Avoca. Caoimhin Naofa, Hollywood. Parkbridge, Clonegal. Donard. Shillelagh No 2. Tinahely.

CO. WICKLOW - LARGE NATIONAL SCHOOLS

St. Cronan's (Boys), Bray.
C.B.S., Greystones.
St. Patrick's, Wicklow.
Arklow (Boys).
St. Joseph's Presentation Convent, Baltinglass.
St. Brigid's Convent, Greystones.
St. Michael's (Girls), Arklow.

Dominican Convent, Wicklow. St. Philomena's, Ravenswell, Bray. Loreto Convent, Bray. Carnew. St. Mary's Blessington. St. Joseph's, Rathnew.

CO. WICKLOW - SECONDARY AND VOCATIONAL SCHOOLS

Mean Scoil Naomh Breanndain, Bray. Presentation College, Bray. Loreto Convent, Bray. Holy Faith Convent, Greystones. De La Salle College, Wicklow. Technical School, Baltinglass. Technical School, Wicklow. Technical School, Bray. Technical School, Arklow.

APPENDIX III.

Names of dental surgeons who carried out the field work for the dental caries surveys

Miss Louise Cunniffe Miss Eithne O'Keeffe Miss Mary F. Healy Miss Kathleen J. O'Brien Dr. Mary Donohue Mr. T. J. Benson Mr John F. Bray Mr. John F. Bray Mr. Justin D. Kidney Mr. Liam Morrissey Mr. John J. B. Hayes Mr. B. A. Kelly Miss Patricia Deborah M. Ryan

seconded	by	Galway County Council
33	33	Dublin Health Authority
53	33	Tipperary (S.R.) Co. Council
22	27	Laois County Council
**	3 7	Cavan County Council
33	33	Kildare County Council
33	39	Westmeath County Council
>>	22	Kerry County Council
33	22	Offaly County Council
**	35	Limerick Health Authority
23	72	Donegal County Council







HEALTH (FLUORIDATION OF WATER SUPPLIES) ACT, 1960

PART II.

REPORT

on the results of analysis of each public piped water supply in the Dublin, Kildare and Wicklow health authority areas.





HEALTH (FLUORIDATION OF WATER SUPPLIES) ACT, 1960.

Results of analyses of water supplied to the public by sanitary authorities through pipes in the Dublin, Kildare and Wicklow Health Authority Areas.

Section 2 of the Health (Fluoridation of Water Supplies) Act, 1960, empowers the Minister for Health to make Regulations as to the manner in which and the extent to which health authorities shall arrange for the fluoridation of water supplied to the public by sanitary authorities through pipes. Before making such Regulations in respect of any health authority, the Minister must, under the same Section of the Act, cause to be made

an analysis or series of analyses of the quantities of fluorine and such other constituents as the Minister may determine in the water supplied by sanitary authorities through pipes to the public in the functional area of the health authority, and

cause to be presented to each House of the Oireachtas a report on the analysis or analyses so made.

In accordance with these requirements this report of the results of such analyses carried out in the Dublin Health Authority area, the Kildare Health Authority area and the Wicklow Health Authority area is presented to each House of the Oireachtas.

Tables 1, 2 and 3 give the results of the analyses in the Dublin, Kildare and Wicklow Health Authority areas, respectively. The water samples from the Dublin Health Authority area were analysed by the Public Analyst for the City and County of Dublin, and those from the Kildare and Wicklow Health Authority areas were analysed by the Galway Region Public Analyst. The method of analysis used by both analysts was the same, and was in conformance with international practice. This method enables the fluorine content of water to be determined down to the level of 0.1 parts per million.

In the Dublin Health Authority area the results of the analyses of the water supplies show that the fluorine content is less than 0.1 parts per million except in the following instances :

10.00

1.1.1

1.1.1

1000

1000

Balbriggan-Skerries supply

0.15 p.p.m.

Rush supply.................. $\left\{ \begin{array}{c} \operatorname{less than 0 \cdot 1 \ p.p.m.} \\ \operatorname{and 0 \cdot 15 \ p.p.m.} \end{array} \right\}$ Kiltiernan-Ballaly supply............... $\left\{ \begin{array}{c} \operatorname{0 \cdot 20 \ p.p.m.} \\ \operatorname{and 0 \cdot 15 \ p.p.m.} \end{array} \right\}$ Barnacullia supply............... $\left\{ \begin{array}{c} \operatorname{less than 0 \cdot 1 \ p.p.m.} \\ \operatorname{and 0 \cdot 15 \ p.p.m.} \end{array} \right\}$

In the Kildare and Wicklow Health Authority areas the results of the analyses of the water supplies show that fluorine was absent (i.e. less than 0.1 parts per million) in all cases.

DEPARTMENT OF HEALTH

November, 1961.

Water Supply Analysed	Date of Analyst's Report	Solids in Solution	Solids in Suspension	Albuminoid Ammonia (as N)	Free Ammonia (as N)	Nitrous Nitrogen (N)	Nitric Nitrogen (N)	Chlorides (as 'C1)	Sulphates (as 'SO4)	Fotal Hardness (as CaCO _a)	Oxygen absorbed from permanganate in 4 hours
		-		1.	-	1	1,000,0)00 par	ts of th	e samp	le cont
Dublin Corporation Supplies :											
(a) Vartry	12/6/*61	-	Slight	0.100	0.020	Trace	Trace	12.0	Trace	30.0	1.07
33	26/6/*61	-	Slight	0.090	0.020	Trace	Trace	13.0	Trace	30.0	1.07
33	11/7/*61	-	Slight	0.060	0-010	Trace	Trace	13.0	Trace	30-0	1.20
(b) Dodder	12/6/*61		Slight	0-020	0-050	0.005	Trace	10.0	11+1	65.0	0.53
33	26/6/*61	-	Slight	0.060	0.050	0.005	Trace	12.0	11+1	65.0	0-67
	11/7/261	-	Slight	0.030	0.010	0.002	Trace	12.0	12.5	65.0	0.80
(c) Liffey	12/6/*61	-	Slight	0.020	0-020	Trace	Trace	10.0	9+8	60-0	0.80
,,,	26/6/°61	-	Slight	0.060	0.020	Trace	Trace	10.0	14.2	60.0	0.67
	11/7/*61	-	Slight	0.010	0.010	Trace	Trace	11.0	11.4	65.0	0.93
Other Supplies in County Dublin Area Balbriggan-Skerries	11/7/261	+	Slight	0+140	0-020	0.002	Trace	20.0	9.8	160-0	1.73
	25/7/*61	_	Slight	0-160	0-030	Faint Trace	6.30	34.0	25.7	240-0	1.73
	11/7/*61	-	Slight	0.150	0-020	Faint Trace	Trace	21.0	9.8	160-0	1.60
	25/7/*61	-	Slight	0-180	0.020	Faint Trace	Trace	23.0	14-7	160-0	2.00
Rush	11/7/61	-	Slight	0.360	0.080	0.003	4.73	50.0	17.2	360.0	2.40
	25/7/261		Slight	0.020	0.020	0.001	1.26	64-0	17.0	360-0	0.53
11 (at Rogerstown)	11/7/261	-	Very Slight	0.030	0-130	0.003	Trace	122-0	28.5	380-0	0.27
Garristown	15/7/°61	-	Slight	0.050	0-020	Faint Trace	Trace	13.0	11.4	260.0	0.13
	25/7/261	-	Slight	0.050	0.010	Faint	1.26	15.0	9.8	280.0	0.13

TABLE 1. Analysis of Samples of Each Public Piped Water Supply in the Dublin Health Authority Area.





2230) 224 (21) <u>-</u>		ACCOUNTS AND AN ADDRESS	Seconds in the D	ublin Health	Authority Area	(cont'd)
A SALVAN	maryais or samples of Each	rublic riped water	suppry in the D	uonn meann a	authorny mea	(come a.).

Water Supply Analysed	Date of Annlyst's Report	Solids in Solution	Solids in Suspension	Albuminoid Ammonia (as N)	Free Ammonia (as N)	Nitrous Nitrogen (N)	Nitric Nitrogen (N)	Chlorides (as 'C1)	Sulphates (as 'SO ₁)	Total Hardness (as CaCO _a)	Oxygen absorbed from permanganate in 4 hours	Colour (Hazen Units)	Odour	Appearance	Reaction (pH)	Residual Chlorine (C1)	Iron (Fc)	Turbidity (in Units)	Fluorine (F)
							1,000,0	00 par	ts of th	e samp	sle con	tained	the part	s as unde	er				
Kiltiernan-Ballaly	15/7/*61	+	Slight	0-070	0.020	Very Faint Trace	Trace	26.0	Trace	120.0	0-67	5.0	None	Clear & Bright	7.0	-	-	-	0.20
22 22	25/7/'61	-	Slight	0.080	0.040	Faint Trace	Trace	24.0	Trace	90.0	0.67	10.0	None	Clear	7.6	-	-	-	0-15
Barnacullia	15/7/*61	+	Some	0.040	0.040	0-003 Faint	2.21	16-0	Trace	200-0	0-13	30.0	None	Slight Dull-	6-6	-	-		Less than 0·1
33	25/7/261		Slight	0.050	010	Trace	Trace	15.0	Trace	45.0	1-33	15.0	None	Clear	7.5	-	-	-	0.15

TABLE 2. Analysis of Sample of Each Public Piped Water Supply in the Kildare Health Authority Area.

Water Supply Analysed	Date of Analyst's Report	Solids in Solution	Solids in Suspension	Albuminoid Ammonia (as N)	Free Ammonia (as N)	Nitrous Nitrogen (N)	Nitric Nitrogen (N)	Chlorides (as 'C1)	Sulphates (as 'SO ₄)	Total Hardness (as CnCO _a)	Oxygen absorbed from permanganate in 4 hours	Colour (Hazen Units)	Odour	Appearance	Reaction (pH)	Residual Chlorine (C1)	Iron (Fe)	Turbidity (in Units)	Fluorine (F)
						1,	,000,00	0 pa	rts	of t	he sam	ple contai	ned the	parts as	under	r			
Naas (Regional Water Supply) Maynooth (Regional	10/7/'61	80	Very Slight Very	0.03	0.004	Absent	Trace	8	14	47	0.92	Colour- less Colour-	None	Clear & Bright Clear &	7.80	Absent	Absent	0.4	Absent
Water Supply)	10/7/201	79.0	Slight	0.03	0.004	Absent	Trace	0	14	48	0.84	Colour-	None	Clear &	7.35	Absent	Absent	0.5	Absent
Athy	10/7/°61	238	Slight	0-05	0.040	Absent	Trace	12	42	176	0.16	less Colour-	None	Bright Clear &	7.25	Absent	Absent	0.1	Absent
Monasterevan	10/7/°61	386	Slight	0.026	0.030	Absent	Trace	14	163	344	0.44	less Colour-	None	Bright Clear &	7.30	Absent	Absent	0.55	Absent
Castledermot	10/7/*61	346	Slight	0.025	0.020	Absent	Trace	12	12	304	0.32	less Colour-	None	Bright Clear &	7.5	Absent	Absent	$0 \cdot 1$	Absent
Ballitore	10/7/°61	341	Slight	0-048	0.010	Trace	Trace	12	162	260	0-68	less	None	Bright	7.8	Absent	Absent	1.7	Absent

to a second s		-				_		-		_	-	-		and the second second	-	-			
Water Supply Analysed	Date of Analyst's Report	Solids in Solution	Solids in Suspension	Albuminoid Ammonia (as N)	Free Ammonia (as N)	Nitrous Nitrogen (N)	Nitric Nitrogen (N)	Chlorides (as 'CI)	Sulphates (as 'SO4)	Total Hardness (as CaCO.,)	Oxygen absorbed from permanganate in 4 hours	Colour (Hazen Units)	Odour	Appearance	Reaction (pH)	Residual Chlorine (Cl)	Iron (Fe)	Turbidity (in Units)	Fluorine (F)
		-					1,000,0	000 1	arts of t	he s	mple	contained	the par	rts as und	cr			-	
Arklow	11/7/'61	95	Slight	0.04	0.012	Absent	Trace	20	Trace	48	1.28	Colour- less	None	Clear	7.2	Absent	Absent	2	Absent
Ballycoogue	11/7/°61	75-0	Slight	0.013	0-008	Absent	1.03	14	Trace	39	0.32	less	None	Bright	7.2	Absent	Absent	0.1	Absent
Aughrim	11/7/*61	43	Slight	0.032	0.008	Absent	Trace	14	Trace	14	0.92	less	None	Bright	7.2	Absent	Absent	0.2	Absent
Annamoe	13/7/'61	53	Very Slight	0.02	0.004	Absent	Trace	12	Trace	8	1.04	Colour- less	None	Clear & Bright	6.0	Absent	Absent	1.7	Absent
Laragh	13/7/'61	50	Some	0.06	0.008	Absent	Trace	14	Trace	12	6.44	40	None	Slight Dullness	6.5	Absent	Absent	2.8	Absent
Newcastle	13/7/'61	148	Slight	0.04	0.004	Absent	0.69	16	14	100	0.44	less	None	Bright	7.4	Absent	Absent	0.5	Absent
Roundwood Wicklow Town	13/7/°61	76	Slight	0.06	0.012	Absent	0.69	14	8	36	0.68	less Colour-	None	Bright Clear &	7.5	Absent	Absent	0.5	Absent
(in part) Wicklow Regional: Ashford, Rathnew,	14/7/*61	164	Slight	0.064	0.008	Trace	Trace	20	8	88	2.44	less	None	Bright	7.6	Absent	Absent	1.2	Absent
and Wicklow Town (in part)	14/7/'61	107	Very Slight	0.040	0.004	Absent	Trace	14	17	23	1.04	Colour- less Colour-	None	Clear & Bright Clear &	7.4	Absent	Absent	0.5	Absent
Rathdrum	14/7/*61	77	Slight	0.02	0.008	Trace	Trace	12	8	22	0.28	less	None	Bright	7.6	Absent	0-04	0.6	Absent
Glenealy	18/7/*61	88	Some	0.064	0.064	Absent	Trace	18	6	30	1.28	less	None	Bright	7.1	Absent	Absent	0.8	Absent
Annacurra	18/7/*61	101	Some	0.032	0-004	Absent	2.4	17	7	26.5	0.28	less	None	Bright	7.7	Absent	Absent	0.5	Absent
Avoca	18/7/261	138	Some	0.08	0.004	Absent	Trace	20	5	47	2.76	15	None	Dullness	7.25	Absent	Absent	1.2	Absent
Tinahely	19/7/'61	55	Slight	0.056	0.048	Absent	Trace	12	6	12	1.76	Colour- less	None	Clear & Bright	7.4	Absent	Absent	0.55	Absent
Ballynockan	20/7/'61	33	Very Slight	0.024	0-004	Absent	Trace	10	4	6	0.8	Colour- less	None	Clear & Bright	6.6	Absent	Absent	0.5	Absent
Lacken	20/7/*61	78	Ap- pre- ciable	0.064	0.02	0.01	Trace	10	8	24	1-36	Colour- less	None	Cloudy	6.75	Absent	Absent	6.5	Absent

TABLE 3. Analysis of Sample of Each Public Piped Water Supply in th

	he	Wicklow	Health	Authority	Area.
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	yst's	uo	insion	nmonia	(88 N)	(N) 8	(N)	â	(*05		ed from n 4 hours	Units)				ine (C1)		Jnits)	
Water Supply Analysed	Date of Anal Report	Solids in Solut	Solids in Susp	Albuminoid Ar (as N)	Free Ammonia	Nitrous Nitrog	Nitric Nitroger	Chlorides (as ³	Sulphates (as "	Total Hardness (as CaCO _a)	Oxygen absorb permanganate i	Colour (Hazen	Odour	Appearance	Reaction (pH)	Residual Chlor	Iron (Fe)	Turbidity (in L	Fluorine (F)
							1,00	0,000	parts	of the	samp	le contain	ed the p	art as un	der				
Donard	20/7/'61	182	Slight	0-04	0.004	Absent	0.51	14	10	113	0.76	Colour- less	None	Clear & Bright Clear &	6.6	Absent	Absent	0-8	Absent
Valleymount	20/7/"61	41	Slight	0.028	0.004	Trace	0.69	10	5	15	0-36	less	None	Bright	5.8	Absent	Absent	0.55	Absent
Hollywood	20/7/*61	151	Slight	0.028	0.004	Trace	1.37	12	6	97	0.68	less	None	Bright	$7 \cdot 1$	Absent	Absent	0-5	Absent
Dunlavin	20/7/°61	391	Very Slight Very	0.032	0.008	Trace	1.37	20	12	263	0-64	Colour- less	None	Clear & Bright	7-2	Absent	Absent	0.6	Absent
Blessington	20/7/*61	91	Slight	0.056	0.004	Trace	Trace	10	9	45	0.88	less	None	Bright	6.75	Absent	Absent	0.8	Absent
Bray	21/7/'61	40	None	0+040	0.020	Trace	Trace	12	4	20	1.08	less	None	Bright	6.6	Absent	Absent	0.4	Absent
Kirikee (Grecane, Rathdrum)	24/7/°61	130	None	0.028	0.004	Absent	3.78	16	21	83	0.72	Colour- less	None	Clear & Bright	7.2	Absent	Absent	0+80	Absent
Coolboy	24/7/*61	25	None	0.028	0.003	Absent	Trace	8	3	11	0.76	Colour- less	None	Clear & Bright	6.7	Absent	Absent	0.5	Absent
Shillelagh	24/7/*61	85	None	0.064	0.048	Trace	Trace	14	6	25	2.9	30	None	Clear & Bright	6.7	Absent	Absent	0.6	Absent
Carnew	26/7/*61	82	Very Slight	0.08	0.02	Trace	1.37	16	8	32	0.76	Colour- less	None	Clear & Bright	7.4	Absent	Absent	1.2	Absent
Windgates	28/7/'61	351	Slight	0.04	0.016	Absent	Trace	22	24	292	0.60	Colour- less	None	Clear & Bright	7.5	Absent	Absent	0.1	Absent
Enniskerry	28/7/*61	79	Very Slight	0.032	0.012	Absent	Trace	12	15	20	0.64	Colour- less	None	Clear & Bright	7.8	Absent	Absent	0.1	Absent
Knockenarrigan	31/7/261	41	Slight	0.02	0.004	Absent	Trace	8	5	13	0.64	Colour- less	None	Clear & Bright	7.5	Absent	Absent	0.5	Absent
Stratford -on-Slaney	31/7/*61	58	Very Slight	0.032	0-004	Absent	Trace	8	6	24	0.2	Colour- less	None	Clear & Bright	6-8	Absent	Absent	0.1	Absent
Baltinglass	5/8/*61	323	Slight	0.032	0.008	Absent	2.58	12	15	264	0.48	less	None	Bright	7.8	Absent	Absent	0.55	Absent

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Table 3. Analysis of Sample of Each Public Piped Water Supply in the Wicklow Health Authority Area (Cont'd.).



1704.E.32798/A.3.750.3/62.A.T.&Co.,Ltd.,G.9.