Four micrograms of vitamin B₁₂ a day was the estimated requirement in mild cases of macrocytic anaemia of pregnancy and 10 µg. in severe cases.

I wish to thank the Glaxo Laboratories (India) Ltd. for supplying vitamin B₁₂; Dr. J. C. Patel for his valuable help; and Dr. S. Swarup for her assistance.

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AN OUTBREAK OF RESPIRATORY TUBERCULOSIS IN A SCHOOL

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At a time when medical and lay opinion is being focused on the problem of tuberculosis it is opportune to relate the story of a local outbreak. Criticism is often directed at the difficulties associated with the threefold control of our Health Service. It is suggested that there should be a greater integration of the hospital, general practitioner, and preventive medicine services. Tuberculosis is frequently cited as an example of a disease which could be combated more effectively if a closer liaison existed between the various services. The localized outbreak to be described is therefore not only of clinical but also of medical administrative interest.

The first intimation of this outbreak followed an observation by the paediatrician who was investigating three cases of clinical primary respiratory tuberculosis in hospital and, in addition, had made domiciliary visits to two similarly affected children. Noting that they all came from the same area, he informed the County

Medical Officer on July 15, 1950. It was quickly confirmed that all the affected children attended the same school, and the school became the centre of investigations. Inquiries revealed that a member of the teaching staff had been absent from May 23 to June 26 suffering from laryngitis, but on July 17, when the school was visited by the Deputy County Medical Officer, this teacher was again absent, this time with "haemoptysis," which had occurred on the previous Friday (July 14). In due course the diagnosis of respiratory tuberculosis was confirmed.

As a routine the milk supplies at the homes of the affected children were investigated. There was no common supply. The school milk supply was pasteurized and there was no record of inefficient heat treatment.

Future action was decided at a meeting of the paediatrician, the local chest physician, and the County and Deputy County Medical Officers. A letter was sent to the parents of all the children at the school asking their consent to carry out Mantoux skin tests on the children. In addition, the health visiting staff of the local health authority called at the homes of all the children who were absent from school, and arrangements were made for them to be investigated. It was then possible to test immediately 176 of the 186 children on the school register. This excellent co-operation of the parents reflects their keen interest in the medical welfare of their children. Those found to be Mantoux-positive were x-rayed, using large films. The results of the Mantoux tests and x-ray examination are set out in Table I. Mantoux testing consisted in the intradermal injection of 0.1 ml. 1/10,000 old tuberculin followed by 0.1 ml. 1/100 in the negatives.

TABLE I.—July Mantoux and X-ray Tests

(a) Results in Various Ages

Age	No. Tested	Mantoux-positive	Percentage Positive	No. with X-ray Evidence of Tuberculosis
5	17	3	18	1
6	30	9	30	3
7	20	7	35	1
8	20	6	30	0
9	16	7	44	2
10	19	5	26	1
11	22	4	18	0
12	10	4	40	0
13	14	5	36	0
14	8	2	25	0
Total	176	52	30	8

The above figures include the five cases which were already undergoing treatment.

(b) Results in Various School Classes

Class	Age Range	No. Tested	Mantoux-positive	Percentage Positive	No. with X-ray Evidence of Tuberculosis
Infants	5-7	48	13	27	4
Standards I and II	6-9	31	8	26	1
Standard III	8-11	26	12	46	2
Standard IV	9-12	33	8	24	1
Forms I and II	11-14	38	11	29	0
Total	—	176	52	30	8

The schoolteacher who was now the suspected source of infection was in charge of Standard III. Why, then, should the infants' class show the greatest incidence of cases with x-ray evidence of tuberculosis? The explanation was apparent when it was discovered that this teacher was in charge of the infants' class from May 8 to 12 owing to the temporary absence of the infants' class teacher.

The return to teaching duties following the initial period of sickness was unfortunate, since it was probable that further children were infected during this period. It was essential, therefore, to repeat the routine tests when the children returned to school after their summer vacation, as by that time the Mantoux test would have had time to show conversion. The local general practitioners were kept fully informed of the position, so that when children presented suspicious symptoms they were referred immediately to the local chest clinic. During the school vacation additional cases were brought to light in this manner.

One of the difficulties was to avoid undue alarm, and, after a local request, the parents were given an opportunity to be present at a meeting in the school. This had the effect of diminishing the natural anxiety of parents, and, incidentally, was a means of health education of the general public. The school premises were disinfected during the holidays in addition to the normal holiday "spring clean." It is doubtful whether this action was scientifically necessary, but it had a considerable psychological effect.

In November all those children who were Mantoux-negative in July or who had not been previously tested were asked to submit to investigation. With few exceptions the parents were prepared to co-operate. The results obtained are set out in Table II.

TABLE II.—*Mantoux State in November and X-ray Results*
(a) By Age

Age	(i) Negative Mantoux in July			(ii) Tested for First Time		
	No. Tested	Mantoux-positive	X-ray Evidence of Tuberculosis	No. Tested	Mantoux-positive	X-ray Evidence of Tuberculosis
5	13	0	0	1	1	0
6	19	1	0	0	0	0
7	12	1	0	1	1	0
8	14	5	3	2	2	0
9	9	2	1	2	0	0
10	14	1	0	0	0	0
11	18	2	0	0	0	0
12	6	0	0	0	0	0
13	8	0	0	1	1	0
14	4	0	0	1	0	0
Total	117	12	4	8	5	0

(b) By Class

Class	(i) Negative Mantoux in July			(ii) Tested for First Time		
	No. Tested	Mantoux-positive	X-ray Evidence of Tuberculosis	No. Tested	Mantoux-positive	X-ray Evidence of Tuberculosis
Infants	32	1	0	1	1	0
Standards I and II	22	2	0	2	2	0
Standard III	14	8	4	2	1	0
Standard IV	25	0	0	1	0	0
Forms I and II	24	1*	0	2	1	0
Total	117	12	4	8	5	0

These figures include children who were referred to the chest clinic during the school vacation.

* This child manifested erythema nodosum in August, but showed no abnormal radiological picture.

Reference to Table II (b) shows that no fewer than 8 of the 14 children in Standard III who were negative in July had by November converted. Table III emphasizes the abnormal picture of this class—the class whose teacher had developed pulmonary tuberculosis.

Although the numbers are small it is of interest to record the Mantoux state by age in this school and to compare the figures with routine Mantoux testing of schoolchildren in the Maesteg area, which had been

TABLE III.—*Mantoux State of Pupils at Completion of Investigations*

Class	No. Tested	Mantoux-positive	% Positive	X-ray Evidence of Tuberculosis
Infants	49	15	30.6	4
Standards I and II	33	12	36.4	1
Standard III	28	21	75.0	6
Standard IV	34	8	23.5	1
Forms I and II	40	13	32.5	0
Total	184	69	—	12

undertaken by the Mass Radiography Unit of the Welsh Regional Hospital Board in 1949. Maesteg is an area which is comparable to the area under review.

TABLE IV

Age	School Under Review			Maesteg Valley		
	No.	Mantoux-positive	% Positive	No.	Mantoux-positive	% Positive
5	18	4	22.2	209	30	14.4
6	30	10	33.3	235	30	12.8
7	21	9	42.9	286	50	17.5
8	22	13	59.1	269	55	20.5
9	18	9	50.0	289	65	22.5
10	19	6	31.6	262	83	31.7
11	22	6	27.3	293	70	23.9
12	10	4	40.0	256	103	40.2
13	15	6	40.0	203	86	42.4
14	9	2	22.2	220	105	47.7

The differences for ages 6, 7, 8, and 9 are of statistical significance.

Comparison of tuberculin sensitivity at the school with the Maesteg Survey, 1949.

Case Records

The clinical histories of the twelve children affected are as follows:

Case 1.—Aged 5½ years. Admitted to hospital on June 29 with history of tonsillitis four weeks previously. On June 21 became generally unwell and had clinical signs of erythema nodosum. This was followed by a persistent pyrexia. Investigations showed the Mantoux test to be positive 1/1,000, and x-ray of chest revealed enlargement of glands at the right hilum. In December, 1950, this child developed collapse of lower lobe of the right lung, but by February the condition was resolving satisfactorily.

Case 2.—Aged 10 years. Admitted to hospital on July 8, having been ill at home since June 29 with a pyrexia for which no adequate cause could be found. A Mantoux test was positive, and investigation showed enlarged glands at the left hilum. By February this child was fit enough to return to school.

Case 3.—Aged 6 years. Admitted to hospital on July 4, having had scarlet fever and chicken-pox a month previously, from which she appeared to make a good recovery. Since June 25 she had a pyrexia of unknown origin. The Mantoux test was positive and there was enlargement of glands at the left hilum with an opacity in left lower zone. The glandular enlargement subsided satisfactorily, and it was estimated that the child would be fit to return to school in March, 1951.

Case 4.—Aged 6 years. History of measles in mid-June, followed by a normal recovery, but on July 4 a pyrexia developed. Investigation showed enlarged right hilar glands and a positive Mantoux reaction. X-ray examination in January, 1951, showed the primary focus to be cleared, but enlarged hilar glands were still present.

Case 5.—Aged 7 years. History of pyrexia starting on July 4. Investigation showed enlargement of the glands at the bifurcation of the trachea and a positive Mantoux reaction. By February the lesion had cleared completely and her general condition was satisfactory.

Case 6.—Aged 6 years. Routine Mantoux test positive. X-ray examination of chest revealed enlarged left hilar glands. Progress was such that this boy was allowed to attend school in December.

Case 7.—Aged 9 years. Routine Mantoux test positive. X-ray examination of chest showed left hilar glands enlarged with stippling in left mid-zone. Satisfactory resolution of root glands enabled her to start school in February, 1951.

Case 8.—Aged 9 years. Vague history suggestive of erythema nodosum. Routine Mantoux test positive. X-ray examination of chest revealed enlarged right hilar glands. Satisfactory resolution was made by February, 1951, when she was able to be up and about, although not fit to return to school.

Case 9.—Aged 8 years. Routine Mantoux test on July 21 negative. General malaise and pyrexia on July 28. Mantoux test positive on August 18, and x-ray films of chest showed enlarged right hilar glands. Satisfactory resolution was made by February and the child was fit to return to school.

Case 10.—Aged 9 years. Routine Mantoux test on July 21 negative. Developed febrile illness on July 31, when the Mantoux test was positive and x-ray examination of chest showed shading in the right upper zone with right hilar glands enlarged. There was satisfactory healing by February, 1951, and the child was able to carry on normal activities.

Case 11.—Aged 8 years. Routine Mantoux test on July 21 negative. Referred to clinic, and Mantoux test repeated in September; the test was then positive, and x-ray films showed enlarged left hilar glands. Progress by February, 1951, enabled him to return to school.

Case 12.—Aged 8 years. Routine Mantoux test in November positive and x-ray films of chest revealed enlargement of right hilar glands. Satisfactory progress was made, enabling her to be fit for school in February, 1951.

In all cases the treatment consisted only of rest in bed, at home or in hospital, with clinical and radiological supervision. Streptomycin was not given.

All the teaching and non-teaching staff of the school immediately volunteered to undergo x-ray examinations, and, apart from the affected teacher, none showed evidence of active tuberculosis.

Conclusions

The staffs of hospitals and local authorities, together with general practitioners, must co-operate in providing a comprehensive health service in which therapeutic and preventive measures play equally important parts.

This local outbreak is an example of the danger that a teacher suffering from pulmonary tuberculosis can be

to schoolchildren. The favourable outcome in this series does not detract from the need for preventive measures. Periodic compulsory x-ray examinations seem to offer the most practicable solution. It must be remembered, however, that pulmonary tuberculosis may be rapidly progressive in a young adult and that annual examinations may not be a sufficient safeguard. Some, maybe, would argue that six-monthly routine examinations would involve waste of effort and money, but, on the other hand, outbreaks such as the one described may be prevented. Preventive measures, we submit, are in the long run financially economical, in addition to being sound from a purely medical standpoint.

The histories suggest an incubation period between the limits of 40 and 62 days.

Summary

Five cases of clinical primary respiratory tuberculosis were reported in pupils of the same school. The probable source of infection was traced to a schoolteacher. Immediate Mantoux and x-ray testing revealed three further cases. The return of the teacher concerned to school after a short period of absence necessitated a follow-up examination of the pupils, and four further cases were brought to light. The classes predominantly affected were those with which the teacher had come into closest contact.

We wish to acknowledge the active part played by Dr. W. E. Thomas, the County Medical Officer, and Dr. J. G. Cox, the chest physician, in the investigations and control of this outbreak.

THE SURGERY OF PAROTID TUMOURS

EXPOSURE OF MAIN TRUNK OF FACIAL NERVE

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Exposure of the main trunk of the facial nerve and the dissection of the distal branches and filaments form the method we have evolved for the removal of parotid tumours.

Willis (1948, 1950), from whose writings we quote, classifies epithelial salivary-gland tumours as follows: simple adenoma; pleomorphic adenomas and adenocarcinomas (so-called mixed parotid tumours); anaplastic carcinomas; and adenolymphomas (papillary cystadenomas). He states that 90% of all salivary tumours fall into the group of pleomorphic adenomas, and that while most of these tumours grow slowly and appear to be well circumscribed they are not strictly benign. He further states that the mode of origin of the tumours parallels that of mammary carcinoma, which often arises from a considerable field of mammary epithelium. He believes that the recurrence rate after inadequate operation may be as large as 62%, and that the principal factor is the conservative type of operation used because of fear of damage to the facial nerve.