were without effect on the clinical condition, and the larvae persisted in the stools. A second attempt was made with hexylresorcinol. The patient, who had been given a saline purgative the previous day, received 9 g. of the drug at 6 a.m. No food was given for five hours, and a saline purgative was administered 24 hours after the dose. Following this treatment the majority of larvae in the stools were dead and there was considerable difficulty in finding any living ones. During this period, which lasted ten days, the patient was free from attacks of asthma. A specimen of stools ten days after the dose had been given contained numerous living larvae and the asthmatic attacks returned at the same time.

On July 30 he was transferred to another hospital under the care of a specialist in tropical diseases, who again greatly reduced the number of larvae in the stools, this time with gentian violet treatment. There was a simultaneous improvement in his asthma during the period of reduction. It was considered that the asthma was definitely related to the *Strongyloides* infestation. During all this period the sputum was persistently negative for tubercle bacilli on concentration and culture, and *Strongyloides* larvae were not found in the sputum. The x-ray appearances had not changed since his admission to Harefield.

Discussion

Pulmonary changes associated with *Strongyloides stercoralis* infestation have been described by Lowe and Lancaster (1944) in their report on 16 cases of strongyloidiasis. Seven of their cases had pulmonary symptoms, four complained of unproductive cough for some weeks, one had been investigated for suspected pulmonary tuberculosis, and one had a small haemoptysis whilst under observation in hospital. Radiographic examination of four patients revealed increased bronchovascular markings. On no occasion had larvae been found in their sputum.

Gage (1911) reported a case in which there were signs of diffuse bronchitis and lobar pneumonia with *Strongyloides* larvae in the sputum. At post-mortem examination the diagnosis of *Strongyloides* pneumonitis was confirmed. Froes (1930) reported a case of pleural effusion in which rhabditiform larvae were discovered before death. Berk *et al.* (1943) describe two cases of strongyloidiasis with pulmonary symptoms. In both cases tuberculosis was suspected owing to cough and sputum, in one case blood-stained, and increased roentgenological markings. Both cases had pronounced eosinophilia. In neither case were larvae recovered from the sputum. In natives with *Strongyloides* infestation for long periods, De Langen and Lichenstein have reported severe asthmatic attacks.

In the case described above, pulmonary symptoms were produced by the infestation. The relationship of the asthma to those periods when living larvae were present in the stools in large numbers is worthy of note. In spite of improvement in the symptoms while under treatment with both hexylresorcinol and gentian violet there was failure to eradicate the infestation entirely.

The significance of the pleural effusion in April, 1946, is difficult to assess. There is no report of larvae in the fluid aspirated at that time, and in the cases of pleural effusion secondary to *Strongyloides* infestation previously reported larvae have been found in the effusion fluid.

I wish to express my thanks to Dr. K. R. Stokes, Medical Director, Harefield County Hospital, for permission to publish this paper; to Dr. John C. Roberts, physician to the Military Unit, Harefield, for advice and criticism and for his invaluable help at all times; and to Dr. F. E. T. Scott, who carried out the bacteriological investigations.

REFERENCES

- Berk, J. E., *et al.* (1943). *Gastroenterology*, **1**, 1100.
Froes, H. P. (1930). *Ann. Parasit. hum. comp.*, **8**, 171.
Gage, J. G. (1911). *Arch. intern. Med.*, **7**, 561.
Lowe, T. E., and Lancaster, H. O. (1944). *Med. J. Aust.*, **1**, 429.

A TIDAL-AIR WHISTLE

BY

F. C. EVE, M.D., F.R.C.P.

The main object of artificial respiration is to produce an adequate tidal air. This whistle, held in the subject's lips, makes his tidal air audible to the operator, the instructor, and the class.

Up till now the ritual of resuscitation has been performed with faith and hope but without evidence that its object was being achieved. Part of expiration might be heard; inspiration was never audible. An instructive instance occurred recently at a meeting held in Beverley before a doctor delegated by the Swiss Red Cross. When the operator, a man with ten years' experience, carried out Schäfer's method the whistle hardly sounded; but when he was replaced by a highly skilled operator it sounded for all to hear. Examiners armed with a whistle could find and remedy many defects.

The whistle is on the bird-call principle, because it must sound during inspiration as well as in expiration—an obvious need for the skylark. It can be boiled, and is easily washed (e.g., in "dettol") each time the subject is changed. It works when its interior is still wet. Counting in seconds—often incorrectly estimated—can now be discarded: timing is done by the whistle to suit the subject's physique. When the inspiratory sound ceases (not before) expiration is induced, and vice versa. If the whistle is obeyed, respirations will not be hurried or jerky. The classes become interesting, and are even amusing. Usually the timing coincides approximately with the orthodox 12 per minute of Schäfer and Silvester. In the rocking method, as it produces a greater tidal air, the longer, smoother whistles call out for a slower rate of about 9 per minute. This is also better for the circulation (4 seconds head-down; 3 seconds feet-down). Tests on larger numbers are needed.

The model has been found to work on all healthy adults and on children of 4–5 stone (25.5–32 kg.), rocked manually. The largest subject was a six-foot (1.8 m.) doctor with a 44-inch (1.12 m.) chest who was rocked for over five minutes, whistling loud and long. He said he was so comfortable that he nearly went to sleep. Yet, when doing his own breathing at rest, the 5-mm. aperture was only just adequate.

Dr. A. A. Harper, of the Physiology Laboratory of Manchester, kindly measured carefully the effect of the whistle in Schäfer's method in two subjects. He found it did not affect the volume of the air breathed, but of course it increased the resistance slightly. The figures were: inspiratory pressure increased from 3.6 to 7.2 cm. H₂O; expiratory increased from 2 to 4.1 cm. H₂O. He considers that these resistances would be of no importance in training conscious subjects. He also allows me to adopt the very convenient nose-clip he used.

Professor E. A. Pask, of the Newcastle Department of Anaesthesia, was good enough to measure the sensitivity of the whistle. With a respiration pump it was just audible at a tidal volume of 200 c.cm. at 8 respirations a minute with a rate of flow of 3.6 litres a minute; or, with a steady flow of oxygen, at 4 litres a minute. He considers it "an instrument of remarkable sensitivity which will be of considerable use in training." In Dr. Harper's subjects the volumes per minute ranged from 6.6 to 7.8 litres with the whistle in Schäfer's method. I am told that the inspiratory note is upper B flat, and expiration usually an octave lower.

The whistle is held in the teeth and closed lips, so that it cannot be applied in cases of unconscious asphyxia. No time-consuming gadgets can yet be authorized where every second is vital. The device is intended to train operators to do their life-saving task efficiently.

At a recent demonstration in London before 130 doctors of the St. John Ambulance Brigade nearly all signified, by a show of hands, their wish to try the method. The tidal-air whistle and nose-clip can now be obtained from Messrs. Siebe Gorman and Sons, Tolworth, Surrey, for a few shillings.

Medical Memoranda

A Case of Twins

The publicity which nowadays is focused on the higher categories of multiple births has caused mere twins almost to escape attention. The following case, however, is interesting enough to be placed on record.

CASE REPORT

The patient was a multigravida aged 26, height 5 ft. 3 in. (1.6 metres), weight 8 st. 5 lb. (53 kg.). Her last menstrual period began on May 1, 1947, and her expected date of delivery was on February 8, 1948. She had one child, a normal full-time delivery on November 10, 1942, weighing 8 lb. 15 oz. (4.05 kg.). There was a history of twins in the family.

In the early months of pregnancy she had some nausea and sickness, which soon improved. At 19 weeks the fundus was two fingerbreadths above the umbilicus. At 23 weeks it reached to midway between the umbilicus and xiphisternum. At 30 weeks the uterus measured 37 in. (0.94 metre) in circumference and 14 in. (35 cm.) in convexity. One small head was felt in the pelvis. X-ray examination on November 21 showed twin pregnancy, the first a vertex and the second a breech.

The patient continued to feel well for the rest of the pregnancy, apart from increasing heaviness. Her weight rose from 8 st. 5 lb. to 11 st. 10 lb. (53 to 74.4 kg.). Her highest blood pressure was 136/80, and at no time was there any albuminuria or oedema. She was given iron and calcium during pregnancy, and was admitted for rest one week before term.

On admission both foetuses presented by the vertex. The foetal heart rates were 136 and 142. Measurements of the uterus were: circumference 46 in. (1.16 metres) and convexity 23 in. (58 cm.).

A medical induction was contemplated at term, but at 10.30 p.m. on February 8, 1948, she went into labour. At 5.30 a.m. the next day the os was fully dilated, and at 7.30 a.m. she was delivered spontaneously of a living male infant, weighing 10 lb. 0½ oz. (4.54 kg.) in the R.O.A. position. After 20 minutes pains restarted, and 15 minutes later a second living male infant, weighing 8 lb. 3 oz. (3.71 kg.) was born in the L.O.A. position. Twenty-five minutes later the placenta and membranes were expelled intact, the total length of labour being 10 hours 25 minutes. There was a loss of 18 oz. (510 ml.). The placenta was binovular in type and weighed 3 lb. 15½ oz. (1.8 kg.)—i.e., little less than one-quarter of the combined weights of the infants.

The puerperium was entirely uneventful. Both infants had regained their birth weight by the seventh day, and by the tenth day the larger one took 18 oz. of milk from the breast, and the smaller one 14½ oz. (420 ml.). Neither took less than this in 24 hours during their subsequent days in hospital. Residual milk expressed was 3½ oz. (106 ml.), making a total yield of 36 oz. (1.02 litres) of breast milk on the tenth day.

The babies were fed simultaneously at all feeds, and were discharged on the 19th day, fully breast-fed, and weighing 10 lb. 1½ oz. and 8 lb. 9 oz. (4.58 and 3.88 kg.) respectively.

The mother had the antenatal preparation of the breasts which is practised at this hospital (Waller, 1946), and during her lying-in needed no more help than the usual care and patience of the nursing staff.

Throughout her pregnancy she was well, and she carried the babies to term, a comparatively uncommon event in twin pregnancies. The records of this hospital show only 14 instances out of 67 twin deliveries in the past four years.

Hospital	Year	No.	Average Weight				Heaviest Weight							
			Twin 1		Twin 2		Twin 1		Twin 2					
			lb.	oz.	kg.	lb.	oz.	kg.	lb.	oz.	kg.			
Queen Charlotte's ..	1945	19	5	6	2.44	5	9	2.52	7	9	3.43	8	8	3.85
Guy's ..	1946	17	5	1	2.29	6	1	2.75	8	2	3.68	6	12	3.06
Liverpool ..	1944	28	5	2	2.32	5	7	2.47	7	0	3.18	7	6	3.35
Camborne ..	1945	6	6	3	2.81	5	11	2.58	6	15	3.15	7	7	3.37
B.H.M.B., Woolwich	1944	17	5	0	2.27	5	3	2.35	6	6	2.89	7	3	3.26
" "	1945	20	4	10	2.10	5	3	2.35	6	4½	2.84	7	4	3.32
" "	1946	11	6	0	2.72	5	12	2.61	7	11	3.49	6	8	2.95
" "	1947	19	5	3	2.35	4	5	1.96	7	4	3.29	7	7	3.37

As will be seen from the accompanying table, the average weights of twins, taken from several different hospital reports, range between 5 lb. and 6 lb. 3 oz. (2.27 and 2.81 kg.). The heaviest weights recorded in the series were 7 lb. 9 oz. and 8 lb. 8 oz. (3.43 and 3.85 kg.) at Queen Charlotte's Hospital in 1945.

Progress has been consistently good. Breast-feeding was maintained, apparently without strain, for eight months. At 3 months the babies weighed 13 lb. 8 oz. and 11 lb. 9½ oz. (6.12 and 5.26 kg.). They had had no illnesses and were free from any sign of rickets. The haemoglobin level was found to be 60% in both cases, and iron was prescribed. When last seen on October 7 (aged 8 months) they weighed 22 lb. and 20 lb. 8 oz. (9.98 and 9.3 kg.) respectively and were very healthy.

My thanks are due to Mr. Keith Vartan, medical director, and Dr. Harold Waller, honorary paediatrician, for permission to publish this case and for their help and advice.

AILEEN P. M. DRING, M.B., B.S., D.R.C.O.G.,
British Hospital for Mothers and Babies, Woolwich.

REFERENCE

Waller, H. K. (1946). *Arch. Dis. Childh.*, 21, 1.

Congenital Pyloric Stenosis in Three Successive Male Babies of the Same Parents

The following cases are reported in the belief that it is rare, if not unique, for the same parents to have three consecutive male babies suffering from congenital pyloric stenosis. It would be interesting to know if any readers have had similar experiences.

CASE REPORTS

Case 1.—This occurred in July, 1945. The precise clinical details are lacking except that the condition was diagnosed clinically and confirmed at operation. The child died shortly after the operation. It is believed that the general condition had greatly deteriorated before consent was given by the parents.

Case 2.—This occurred in July, 1947. The clinical features were classical in that projectile vomiting started at the end of the second week after birth. Visible peristalsis and a palpable mass were evident. Unfortunately, however, the family conditions left something to be desired, and the parents did not use the "eumydrin" with which the doctor was treating the case. Other therapeutic measures were carried out by the parents against the doctor's advice and operation was refused. Inevitably the general condition became worse, and when eventually the parents realized the folly of their ways the child died before operation could be performed. A post-mortem