

Association between General Appearance and Incidence of Fainting.—Table V gives the incidence of fainting among donors classified according to sex and according to a rough system of bodily build. This confirms the clinical impression

TABLE V.—*Incidence of Fainting in Donors Classified according to General Appearance*

Description	Males		Females	
	Calculated No.	% Fainted	Calculated No.	% Fainted
Tall and thin ..	354.9	11	336.8	13
Short and stout ..	68.35	5.9	473.6	6
Tall and stout ..	141.55	5	136.85	10
Short and thin ..	139.3	13	576.35	7.6

that those of tall thin build were most often associated with a predisposition to vasomotor reactions.

Temperature and Relative Humidity.—No note was made of atmospheric conditions in the buildings at the time of bleeding. Records were, however, obtained of external temperature and relative humidity, but no correlation could be traced between the incidence of fainting and either of these factors. This was contrary to expectation, since the general impression was that reactions were more frequent in hot weather than they were in cold.

Severity of Reactions.—Table VI illustrates the relative incidence of reactions varying in severity. The interpretation of the classification has already been given, Grade 1 being the least and Grade 3 the most severe. Little can be deduced from examination of these results, since there would be a high rate

TABLE VI.—*Incidence of Fainting in Donors attending on First, Second, and Subsequent Occasions, with Severity of Reaction in each Case*

Grade of Faint	First Attendance	Second Attendance	Third or Subsequent Attendance	Total
1	97	43	24	164
2	28	15	7	50
3	5	1	2	8
All grades ..	130	59	33	222

of selection among donors who had reacted to previous donations. Conclusions, therefore, cannot be drawn regarding the incidence of fainting among donors who have attended on second or subsequent occasions. Of 59 donors who fainted at their second attendance 26 had done so under similar circumstances before; and of 33 who fainted at their third or subsequent attendance 11 had previously experienced similar reactions. A few cases are on record of donors who suffered their first reaction after their fifth or sixth transfusion.

Summary and Conclusions

Investigation of syncopal reactions in 3,241 donors, bled over a period of four months, reveals that there is a definite correlation between certain individual and environmental factors and the incidence of these reactions. Factors tending to increase the reaction rate may be classified as follows:

Avoidable

Environment.—Increased incidence of fainting was observed in circumstances in which supervision of the donors by the medical officer or senior nursing staff was not adequate. Rest immediately after the donation of blood was also important, as was shown by the low rate of reactions in one hospital where tea was served before the donors moved from their couches.

Isolation.—While it is desirable, for aesthetic reasons, to isolate donors by screens, it is not believed to affect very greatly the tendency to fainting, as donors are reassured by being able to see others giving their blood. "Epidemic" fainting, however, is aggravated under such conditions, and it is better for young donors attending in parties to be separated.

Menstruation.—Donors known to be menstruating should not be accepted, but it is not considered advisable to exclude such donors unless the information is voluntarily given by them.

Unavoidable

Diathesis.—The incidence of reactions is significantly higher among those of the "asthenic" diathesis than among donors of more stocky appearance. This suggests that syncopal reactions

may be associated with increased vagal tone, and this hypothesis is further borne out by certain clinical features of the reactions, such as bradycardia and low blood pressure.

Age.—The higher incidence of fainting among donors under the age of 30 provides further evidence of the association between increased vagal tone and the incidence of syncopal reactions following transfusion.

Treatment

The usual measures for the treatment of syncope are effective in restoring all cases. No specific drugs, such as atropine, have been used, as, owing to the transient nature of the complaint, such treatment may prove more unpleasant than the reactions themselves. Attention to the above-mentioned environmental factors and avoidance of donors with a tendency to syncopal attacks provide the best prophylactic against unduly high rates of fainting among donors.

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THE EXPANDING PELVIS

BY

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A fact well known to the ancients was that the pelvis of woman expands during labour. Galen and Soranus both taught that the pelvis gave way at the articulations to let the child's head pass. The members of the Gynaecological Conference held at Amsterdam in 1899 were unanimous in their opinion that the pelvic joints (the symphysis in front and the two sacro-iliac joints at the back) softened in pregnancy, moved apart, and so led to a definite enlargement of the area enclosed by the pelvis during labour. It was claimed that by suitable posture a definite increase of both antero-posterior and transverse diameters could be obtained *in every pelvic plane*, and it was stated that in the lithotomy position the lengthening of the true conjugate at the brim which could be obtained by posture amounted to 0.5 to 1 cm., while at the outlet the separation of the ischial tuberosities in the lithotomy position was increased by as much as 2 cm. This expansion varied with the individual, being greatest in the young and in those engaged in active work. This is one reason why in countries such as India marriage at puberty is traditional. Experience has shown that where skilled assistance in childbirth is not available, offspring are more likely to be born alive when the pelvis is still flexible.

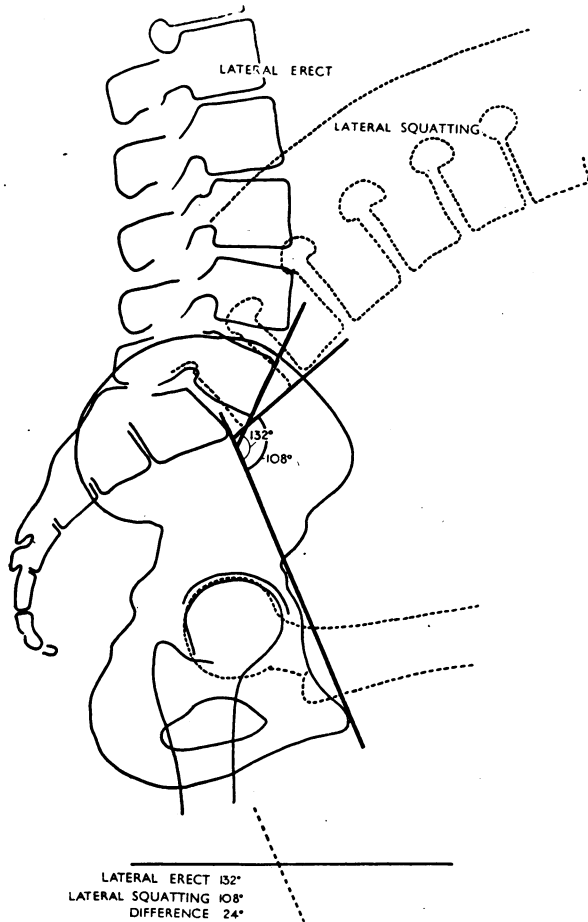
The Flexibility of the Pelvic Joints

Ralph Brooke (1934) has found that just before delivery the flexibility of the pelvic joints is 2½ times as great as in the unimpregnated state. Besides the increase noted at the brim and at the outlet, there is another easily observed increase—namely, the widening of the space between the posterior-superior spines of the ilia. The difference made here between hollowing and rounding of the back is normally half an inch (about 1.25 cm.), but this separation of the spines is increased during pregnancy and by suitable exercise to over 3 cm. I find in practice it gives a very good indication of the flexibility of the individual pelvis.

With the valuable co-operation of Miss K. C. Clark of Ilford Ltd., well known for her original work on positioning, I chose as model a healthy well-grown child dancer of 14 years, as the bones at that age are less dense. The accompanying tracings show two lateral vertical views of her spine and pelvis. The first is on *tiptoe* with arms above the head to get the maximum *hollowing* of the back. The second is taken in the *squatting* position with head bent well down between the knees to ensure the maximum *rounding* of the back. These studies show that change of posture has more important effects than

mere enlargement of the brim: (a) change in the alignment of the lumbar vertebrae and sacrum; (b) change in the angle made by the plane of the brim with the spine.

In hollowing the back, as on tiptoe, the lumbar vertebrae and sacrum form a curve with the convexity directed forward, and their bodies are separated from each other in a fan-like



manner. Compare this with what happens on rounding the back as in squatting, in crouching, or in the lithotomy position. Then the bodies of the lumbar vertebrae are pressed together and form with the sacrum part of a continuous curve which has its concavity directed forwards. The gap between the last lumbar and the first sacral vertebra has closed up. In the present example the angle made by the plane of the brim with the anterior surface of the body of the first lumbar vertebra was, on tiptoe 132 degrees, squatting 108 degrees—a difference of 24 degrees. Both the curving of the spine and the bringing up of the plane of the pelvic brim to a position more nearly approaching a right-angle with the lumbar vertebrae must facilitate the entry and descent of the foetal head.

Bearing down with rounded back brings the coccyx forward and releases the muscles of the pelvic floor for their final task—namely, complete relaxation as the head passes the vulval opening. One can now understand why crouching, squatting, and kneeling are the positions naturally chosen for parturition when women are left to themselves, as it is upon the changing movements of spine and pelvis that the process of natural birth depends, and with which we must be familiar before prescribing ante-natal exercise and before we can make the best use of posture during labour. To get the best results the position adopted must never be a rigid attitude, but a sequence of changing movements as the flexible pelvis accommodates itself to the advancing head.

Ante-natal Exercises

The pelvis, then, is not a rigid structure but is capable of expansion at the symphysis in front and at the two sacro-iliac joints behind. This flexibility, natural in the very young, can

be maintained and developed by means of well-designed exercises even in quite elderly primigravidae, and it can then be utilized during labour by a judicious use of posture, such as sitting, kneeling, crouching, in all of which the pelvic articulations are pulled apart, the pelvic floor stretched, the vagina and rectum drawn up and opened.

To ask an elderly primipara to kneel or squat for the first time during her confinement is to ask for trouble. Her back, her joints, and even her feet are stiff. Hence the necessity for well-chosen exercises in the ante-natal period. Now, the one exercise which fulfils all our requirements is that of squatting: (1) squatting with feet on the ground, knees apart, back well rounded, and the head down between the knees; and (2) squatting with hollow back, knees apart, head thrown back, and eyes directed to the ceiling. These two positions can be combined in one exercise by a slow rocking movement on the feet forward and back while the patient steadies herself by holding on to the side of the bed. The first position is the more important, as when the back is rounded the sacral promontory goes back (the coccyx forward), while the pubic arch is widened and the perineal muscles are stretched transversely.

Conclusion

Perfect ease in parturition is like perfect ease in swimming or in playing games, and necessitates a trained control of muscular contraction and, still more difficult to learn, relaxation of the opposing muscles until the co-ordinated movements become instinctive. Childbirth is really an athletic feat in which the mother must be the chief performer, not her attendant, and to play her part properly she needs specialized teaching and training.

Sir Arthur Keith once said that while the heads of the race were getting bigger the pelvis of woman seemed to be getting smaller. The explanation might well be that the pelvis is adequate but rigid. Civilized conditions and habits have deprived it of its natural elasticity, so that the mother is bruised and the foetal head is crushed during birth instead of its being a process of mutual adaptation and accommodation between mother and child.

BIBLIOGRAPHY

- Brooke, R. (1934). *Proc. roy. Soc. Med.*, **27**, 1211.
Engelmann, G. J. (1883). *Labor among Primitive Peoples*, St. Louis.
Fabre (1933). *Précis d'Obstétrique*, 1.
Gray's Anatomy, 1938, London.
Jarcho, J. (1934). *Postures and Practices during Labour among Primitive Peoples*, New York.
Jellett, H. (1929). *Maternal Mortality*, London.
Kelly, H. A. (1918). *Medical Gynaecology*, p. 210.
Vaughan, Kathleen (1937). *Safe Childbirth, the Three Essentials*, London.
Witkowski, G. J. A. (1887). *Histoire des Accouchements*, Paris.

MASSIVE ASPIRIN OVERDOSAGE: RECOVERY

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In the opinion of Roche Lynch (*Brit. Encl. med. Pract.*, 1939, **12**, 77) aspirin is the drug in commonest use by the general public of this country. In view of the comparative frequency with which overdoses of aspirin are taken and of the absence or inadequacy in medical textbooks of descriptions of the treatment of this acute medical emergency, the following case in which recovery followed the taking of nearly 1,000 grains of aspirin seemed to merit a short account of the methods of treatment employed. Recovery after retention of aspirin in doses exceeding 500 grains, according to the literature, is uncommon.

Case Report

The patient, a married woman aged 57, was admitted to hospital at 8.15 p.m. in a comatose condition, the following history being given by her husband.

For several weeks she had been depressed and suffering from insomnia, for which she had been taking aspirin in small doses.