those which are water-borne. In epidemics of paratyphoid and dysentery there is no definite evidence in favour of the prevailing view.

It is not the object of this paper to discuss the reason for such age- and sex-variations as may occur. It is clear that comparisons with "normal" incidence may be seriously vitiated if limited groups of the population are specially exposed to infection either from contact or from the consumption of such an article of diet as water or milk, as, for example, when institutional inmates or pupils of a particular school are involved. Apart from this, however, there is one point which I think should be kept in mind. During unusual epidemics of any kind it is likely that a higher proportion of mild or anomalous cases will be discovered. If this is so a larger proportion of adolescent and adult cases will be detected when scarlet fever and, perhaps, diphtheria are the diseases in question. The Chelmsford milk outbreak is an outstanding instance, actually three-quarters of the cases showing no rash, though they were recorded as cases of scarlet fever. On the other hand, the true nature of alimentary infections, especially of typhoid, is more apt to be missed in children at ordinary times¹⁸ than among adults, so that their detection at times of special interest, as in the course of a milk epidemic, may give a false idea of their prevalence. It is possible that there is really no differential age incidence at all in milk epidemics. This view, however, would not explain Clarke's finding that the past occurrence of unsuspected milk infection can be detected by going over the records of scarlet fever cases, and identifying an abnormal proportion of older cases. Milk outbreaks are likely to become much less common, and it may be difficult to clear up some of these points.

Suggestions

1. That every milk or other special outbreak of infectious disease should be published, however briefly.
2. That reports should note whether special social or institutional groups of the population are involved.
3. That the age- and sex-distribution of cases should always be given, in five-year groups up to 20 years of age, even if the numbers are too small to bear statistical analysis. Cases attributed to direct infection from milk should be distinguished from those presumably secondary and due to contact. The accumulation of records of small outbreaks may be useful.
4. That the annual reports of medical officers of health should give sex as well as age groups of all cases notified each year. Similar distributions should be given in fever hospital reports for verified cases.
5. That Central Government reports should give age- and sex-distributions of cases notified each year. The annual report of the Department of Health for Scotland contains age distributions of cases, but no information whatever is available for England and Wales, either in the Registrar-General's Annual Statistical Review or in the reports of the Ministry of Health. The imperfection of such records is of course obvious, but the fallacies which might arise in using them are less serious than our complete ignorance of the incidence of infection by age and sex so far as the whole country is concerned.

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NASAL OBSTRUCTION IN THE NEWBORN

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The urge to breathe through the nose is so strong in the newborn infant that not infrequently, when nasal obstruction is present, the baby will die rather than develop mouth-breathing in the early days of life. It is obvious that nose-breathing is essential if the baby is to obtain nourishment by suction at the breast, and herein, no doubt, lies the reason for the natural instinct. When there is any degree of blockage of the nasal airway in the newborn infant respiratory failure may easily develop.

It appears likely that the facility to breathe through the mouth develops by about the tenth to the fourteenth day of life. Warwick James and Somerville Hastings¹ have investigated this point by observing closely the breathing habits of normal newborn babies, trying the effect of obstructing the nose; in their opinion, breathing takes place exclusively through the nose in the newborn period, even though the mouth may appear to be open.

Congenital Obstruction

The great difficulty experienced by the newborn infant in acquiring the mouth-breathing habit is illustrated by two examples of congenital obstruction of the nose which have recently been under observation.

Case 1.—Baby F., born at Queen Charlotte's Maternity Hospital, was seen at the age of 1 day. There was obvious nasal obstruction, with great difficulty in respiration until the mouth was held open. Mr. Monkhouse curetted the post-nasal space hoping to find adenoid tissue. This, however, was not present, and an attempt to introduce a probe through the nares showed that there was bony obstruction on both sides. A catheter was passed into the trachea in an effort to maintain an airway to the lungs, but the baby coughed it out and, unless the mouth was propped open, would not breathe at all. Despite efforts to achieve this, cyanotic attacks continued and the baby died aged 2 days. A partial post-mortem examination by Dr. R. M. Fry showed a bony abnormality obstructing the posterior nares.

Case 2.—Baby H. was admitted to the Hammersmith Hospital, aged 17 hours, with a history of great difficulty in breathing since birth. There was an obvious abnormality of the nostrils, and nasal breathing appeared to be impossible. A tracheotomy tube covered with rubber tubing was tied into the mouth, so that it curved back over the tongue into the back of the pharynx, and by means of this artificial airway breathing improved. Great difficulty was experienced in feeding the baby, although this was successfully attempted through a stomach tube passed alongside the tracheotomy tube. The child's general condition tended to deteriorate, and she died, aged 4 days, with a rising temperature and rapid respiration. Mr. Sydney Scott found that there was complete

obstruction of both nares. A detailed account of the abnormality will be published elsewhere by Mr. Scott, who has kindly allowed these notes to be quoted.

There are many other examples of congenital obstruction of the nasal passages in literature, some of which are included in the paper by Warwick James and Hastings. One of the most important accounts of the condition is given by Richardson,² who also refers to the literature, giving an elaborate classification of the varieties likely to be met with. Richardson gives an excellent description of the appearance of the newborn baby with bilateral nasal obstruction, pointing out that there are attacks of cyanosis and struggling followed by crying, during which the baby breathes well through the mouth. The colour improves and the child becomes quieter; it closes the mouth, and again becomes cyanosed, struggles, cries—and so on. There is great difficulty in taking either the breast or bottle, and in many instances such infants die, probably labelled "asphyxia neonatorum." Richardson thinks that a child will learn to breathe through the mouth in ten days. He describes a case in which relays of helpers managed to keep the baby's mouth open by depressing the chin for a sufficient length of time until mouth-breathing became established.

The practical importance of such cases lies in the measures suggested for less serious types of nasal obstruction. The actual passage-way through the nose is remarkably narrow in the newborn baby, so that a slight degree of swelling of the mucous membrane or the presence of amniotic debris, meconium, or other foreign matter may easily cause obstruction. It is well known that the full expansion of the lungs takes several days, and may be postponed or prevented by any sort of obstruction in the respiratory tract. Richardson's suggestion that many babies with such trouble are allowed to die labelled as "asphyxia neonatorum" is one which may well contain a serious truth, because at the post-mortem examination on such cases atelectasis would undoubtedly be found, and a close examination of the nasal airway may very well be overlooked. A recent example of a temporary obstruction of the nasal airway causing symptoms which were not obviously due to such a cause has recently been under observation.

Case 3.—Baby S., born at full term, weighing 7 lb., was seen at St. Stephen's Hospital, aged 1 week, with the story that everything had been normal for five or six days, when the breathing became rapid and distressed and the baby became cyanosed. The intercostal spaces were sucked in during inspiration, and there was much movement of the accessory respiratory muscles. The whole picture was strongly suggestive of obstruction in the upper air passages as, for example, might be produced by laryngeal disease or a large thymus. Examination of the chest failed to show any physical signs, and there was no actual stridor. Largely with a view to excluding the possibility of nasal obstruction a catheter was passed through each nostril. There was at once definite improvement in the child's condition, breathing became easier, and the cyanosis was relieved. This "dilatation" of the nasal airways was continued at intervals, and three days later the baby appeared to be perfectly normal, breathing easily through the nose. It seems probable that the actual cause of the trouble was slight infective rhinitis, although there had been no sneezing and no nasal discharge. There were certainly no obvious symptoms pointing to nasal obstruction.

A rather similar case with more obvious nasal disturbance was seen last year with Dr. W. A. Dunlop of Hendon.

Case 4.—Baby B. was born with normal delivery, and became rather stuffy in the nose with attacks of cyanosis on the second day of life; there followed some nasal discharge from both nostrils. Physical examination of the chest showed no abnormality, and there was good air entry. A diagnosis of congenital adenoids was made, but temporary treatment

by the instillation of menthol in paraffin was instituted with the idea of proceeding to removal of the adenoids if the symptoms did not improve. The simple measure, however, proved adequate in clearing up the nasal trouble, and within a few days the baby was breathing normally with no further cyanosis. Another point in this case was difficulty in feeding experienced in the early days because of the blockage in the nose. The early development in this case suggests that the rhinitis was produced by inhalation of foreign material during delivery.

Other causes of non-bony and non-membranous nasal obstruction are recognized, of which perhaps the most important is congenital adenoid enlargement. An interesting rarity was seen in one baby who used to draw the uvula up into the nasopharynx when it cried, causing blockage there, which was only relieved some time after the baby stopped crying and allowed the uvula to come down again. This condition existed probably for several days with cyanotic attacks, but as the child grew older it righted itself. A fairly common cause of temporary nasal obstruction is seen in very big newborn babies with fat cheeks and a short upper lip, who have the exterior nares completely blocked during feeding at the breast, and are difficult to get going with breast-feeding in consequence.

General Commentary

These several cases have been described to emphasize the great importance of investigating the state of the nasal airways in any newborn infant who has apparent difficulty in breathing. It is a simple matter to pass a soft rubber catheter, lubricated with a little paraffin, back through each nostril; this may relieve cyanotic symptoms, and indicate a diagnosis when there is obstruction present. If nasal obstruction cannot be overcome in this simple way, then it is important that the mouth be kept open and an airway be maintained through this route until such time, generally about ten days, as the baby learns to breathe through the mouth. Feeding will be difficult during this period, since suckling is impossible, and it must therefore be maintained by the use of a spoon, or in very ill babies by the passage of a stomach tube two or three times a day.

Summary

Examples of nasal obstruction, bony and permanent, inflammatory and temporary, are described. It is pointed out that mouth-breathing is not acquired until the age of 10 to 14 days. It is suggested that in all instances where there is difficulty in breathing in the newborn baby the state of the nasal airways should be carefully examined, and any narrowing be dealt with, if possible, by the passage of a soft rubber catheter.

The author's thanks are due to the medical officer of the London County Council for permission to refer to Cases 2 and 3 and also to the medical superintendents of Hammersmith and St. Stephen's Hospital, where these babies were seen. Case 2 was admitted under the care of Professor Young, who kindly gave permission also for the case notes to be summarized. Mr. Monkhouse, F.R.C.S., Mr. Sydney Scott, F.R.C.S., and Dr. W. A. Dunlop must also be thanked for their interest in, and special care of, the babies already mentioned.

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The Health and Cleanliness Council (5, Tavistock Square, London, W.C.1) has issued a new poster, with the slogan, "Where there's dirt there's danger." We are asked to state that they will be pleased to send specimens free of charge, together with particulars of their offer of supplies for distribution, to any readers who may care to apply to the secretary at the above address.