Discussion

The Manchester workers have themselves pointed out some possible criticisms to which their results might be open. In particular, they refer to the small number of their subjects. Additional queries arise even although their results are statistically outside the limits normally accepted for chance variations (see Abrahams, 1943; also *British Medical Journal*, 1943).

If, however, we accept the validity of the findings of these workers, the fact that vitamin supplements did not induce such changes in physiological function in our subjects might possibly be due to their not having been deficient in these nutrients before the administration began. This is supported by the fact that there was also no improvement in other respects after the year's dosing (see Yudkin, 1943). Gain in height and weight, strength of grip, haemoglobin, intelligence, educational attainment, and dark-adaptation were no different in those children receiving the supplement from what they were in those receiving the control pellets. Moreover, although there was a reduction in the incidence and duration of colds in the vitamin group, this was seen only in the younger children and was not shown by the older children examined for physiological function.

It should be emphasized that the absence of effect in our subjects may be due to differences in age or in degree of deficiency; they are not therefore to be interpreted as contradicting the findings of Harper *et al.* Nevertheless it is clear that improvement of physical efficiency by vitamin supplements cannot be regarded as being generally applicable to all groups.

Summary

A group of 178 children aged 11 and 12 were examined after about half of them had received vitamin supplements daily at school for one year. The supplements provided each school day 5,000 I.U. vitamin A, 1 mg. vitamin B₁, 25 mg. vitamin C, and 500 I.U. vitamin D, the average addition over the year being about one-half of the reputed daily requirements of these substances.

No difference was observed between the control group and the supplemented groups in resting pulse rate, vital capacity, breath-holding, or 40-mm. endurance test.

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THE CRY OF THE CHILD IN UTERO

BY

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"Vagitus uterinus" is the term applied to the crying of the child while its head is still in the uterus. Mohammed and St. Bartholomew are both supposed to have made themselves heard *in utero*. It may be of importance in medico-legal cases, as it is possible in this way for a child to be stillborn and yet have its lungs partly aerated. In some cases this cry of the child may also be a warning of foetal asphyxia, requiring a rapid delivery.

Record of a Recent Case

Mrs. T., a primigravida aged 29, was sent up to the London Hospital at 40 weeks with a breech presentation. External version under anaesthesia failed and she came into labour spontaneously two days afterwards. The membranes ruptured after 27 hours with the cervix fully dilated, and 1½ hours later it was decided to assist delivery as the anterior buttock had been peeping without advance for half an hour and the mother was becoming distressed. The foetal heart rate was 160 a minute. The resident accoucheur performed a postero-lateral episiotomy under gas, oxygen, and ether, with the patient in the lithotomy position, but was unable to bring down a leg as there was little liquor. The registrar therefore took over, and just as he was passing his hand gently up the vagina the foetus was felt to give a convulsive movement and everyone in the labour theatre heard a "foetal cry." This was repeated twice more, and was accompanied by movement of the foetus. The cry was

loud, and was heard by three doctors, two hospital sisters, and three nurses; and all this when the anterior buttock was just peeping at the vulva. Rapid delivery was performed, bringing down the legs and arms, and forceps was applied to the after-coming head. Although this was done quickly the foetus was making strong inspiratory efforts during delivery. The female infant of 6 lb. 6 oz. was very cyanosed, but breathed at once and recovered rapidly.

Discussion

For this condition to occur it is necessary for air to be present in the uterus. This may be due to the suction of air along the examining hand during the relaxation of the uterus, as probably occurred in this case. If the patient had been delivered on the left side there would have been a tendency for gravity to pull the foetus and uterus out of the pelvis and so suck air into the vagina or even the uterus. Miss Field at the meeting of the Obstetric Section of the Royal Society of Medicine on March 19, 1943, described a case in which air rushed up the catheter during high rupture of the membranes and was followed by foetal crying, and 54 hours later by the delivery of a living child. Mr. Fraser's case at the same meeting was harder to understand. A 4-gravida, 30 weeks pregnant, ruptured her membranes five days before delivery. Twenty-four hours before delivery the foetus was heard to cry *in utero* for 40 minutes with the os only one-fifth dilated. Tympanites and succussion splash were present. The premature foetus died with a cerebral haemorrhage three hours after delivery. Air was perhaps sucked into the uterus during a uterine relaxation, or by the piston-like action of the foetal head. Although afebrile there may have been a low-grade infection with gas-forming organisms.

Once there is air in the uterus the foetus must inspire in order to produce a cry. There are at least two types of intra-uterine cry. The first is a soft whimpering cry—best heard with a stethoscope to the abdomen—which may continue for a considerable time and is not associated with asphyxia of the infant. This was the type of cry in the latter two cases. The second type was found in our case, in which the cry was loud and gasping, and was accompanied by a convulsive movement of the foetus and associated with foetal asphyxia.

The work of Barcroft and Barron on the respiratory centre of lambs *in utero* throws light on this problem. The movements responsible for respiration can be traced back to the first efforts that the foetus makes, and it seems that a third of the way through pregnancy the essential neuro-muscular mechanism has been laid down and as it were tried out. At first the respiratory movements occur as a reflex to a stimulus. This becomes more sensitive and the response more differentiated, but, later, with the development of the controlling higher nervous centres the foetus again becomes inert. With the onset of labour there is a degree of anoxaemia which depresses the inhibiting higher centres, so that the foetus shows more movement. There is also an increase of CO₂ pressure, and an avalanche of sensory impulses which all have a large stimulating effect on respiration.

In the first group there is a gentle whimpering cry which is unassociated with asphyxia and occurs before or early in labour. This noise is due to air passing in and out of the chest, whereas normally there is a tidal flow of liquor. In these cases the foetus can be stimulated by prodding, when the cry may be louder. In the second group the type of respiration is gasping, is associated with foetal asphyxia, and occurs when labour is well advanced. It has been shown by Barcroft that transection of the brain-stem above the level of the hypoglossal nucleus in the sheep foetus causes this form of respiration, and it is suggested that this gasping type of cry in the human foetus is due to anoxaemia of the higher nervous centres releasing the lower medulla.

Yet another possibility is that once there is air in the body of the uterus it may be suddenly forced past a fold of membrane or vagina by a contraction of the uterus. A noise simulating a foetal cry might thus be produced. Sipple's case was quoted in the *British Medical Journal* of Sept. 14, 1912. While carrying out an internal version he had to hold his hand still during a contraction. At that moment there were two high-pitched noises just like an infant's cry, but he noticed that they were accompanied by a sensation of air running up his forearm.

It is probable that this condition is more common than supposed. Prof. F. J. Browne has found that the lungs of stillborn foetuses often float in water, which shows that some aeration has taken place. This post-mortem test of stillbirth is thus of little significance. DeLee said that he has heard babies sneeze and cough *in utero*, and even hiccup.

We have seen that at an early date in development the movements of respiration have been tried out. For a cry to be heard, however, there must be air in the uterus, with a variable degree of foetal anoxaemia, rise in CO₂ pressure, and peripheral stimulation. The cry will be quiet and whimpering if the asphyxia and peripheral stimulation are slight, but loud and gasping if these are severe. It is in the last group that the foetus is distressed and requires immediate delivery. In our case there is little doubt that air was drawn into the uterus along the examining hand between pains, and the long second stage and prolonged manipulation caused partial asphyxia and stimulation of the foetus. Rapid delivery possibly saved the child's life.

I must thank Mr Eardley Holland and Mr. Alan Brews for permission to publish this case and for their help.

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Medical Memoranda

Paralysis of the Serratus Anterior following Glandular Fever

So far only one case of this condition appears to be recorded in the literature, and that was by J. S. Richardson (*Lancet*, 1942, **1**, 618); but in his case the paralysis developed during the third week of illness and cleared up in four months, whereas in the one which came under my observation—a persistent serratus magnus palsy following glandular fever—the paralysis developed five days later, and is still present a year after the onset.

CASE HISTORY

A soldier aged 25 developed a sore throat on April 27, 1942. A throat swab showed Vincent's organisms; culture negative for K.L.B. On May 8 there was a rise in temperature, with an erythematous rash over the chest and marked glandular enlargement in the neck on both sides. The spleen also was probably enlarged, but no enlargement of glands was noticed elsewhere. The rash disappeared after a few hours, but the temperature was still raised. It was thought to be a case of rubella, but as the patient had had a definite attack of rubella two years previously this was improbable. The glands continued enlarged and tender, and remained so for six or seven weeks.

On May 9 a white cell count gave 11,200 per c.mm.—neutrophils 29%, lymphocytes 66%, monocytes 4%, eosinophils 1%. There was severe pain in the right shoulder, with inability to sleep. On the 11th there developed severe paralysis of the right serratus anterior muscle with no sensory changes and no meningeal symptoms. Pain disappeared at onset of paralysis. The Paul-Bunnell reaction was positive in a serum dilution of 1 in 900. On the 12th the test was repeated, and was still positive at 1 in 900. Throat and nasal swabs were taken and cultured for K.L.B., but the result was negative; also, no Vincent's organisms were found.

On May 16 the white cells numbered 5,700 per c.mm.—neutrophils 39%, lymphocytes 51%, monocytes 9%, eosinophils 1%. The faradic response in the right serratus anterior was very weak. Radiographs of the cervical spine were negative. On June 22 lumbar puncture produced a clear fluid under normal pressure. No leucocytes were seen in 1 c.mm. Total protein, 45 mg. per 100 c.cm.; sterile. Since then the patient has had splinting and physiotherapeutic treatment.

On May 12, 1943, the vertebral border of the scapula, and especially the lower angle, still stood out prominently behind, giving a characteristic winged appearance to the back. The arm could be pushed forward, but weakly. I could not elicit any response to faradism or galvanism in the right serratus anterior muscle. Although the functional recovery is about 50%, it is obvious that this is due to the function of the serratus anterior being taken by other muscles, as that muscle is still paralysed.

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Reviews

LOCAL GOVERNMENT

The Municipal Year Book and Encyclopaedia of Local Government Administration, 1943. (Pp. 1,343. 42s.) London: Municipal Journal Limited.

Many new matters have appeared on the agenda of local government since the *Municipal Year Book* was first published in 1897, so many that one wonders what Victorian aldermen and councillors found to talk about. The most recent matter and the most peremptory is civil defence with its various ramifications—provision and maintenance of shelters, arrangements for evacuation, communal feeding, care of the bombed-out, fire, first-aid, and decontamination services. It was argued at first, before experience disproved it, that to add civil defence to the other functions of local government would be, not indeed the last straw, but the last big bale of hay on this patient camel's back. But that was to reckon without the adaptability and resourcefulness of those who administer local affairs, especially the permanent local government service. Never before has local government touched life at so many points, and it has its reward in a quickened public appreciation which has displaced the old apathy. It is beginning to be realized by the average citizen that his happiness, safety, and environmental health depend upon the town hall more than upon the Palace of Westminster. This most important side of community life has a guidebook worthy of it. There is not a fact or figure, name or emblem connected with local government, from the city corporation down to the seven-hundredth rural district council, which is not to be found in these 1,300 closely packed and well-sectioned pages. The yearbook is primarily a directory, but it is also an annual review of the chief events in local government, and among other things it gives a good summary of the different reports, statistics, and tendencies in the field of public health. Incidentally it shows how various is the structure of local government. In England and Wales there are 62 county councils, 83 county borough councils, more than 300 councils of other municipal authorities, and nearly 600 urban district councils. A growing feature and sign of things to come is the number of joint boards and committees, covering water and gas, sewerage and burial, and in Scotland poorhouses and district asylums, venereal diseases, and the welfare of the blind; but of all joint boards those which have to do with hospitals are most numerous, totalling 212 in England and Wales.

LARYNGEAL SURGERY

Diseases and Injuries of the Larynx. A Textbook for Students and Practitioners. By Chevalier Jackson, M.D., Sc.D., LL.D., F.A.C.S., and Chevalier L. Jackson, M.D., M.Sc., F.A.C.S. Second edition. (Pp. 633; illustrated. 36s.) New York and London: The Macmillan Company, 1942.

A second edition of *The Larynx and its Diseases*, by Chevalier Jackson and Chevalier L. Jackson, has been issued under the title *Diseases and Injuries of the Larynx*. The present edition does not differ in essentials from the first (reviewed in these columns on Oct. 16, 1937), but is longer because a chapter on war surgery of the larynx has been added. This is rather out of keeping with the rest of the book, which is almost entirely based on Jacksonian observation and experience, while the new chapter does not give any indication of personal experience in the surgery of war, except in the matter of the effects of poison gas, which so far has not been employed in the present conflict. The authors have changed their views to some extent on the surgical treatment of cancer of the larynx, but they still give a quite inadequate picture of what can be accomplished in the surgical treatment of the intrinsic variety of the disease, and the statement that in the "*extrinsic type of cancer surgery is worse than useless*" ignores what has been accomplished by others, and coming from such an authority must hinder any attempts at progress in this direction. In all other aspects of laryngeal surgery the book reveals what can be done by patient endeavour often extended over long periods, and how great is the debt of laryngology to endoscopy as practised and taught in the Jacksonian clinic. The book is of more value as a picture of how a great master of his art sees it and practises it than as the complete textbook at which he has aimed, for there is no attempt to keep abreast of recent