VITAMIN C IN SCHOOL-CHILDREN

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PUBLIC HEALTH

Public Health

AFTER the study of vitamin-C saturation in a group of hospital children in the winter of 1940–41 (Payne and Topley) it was decided to make a further study in normal school-children.

Two methods of investigation were used. The first was to make saturation tests on a series of school-children. The technique adopted was to take 10 boys between 10 and 13 years and starting on a Monday, give a dose of 50 mg. of ascorbic acid per stone of body-weight daily, until satisfactory saturation had been demonstrated by the presence of at least 7 mg. of ascorbic acid per 100 c.cm. of urine passed in the period between 3 and 5 hours after the dose. A fresh group of boys was taken each week starting in December and the investigation was continued until the end of the spring term.

In the second method two school forms were chosen—one of boys and one of girls, aged between 11 and 12 on an average. About 40 children were in each form.

In this school each age-group was already graded into A, B, and D standard according to scholastic merit and behaviour. A-standard children were the best in intelligence and behaviour; B-standard children were thought to be capable of attaining A standard but were falling short of it for some reason; those of C standard were ordinary average children, and those of D standard were dunces. B-standard forms were chosen as being the most likely to show improved performance or behaviour. To half the children of each form 50 mg. of ascorbic acid was given daily; to the other half dummy tablets were given. Which half was having the active tablets was known only to the headmaster and headmistress.

Saturation tests.—Table I shows the number of days taken to saturate the boys in the months of December to March. Using Harris's criterion of saturation it was seen that, taking the whole period, 80% of the boys were having enough ascorbic acid.

<table>
<thead>
<tr>
<th>Cases saturated on days</th>
<th>Not saturated (duration of test in parentheses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>December</td>
<td>17</td>
</tr>
<tr>
<td>January</td>
<td>27</td>
</tr>
<tr>
<td>February</td>
<td>40</td>
</tr>
<tr>
<td>March</td>
<td>28</td>
</tr>
<tr>
<td>Dec.–March</td>
<td>112</td>
</tr>
</tbody>
</table>

A control group of children in hospital was tested, to compare with the results of the previous year's test. It will be seen that the results are much worse than in the healthy groups and slightly worse in 1941–42 than in 1940–41 (table II); the same sort of thing has been found among other groups of children in different parts of the country by Harris (1942). The tests were made at the same time of the year in all cases.

Feeding tests.—The reports of both headmaster and


DISCUSSION

These results may on the whole be regarded with satisfaction as indicating a reasonably good standard of vitamin-C nutrition considering the difficulties of war-time. The school was situated in the outskirts of a semi-industrial town and served a well-developed housing estate. The usual school meal was supplied (it was one of the schools mentioned by Booth and his colleagues); the school had no garden.

Supplementary feeding with ascorbic acid produced no detectable improvement in the children. This may be taken as supporting evidence that the Harris saturation-technique gives results in conformity with nutritional needs.

SUMMARY

Saturation tests have been performed on school-children during the winter months and showed a fair degree of saturation. A group of children was fed 50 mg. ascorbic acid daily and their behaviour and physical health were compared with those of a control group. No material difference in these respects could be detected at the end of four months.

I wish to thank Mr. Tovey, the headmaster, and Miss Clifford, the headmistress, for their help; the Hertfordshire county council education committee for permission to do the work; and Dr. Field and Dr. Franklin who so kindly examined the children. Miss B. Kettle was responsible for most of the urinary ascorbic acid estimations. The ascorbic acid was supplied by Roche Products Ltd.

From the School Reports

SCABIES

Dr. Meredith Davies of Devon calls attention in his school report for 1941 to overcrowding in schools in reception areas. In Devon, the native children numbered 35,000 and official evacuates 26,000. This overloading may have something to do with the increase in skin diseases—compared with 1940, scabies increased 2½ times and impetigo and other skin conditions doubled, while the difference in incidence between native and evacuated children, so well-marked at first, was reduced. The increase of scabies in school-children in 1941 was serious
and widespread. In Colchester, the numbers in the three years 1940 to 1942 were 27, 43, and 37, respectively; in Leicester they were 153 cases in 1940 and 346 in 1941. In Leicester the numbers recorded annually since 1934 were 54, 67, 143, 215, 371, 445, 728, 2637. Dr. E. K. Macdonald calls attention to the fact that in Leicester, as in all London boroughs, the statistics of cases notified for the year 1941, 18 per 100,000 were evacuees; 752 cases of scabies, 310 in the evacuees, were treated at the clinics against 192 in 1940. In Kettering among more than 42,000 school-children there were 451 cases of scabies. As the prevalence of the disease is foci rather than hotspots among native children, but the difference is rapidly diminishing. In Exeter, the known incidence of scabies, which in 1940 was 288 cases in 107 families, increased to 980 cases in 468 families in 1941. Generally, in our school-children there was an increase in impetigo and a lowering of the standard of freedom from head lice in 1941, but nothing to be compared with the increase of scabies: The rise in scabies is not limited to the reception areas, nor is it greater in them than in evacuation areas, and, though reliable figures for other sections of the population are not available, it appears to be no greater in school-children than in other people.

Tuberculosis

There will be special interest in the returns of tuberculosis in school-children in the next few years, especially of the pulmonary type, for with improved X-ray facilities detection of the disease before the onset of definite symptoms should be possible and three important points at present doubtful can be finally cleared. The first is whether adolescent phthisis starts before puberty or with the onset of chronic indifferent ill health, formerly known as tubercular meningitis. The second is whether or not the condition of the lungs changes, for with efficient treatment of the tuberculosis officer—11 notified cases, 30 suspects and 29 contacts. Three were found to have pulmonary tuberculosis, 12 other forms, and 55 showed no evidence of tuberculosis. In addition, 5 evacuees were notified, 2 pulmonary, 3 other tuberculosis, and 11 of other tuberculosis in school-children were notified. In Croydon among school-children the pulmonary tuberculosis mortality was 6-5, and the incidence 19-5 per 100,000. The non-pulmonary rates were 51-9 mortality and 130-4 incidence. Dr. Holden says that the non-pulmonary cases show a considerable increase: “but this may be more artificial than real as the new figures are the result of an improvement of facilities for treatment.” In Leicester 2 definite age-groups below 5, the incidence shows no trend of age since 1937 arranged in the six age-groups. In the school age were referred to the tuberculosis officer of non-pulmonary tuberculosis in persons under 25 years of age since 1937 arranged in the six age-groups. In the school age were referred to the tuberculosis officer, 310 in the evacuees, were treated at the clinics against 192 in 1940. In Kettering among more than 42,000 school-children there were 451 cases of scabies. As the prevalence of the disease is foci rather than hotspots among native children, but the difference is rapidly diminishing. In Exeter, the known incidence of scabies, which in 1940 was 288 cases in 107 families, increased to 980 cases in 468 families in 1941. Generally, in our school-children there was an increase in impetigo and a lowering of the standard of freedom from head lice in 1941, but nothing to be compared with the increase of scabies: The rise in scabies is not limited to the reception areas, nor is it greater in them than in evacuation areas, and, though reliable figures for other sections of the population are not available, it appears to be no greater in school-children than in other people.

The number of civilian and service sick in the Infectious Hospitals of the London County Council on June 9 was 1828. During the previous week the following cases were admitted: scarlet fever, 1906; whooping-cough, 2063; diphtheria, 607; paratyphoid, 5; typhoid, 5; meningo (excluding rubella, 672; pneumonia (primary or influenza), 637; puerperal pyrexia, 143; cerebrospinal fever, 50; poliomyelitis, 5; polio-encephalitis, 2; encephalitis lethargica; 5; dysentery, 127; otitis media, 9. Of the case of cerebrospinal fever, there were no malnutrition of clinical significance attributable to shortage of food elements.

Infectious Disease in England and Wales

WEEK ENDED JUNE 12

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1906; whooping-cough, 2063; diphtheria, 607; paratyphoid, 5; typhoid, 5; meningo (excluding rubella, 672; pneumonia (primary or influenza), 637; puerperal pyrexia, 143; cerebrospinal fever, 50; poliomyelitis, 5; polio-encephalitis, 2; encephalitis lethargica; 5; dysentery, 127; otitis media, 9. Of the case of cerebrospinal fever, there were no malnutrition of clinical significance attributable to shortage of food elements.

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