

NOTES ON DENTAL INSPECTION AND TREATMENT OF SCHOOL CHILDREN AT CAMBRIDGE.

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THE first annual report of the Cambridge Dental Institute for School Children has just been issued, and as this is, I believe, the only institution of the kind in the country, a short account of its origin and of the work done may prove of interest.

The Institute owes its origin to Dr. George Cunningham, the honorary director, to the generosity of Mr. Sedley Taylor, who supplied the necessary funds, and to Dr. Dalton, Chairman of the Public Health Committee. The scheme formulated by these gentlemen was laid before the Education Committee with the result that in April, 1907, the council agreed to a proposal for the inspection of the teeth of the children in the elementary schools, and in October, Mr. A. W. Gant was appointed borough dentist. As the local education authority could not at that time legally undertake treatment, the share of the cost borne by the Corporation has been £50 per annum for inspection only, while the rest of the expense has been borne by Mr. Sedley Taylor. This has amounted to about £360 a year, and includes salaries, rents, materials and printing, but not the initial cost of furnishing and fittings. The premises are of the simplest character, and consist of a waiting room (provided with rocking horses, etc.), and a well-lighted surgery.

The examination of the children was originally conducted along with the general medical inspection, but as it is considered better to examine every child in each school, this arrangement has now been discontinued, and the dental inspection is conducted quite independently. It is found that by this method the work proceeds more rapidly, and the disturbance of the school work is trifling as only half a dozen are present at a time. All the children are examined upon the school premises and during school hours. It might be mentioned that attendance for treatment, although not on school premises, counts as school work.

Early in its career it was found that unless the parents could be reached and made to take an interest in the work, the life of the clinic would be seriously threatened. This

object was achieved by holding meetings for mothers, at which the objects of the undertaking were explained, and the great benefits which the children would receive were pointed out. By enlisting also the co-operation of the teachers, by the distribution of pamphlets, and by popular lectures, the clinic soon became widely known and its success assured.

Experience has also shown that when fillings were done first the children would not afterwards attend for extractions. The rule now is therefore to perform the necessary extractions before beginning any conservative work. A practical point of some importance as likely to affect the popularity of the clinic among the children, is that no extractions whatever are ever done at the clinic. The object of this is that it should never become associated in the childrens' minds with any painful operation, and consequently arrangements have been made for the dentist to attend at Addenbrooke's Hospital one afternoon a week for this work alone.

The forenoons are devoted to work in the clinic, the younger children being brought generally by their parents or teachers, but some after their first visit come alone. The schools are visited in the afternoons for the purpose of inspection. All the work is carried out by Mr. Gant with the help of a nurse assistant who looks after the premises and instruments, and who takes notes of the inspections at the schools.

With regard to the examinations, these are made with the aid of probe and mirror, each tooth being examined, and its condition carefully recorded upon a dental chart issued by the British Dental Association. The number of children examined at school averages twenty per hour, and the number treated at the clinic about six each morning and about four in an afternoon; however, many of the children have to attend two or even three times before the work is completed (one filling takes generally about twenty minutes).

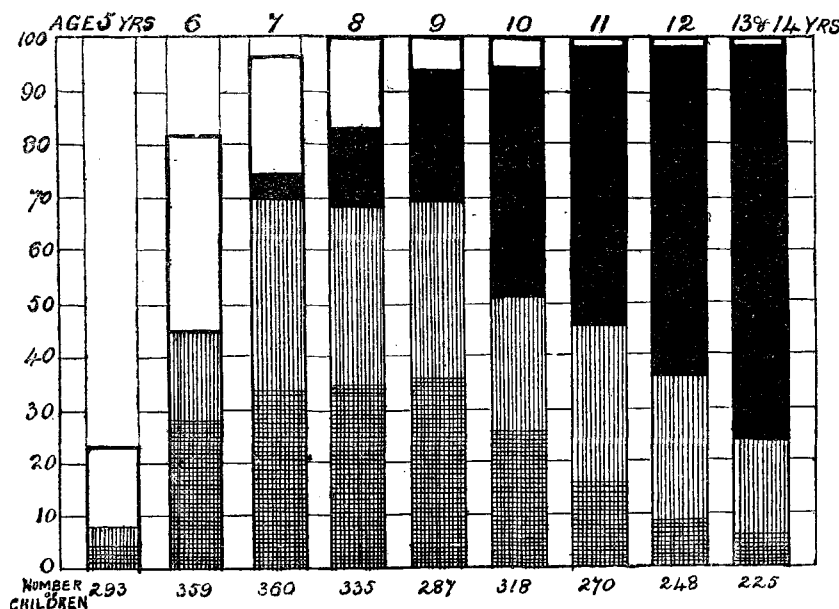
The time spent in examining each child varies considerably, the elder ones taking a much longer time than the very young children on account of their greater number of permanent teeth requiring examination. With very young children a mirror will generally suffice to discover all the caries in the temporary teeth, as it is unfortunately very extensive. In examining the permanent teeth it is necessary to explore each one thoroughly with a fine

probe in order to detect the earliest traces of caries beneath the food caries which covers them.





The actual amount of work accomplished has been limited to some extent owing to the Institute being only in its first year of operation, but it gives a useful indication of the work which a dentist, devoting his whole time to this work, may carry out, and affords a demonstration of the extreme need for attention to the teeth of elementary school children.

all ages beyond 7 years. The actual percentages are shown in the diagram. Excluding the temporary teeth, the number of children with *sound permanent* teeth was 360, or 15 per cent. The percentages at each year is also shown in the diagram.

The alarming rapidity with which caries is spread if no treatment is undertaken is shown in the last column of the diagram, and also in another part of the annual report which shows that 50 per cent. of the children have nine or more permanent teeth carious at 13-14 years



The height of the column indicates the Percentage of Children having Permanent Molars; the shaded parts of these columns show those with sound and carious teeth.

SOUND  SAVABLE  SAVED  UNSAVABLE 

As the report is now in print and can be obtained by any one interested,* it will suffice here, if without going into minute detail, I give only a few of the figures with which it deals.

The total number of school children in the elementary schools is just over 7,000, and of them 2,946 were examined during the year. Only 70 children or 2.4 per cent. had teeth (including both dentitions) which showed no decay. The proportion of children at each year from 3 to 14 with *all* their teeth sound varied from 11 per cent. at 3 and 4 years, to either none at all or less than 1 per cent. at

of age. It is obvious, therefore, that to obtain the best results from the work of a school dentist we must get the children early. In Cambridge the present plan is to treat all those to whom the greatest benefit would result, and this has been found to be children between 5½ and 9 years of age (the six-year molars). At present no attempt is made to deal with temporary teeth; all that can be done is to extract septic teeth and relieve the more urgent symptoms by dressings of silver nitrate. It may be noted that by "unsavable" is meant teeth which cannot be made artificially sound except by more costly and elaborate work than can be undertaken in a school clinic.

* To be obtained from the Town Clerk, Guildhall, Cambridge, price 6d. each.

The prevalence of oral sepsis is indicated by the fact that 30 per cent. of the children had "very dirty teeth and inflamed gums caused by the presence of one or more dead teeth which were discharging pus," while an additional $5\frac{1}{2}$ per cent. had mouths "in such a septic condition as to threaten seriously their general health and well being."

As a result of experience in Cambridge it is considered that one dentist giving his whole time to the work can be responsible for 2,000 children. Although at present no attempt is made to deal with temporary teeth by stopping, this does not mean that other children have not benefitted by the work of the Institute. A very great deal has been done in directing public attention to the need that exists for attending to the condition of the teeth, while at the same time school teachers have been able to bring their influence to bear on both parents and scholars.

It is hoped that with further development of this work, re-examinations of the teeth can be made, but so far this has only been possible in a small number of cases.

There are two other points of some importance in connection with school dental work; one is that if this work is to be of real benefit to the class for whom the clinic exists, the examination should be carried out by a dentist. If undertaken as part of the medical inspection, it is likely that many cases of incipient caries will be overlooked. In addition also it is necessary that a dental chart should be prepared for each child, showing not only the position and extent of caries in the teeth, but the actual amount of masticating surface lost. The school medical officer should not be expected to do more than report on the cleanliness of the mouth and any obvious defects. The second point is the need for enlisting the teachers in this work. Only a very few children are found to use a tooth brush, and in practically every mouth the teeth were coated with a film of food stuff. Lectures on dental hygiene for teachers should be organised, and if this is done and at the same time parents are brought to realise the necessity for cleanliness of the mouth, a great improvement will soon be manifest.

In conclusion, I wish to acknowledge my indebtedness to Dr. George Cunningham and to Mr. A. W. Gant for permission to utilise the figures contained in their report, and for the use of the diagram block.

THE DISINFECTION OF BOOKS.

IN Volume 62, Part 1 of the *Zeitschrift für Hygiene und Infektionskrankheiten*, Professor A. Gärtner, of Jena, gives an account of an apparatus which he invented for the wholesale disinfection of books.

Although difficult to prove that actual cases of disease have been transmitted by means of books, still the discovery in the leaves of much used books of tubercle bacilli and numerous cocci, coupled with the well-authenticated cases of the transmission of scarlet fever long distances by letter, prove that this method is very probable under certain circumstances, and that, therefore, disinfection of library books is desirable. Apart, however, from these considerations, disinfection would to some extent lessen the distaste which many cleanly and sensitive people have to handle the dirty books of a lending library.

Hitherto, efficient disinfection of books in any quantity has proved extremely difficult, because pure dry or moist heat at sufficiently high temperature to kill organisms will ruin the books and any available gases either injure them or fail to penetrate. Formalin, the best of the ordinary available gases, in addition to the want of penetrating power, leaves behind a very disagreeable smell, and one which many people cannot tolerate. After making numerous experiments with these various methods, the attention of the author was soon directed to the vapours of alcohol and water mixed. After trying a few preliminary experiments to prove the general efficacy and practicability of the mixture, a special apparatus was constructed which consisted of a water jacketed box in which the books could be placed and heated to the required temperature, about 56 c.

After this a vacuum was produced by means of a pump, and when this reached 700 mm. an equal mixture of water and alcohol vapours were let in and effected complete disinfection in about half an hour.

Later it was found that it was very difficult to get the books when put in a large quantity (*viz.*, about 1,000 at a time) heated up equally everywhere, and it was found desirable to construct a similar receptacle where books could be heated to 60 c. before being placed in the disinfector proper.

In this way the author found that the whole process only took two-and-a-half hours, and while the disinfection of the first lot was proceeding, a second 1000 books could be heated, so that in ten hours four charges was dealt with, a total of 4,000 books. By having larger machines 6,000 books could be dealt with in the same time.

As regards general results the disinfection is complete, and the books are in no way damaged. The apparatus was made at the instigation of a large book firm, and will be found very useful where many books require disinfection, such as public libraries, ordinary lending libraries, second hand book dealers, etc.