in normal persons from this average curve, its slope varying by ± 25 per cent. and its height by rather more. We will consider the factors at work in causing these variations, a matter of importance clinically, since the same factors may produce more extensive variations in disease.

CO₂ is present in blood almost entirely in the combined form, as bicarbonate BHCO_3 ; a little is dissolved. The c.H of blood is proportional to the ratio,

$$(\text{dissolved CO}_2) / (\text{combined CO}_2).$$

Since the dissolved CO₂ is proportional to the CO₂ pressure we may say alternatively that the c.H is proportional to the ratio,

$$(\text{CO}_2 \text{ pressure}) / (\text{combined CO}_2).$$

Now suppose we add bicarbonate to blood, keeping the c.H constant while we do so by increasing the CO₂ pressure in the same proportion as we increase the total bicarbonate—that is, the combined CO₂. Then the total CO₂ held by the blood is increased by the amount combined in the bicarbonate added, plus the extra amount dissolved owing to the increased CO₂ pressure. The second amount is very small, since CO₂ is not very soluble, so that the only important increase is that due to the added bicarbonate. The same is true of adding bicarbonate at any fixed c.H, so that by adding bicarbonate to blood we merely raise the v.CO₂—c.H line of Fig. 1 by a uniform amount all along, without changing its slope; in other words, the degree to which the blood is buffered is unaffected by the addition of bicarbonate as such. By adding bicarbonate to blood we merely cause an increase in its CO₂ pressure for a given c.H; the CO₂ pressure in the alveolar air is increased therefore, the respiratory centre slowing the respiration to keep the c.H constant. Hence variations in the total bicarbonate content of the blood are not responsible for differences of slope, but only for differences of position of the curve in Fig. 1. The variations of slope are due to another cause.

The v. CO₂—c.H line of Fig. 1 is much less steep for plasma than for blood, which is natural, since the red cells contain the major portion of the phosphates, and all the haemoglobin, which provide the greater part of the base required to combine with, and so absorb, the CO₂. If, therefore, some of the corpuscles be abstracted from blood, we may expect the resulting v. CO₂—c.H line to be intermediate in slope between the line for plasma and the line for whole blood; the more red cells be left the steeper will be the line, the less be left the less will be its inclination. Hence the differences in the bloods of normal individuals in this respect may be attributed to differences in the number and contents of the red cells.

A steep v. CO₂—c.H line, implying a well-buffered blood, will be a characteristic of an individual in whom exercise produces little respiratory distress; a line of little slope we should expect to find associated with dyspnoea. It will be very interesting to study the physiological and the clinical aspects of variations in the slope and position of this line.

THE END-RESULTS OF REMOVAL OF TONSILS AND ADENOIDS.

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So much has been written recently on the subject of the operation for the removal of tonsils and adenoids that there may perhaps seem to be little more which can be usefully added. There is, however, one aspect upon which little, if any, stress has been laid—namely, the general practitioner's views upon the effects and the utility of the operation. It is he who is naturally in the best position to judge the end-results, since he is able to observe the patients more intimately and for longer periods than the operator or the consultant can do. Further, it is as a rule the general practitioner who decides as to the advisability of his little patients having their tonsils and adenoids removed, and it is he who has to give the parents the reasons, based upon his previous experience, which lead him to believe that benefit will be derived from the operation.

For these reasons I feel that a summary of the cases which have been under my care during the last few years may

serve a useful purpose. I have included all the children under 10 years of age who have had their tonsils completely removed by dissection (all according to the method originated by Mr. George E. Waugh) and their adenoids removed at the same time. The very striking conclusion which this summary indicates is that, once convalescence after the operation is complete, the child's health is so greatly improved that one has hardly ever had to attend him or her again; and that the child is not so liable to other and fresh illnesses as one who retains this lymphatic tissue.

I append a table of the cases, and must add that in only one instance (Case 34) where I have not subsequently attended the child again have I lost trace of the patient. In the remaining cases I have attended other members of the family and have had the opportunity of seeing for myself the healthy condition of the children referred to. I have purposely omitted stating the signs and symptoms which led me to advise operation because I do not wish to confuse the issue, the point which I desire to emphasize being the very small number of professional attendances on these children subsequent to operation, thereby proving the undoubted benefit that has accrued from the surgical procedure. In only four cases (Nos. 12, 26, 33, 39) had an obvious tonsillitis been observed; in four cases (Nos. 3, 11, 33, 50) a cervical gland was sufficiently enlarged to attract the mother's attention; and in three cases (Nos. 21, 45, 49) chorea or acute rheumatism was the reason for advising the operation. In all the other instances it was the general survey of the case which indicated the treatment.

Summary of Cases.

Case.	Year.	Attendances Previous to Operation.	Subsequent Attendances.
1	1911	40 in 20 months	For measles and hernia.
2	"	Weekly for 3 years	For influenza 9 years later.
3	1912	45 in 18 months	Nil.
4	"	26 in 4 months	Frequently for congenital deformity.
5	"	53 in 2 years	Chicken-pox in 1920.
6	"	33 in 20 months	Occasionally for uric acid.
7	"	40 in 1 year	Nil.
8	1913	Seen once only	Occasionally for talipes.
9	"	Daily for 2 months	Nil.
10	"	5 in 2 months	Appendicitis in 1920.
11	"	Seen once only	Nil.
12	1914	Seen once only	Nil.
13	"	12 in 2 months	For small cuts, and bronchitis twice.
14	"	14 in 2 months	For fissure in ano.
15	"	25 in 2 years	Twice since.
16	"	9 in 1 month	Nil.
17	"	73 in 2 years	For gastric disturbances, 7 attendances.
18	"	19 in 6 months	Nil.
19	"	9 in 4 months	For pertussis in 1915; vulvitis in 1919.
20	"	Almost daily for years	Frequently for "congenital heart."
21	1915	13 in 3 months	In 1919 for astigmatism.
22	"	49 in 5 months	Frequently for asthma.
23	"	14 in 12 months	Nil.
24	"	21 in 2½ years	Nil.
25	"	21 in 5 weeks	Nil.
26	1919	10 in 2 months	Chicken-pox in 1920.
27	"	13 in 2 months	For gastritis and food rash several times.
28	"	12 in 6 weeks	Fractured humerus in 1920.
29	"	9 in 1 month	Two attendances for accidents.
30	"	6 in 3 months	Nil.
31	"	6 in 5 months	For gastritis several times.
32	"	16 in 5 months	Two attendances since.
33	1920	6 in 2 months	Nil.
34	"	15 in 7 months	For warts on hand.
35	"	7 in 3 weeks	For tapeworm several times.
36	"	12 in 3 months	Nil.
37	"	14 in 7 months	Nil.
38	"	15 in 14 months	Nil.
39	"	4 in 3 months	Several times for talipes.
40	"	7 in one month	Several times for talipes.
41	"	20 in 16 months	For gastric disturbance in 1921.
42	"	3 in one week	Nil.
43	1921	6 in 6 months	Nil.
44	"	6 in 4 months	Nil.
45	"	19 in 4 months	Nil.
46	"	21 in 1 month	Nil.
47	"	14 in 3 months	Three times for colitis.
48	"	3 in 4 months	Nil.
49	"	24 in 6 months	Nil.
50	"	37 in 2 years	Nil.
51	"	8 in 6 months	Nil.
52	"		Nil.

In 24 cases, or 47 per cent., no further attendance was needed. In 5 cases, or 9 per cent., attendances were required for gastric or intestinal disorders only; in 4 cases, or 7.5 per cent., for congenital deformity; in 4 cases, or 7.5 per cent., for zymotic diseases; in 2 cases, or 4 per cent., for appendicitis; and in 10 cases, or 19 per cent., for other disturbances unconnected with the throat. Thus there are left only three cases—asthma, congenital heart, and bronchitis—where attendance after the operation for removal of tonsils and adenoids was at all frequent, and in these instances it was very much reduced.