conducted, which means that labour is allowed to progress for some 8 to 12 hours before a decision is made as to doing a caesarean section or allowing labour to proceed and achieve vaginal delivery. If on the one hand the patient is told in the last few weeks of her pregnancy that she is to have a trial labour and that a section may be necessary she will be in some uncertainty and will not enter labour with full confidence that labour will progress in the normal way in which she has been instructed. On the other hand if she is not told of the possibility beforehand and is then told after some hours of labour that she now requires a section she is apt to imagine that some serious complication has suddenly arisen and however much she is reassured she will be apprehensive about the outcome for her baby. The emotional state of labour is not conducive to her being able at that stage to accept a rational explanation of what is happening.

A rewarding aspect of antenatal instruction is that the patient with a definitely contracted pelvis for whom vaginal delivery is not safe and who is told at 38 weeks that a caesarean section is the right course for her has the utmost difficulty in persuading the patient to accept this.

The answer to the problem must lie in instructing patients at prenatal classes that caesarean section is not undertaken as a last desperate measure but rather as a means of forestalling complications and avoiding trauma to mother and baby. They should also be made aware that their prenatal training was not wasted should they not be able to deliver vaginally but that labour and delivery form but one part of the prenatal course and they will still have the advantages of posture, properly toned up muscles, correct breathing in the later months of pregnancy and an understanding of many aspects of childbearing. They should also not lose sight of the fact that postnatal exercises are as important after section as after vaginal delivery.

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THE SEXUAL ASPECT

There are many aspects of pre- and postnatal instruction which are better imparted to a group than to an individual as the patient will then feel that the remarks are not being addressed to her personally and so she is able to assimilate the knowledge without embarrassment. This is particularly true of matters relating to sexual adjustment. If the patient has this knowledge and has confidence that her doctor will choose the right course for her, little difficulty should be encountered in persuading her that caesarean section is the right course for her.

Psychological Principles

Applied to Antenatal Training

By ALMA E. HANNON, (M.A.) Psychology

Divergence of opinion exists amongst the proponents of antenatal training as to what constitutes a completely satisfactory programme for the preparation of childbirth. Successful performance during labour is considered the criterion for "satisfactoriness". Until a controlled investigation is undertaken what the results demonstrate a definitive relationship between method of training and performance during labour no claim for the superiority of one method over another can be made. Research in the efficacy of these different procedures would prove extremely laborious and almost since control of all the variables related to successful parturition would be difficult. How then can we assess the intrinsic value of any one of the training procedures? We may be prepared to accept that if it works, then it is satisfactory. This is pure empiricism. Such an approach is permitted in a scientific discipline but it can prove sterile where the generation of new concepts, hypothesis or a theoretical model are concerned. The question should be "what makes it work?" This becomes a quest for the antecedents of the observed behaviour. "How does it work?" on the other hand implies a quest for laws governing behaviour. If such an approach is adopted, we need explore no further, as the principles governing behaviour are already known to us. What we need to determine is how adequately they are applied to the area of antenatal care or training.

Antenatal training can be divided into three categories:

- Physical training through exercise and breathing; relaxation; and education in the physiology and mechanics of childbirth and labour. All three categories should be covered in the preparation for childbirth. The rationale for any antenatal procedure should be to equip the woman with responses
which she will be able to use during her confinement to control and facilitate birth of the child. Let us now examine each of these categories in turn.

**PHYSICAL TRAINING THROUGH EXERCISES AND BREATHING**

Awareness of the body in space depends on constant input from the somatic nervous system. Our perception of an arm extended above the head depends on the co-ordination of tactile and visual sensations; accuracy of movements is the result of associating differential muscular tensions with different visual sensations as the arm is moved through space. Sensory deprivation or the reduction of sensory input results in disorientation of the body in space. Hallucinations were experienced by student volunteers in a sensory deprivation experiment carried out at McGill University by Bexton et al.

Impairment of intellectual performance was shown after only short periods of isolation. The constancy of our psychological behaviour is determined, then, by the continuous interaction of the body with its environment. If we wish to establish a perception or awareness, we must first invoke behaviour. To quote Sperry: "If the man matures correctly, Grantly Dick-Read work of the brain to be the manufacture of ideas, sensations, images, and feelings, the storage of memories, and the like, and often expects the correlates of these to be some kind of aural end-product phoshorescing within the cortex or emanating from its convolutions. These subjective phenomena may, however, be regarded as phases of brain function itself, not products of it. Scientific analysis has failed to disclose any output at the cerebral level other than the miscellaneous by-products mentioned above. Excepting these, the entire activity of the brain so far as can determine, yields nothing but motor adjustment." 14

Ewert, when trying to replicate Stratton’s research on the inversion and reversal of the visual field produced by prismatic lenses worn in spectacle frames, found that his visual field remained upside down and reversed whilst Stratton had reported the spontaneous correction of the visual field after prolonged and continuous wearing of the inverting spectacles. The difference in their findings is explained by the extent of their motor behaviour. Ewert sat at his laboratory desk writing reports whilst Stratton moved about manipulating his physical environment during each of these categories in turn.

"The woman learns how to hold these muscles in a state of relaxation; and she endeavours to obtain the best possible motor co-ordination. She reheares useful movements, favourable positions and postures that are an advantage at certain times. We try to impart to the woman during her preparation some form of discipline. This discipline amounts to the formation of centres of excitation and of new connections at brain level. At the very moment when the first contraction appears the woman gets the maximum functional efficiency out of her brain, and raises the threshold of painful perception by practising all the techniques she adopted during her preparation" (p. 130). This represents the psychoprophylactic approach to exercise, essentially a training in awareness. Perception of bodily sensations can be heightened during differential training in which contractions and relaxation in groups of muscles are performed alternatively. Such a procedure enables a woman to differentiate, and at times dissociate, and that has a positive effect from anything that has a negative one as far as the motor system is concerned. So much so that by the time labour is reached the woman can induce a muscle to work on its own, while the others which do not need to work are maintained in a state of relaxation. During delivery, for example, her apprenticeship will have taught her how to contract her abdominal muscles while she keeps the muscles of her pelvic floor relaxed. There will be no obstruction to overcome forcibly; hence the duration of delivery will be shortened accordingly." (p. 131). Kitzinger makes the following comment on disassociation: "‘Disassociation’, a technique taught as part of the psychoprophylactic method, is very different, (that is from her method of simulated contractions) is not intended to simulate in any way true uterine contractions, and substitutes a deliberate, conscious act for an experience which essentially is one of smooth, co-ordinated activity of involuntary muscles—one which the mother cannot will to function either at birth or afterwards. It is not another kind of intellectual information or physical exercise can help to control, (p. 17, italics mine). This latter statement is contradicted by a wealth of experimental evidence on conditioning of autonomic functioning. In summing up some of this evidence Franks’ states: "Under certain circumstances verbal stimuli can bring about or modify a wide variety of physiological reactions, some simple, other complex, some at the level of awareness, others which the subject is normally quite unaware. It is claimed that in this way it is possible to influence metabolism, the secretions in the gastrointestinal tract, vaso-motor activity... (p. 111). Here involuntary or autonomic behavior is brought under voluntary control by pairing of a verbal stimulus with an unconditioned stimulus, that is one that produces the autonomic response, for a critical number of trials and in spatial and temporal contiguity. Again quoting from Franks: “Working with a variety of visceral responses Bykov has shown that these responses obey the same laws as does the CR (conditioned response) secretion of saliva. Especially important is his work with the kidneys in which the mechanism of the urinary CR was shown to involve both the pituitary gland and the nervous system. In a similar manner, Bykov and his associates have been able to establish and manipulate CR of bile, heat regulation of the body, blushing... (p. 139). An association formed between two events, usually a stimulus event and a response event, is termed conditioning. It was Pavlov who discovered the conditioned reflex (as opposed to the innate or unconditional reflex) and used it..."
as an instrument for studying the processes and principles governing higher nervous activity. Conditioning applies not only to reflex behaviour, as was demonstrated by the Russians, but also to operant (what the layman refers to as voluntary) behaviour itself: behaviour consequence to stimulus. The individual; the environment is "operated" upon. What manipulations or operations will be learned or conditioned in an individual depends on the contingencies present in the environment. If, for example, an organism is searching for food and finds it, the behaviour preceding the actual eating of the food will be reinforced, and vice versa. Generally, the definition of reinforcement is tautologous: "If X follows Y, then Y is reinforced". In the laboratory reinforcement is determined by the experimenter, but in a free-response setting what will be reinforcing for behaviour is not necessarily known. Reinforcements of everyday life are social in origin rather than emanating from a biological condition. In our early training procedures for the young we reinforce any form of behaviour that approximates more closely normal cultural practices. The relaxation procedures used in antenatal training are functionally related in this example.

Relaxation procedures used in antenatal training are essentially in a social context and behaviour can be brought under the control of specific stimuli. Her participation in exercises is constantly being reinforced by the teacher through praise and encouragement. Further, the knowledge that she is equipping herself adequately for an event will lessen any anxiety she may experience and this will reinforce her attendance and participation in the procedures. Her behaviour will evoke social approval from other sources as well, her husband through his interest would also be providing reinforcement; her doctor by sanctioning such behaviour is also reinforcing it; friends by showing willingness to discuss the antenatal programme also provide what is tantamount to approval. The sources of reinforcement in such a context are numerous and there should be no difficulty in maintaining the desired behaviour at an optimal level.

The real problem is how to build up the behaviour. Descriptions of what is required are not wholly satisfactory, as the transition between verbalizing and enacting can only be achieved if the behaviour is already present - that is, in the individual's repertoire. Audio-visual aids will merely consolidate existent behaviour and do not necessarily give rise to the stimuli or sensations which are the antecedents for responses. The sequence of behaviour necessary for parturition will have to be "shaped" by successive steps, each involving sets of muscles. The feedback from each set of muscles provides the stimulus for the next response in the chain. It is only by the manipulation of both the stimulus and response variables that conditioning can be established. A successful training programme for labour would be one that simulates as closely as possible the labour itself, thus generating and conditioning total participation on the part of the woman.

Imagery and verbalizations are both internalized mediators of behaviour, they cannot evoke the behaviour itself unless the behaviour has been experienced. Trying to imagine a contraction is impossible without having experienced some muscular tension; the injunction to contract a muscle is impossible in the abstract. Using generalized imagery has value only if there is some commonality between experiences, for then generalizations of behaviour can occur. The danger in using such a procedure is that the stimulus or sensations one is trying to evoke become somewhat blurred and non-specific. For example, quoting from Kitzinger: "Uterine contractions are felt by many women to sweep towards them, rise in crescendo and then fade away like waves of the sea, so that wave imagery is very useful when describing the sensations of contraction. This wave imagery is closely associated with the idea of rhythm, which is all important in harmonious psychosomatic adaptation to labour. One can explain how a woman must swim over the wave and not allow it to envelop her, and to do this she must go forward to meet it with her breathing instead of waiting until it is already on her. So she must judge its size—analyze it—and keep on top of it with her breathing, adapting the rhythm and depth of her breathing to the curve of the wave. As it approaches its crest, her breathing is at its most light and rapid. Her breathing is always in relation, not to a chart on a wall or an illustration in a book, but to that particular contraction of her own uterus and to its rhythm and intensity." (p. 165). This analogy elicits somewhat amorphous sensations and so fails in its purpose of identifying the antecedents of behaviour; for behaviour to come under stimulus control the stimulus must be unambiguous. Another difficulty can arise from the use of imagery in a training programme because differences in the ease with which people can handle imaginative situations are known to exist, so those able to elicit imagery would be better prepared than those who could not.

The type of instruction that would succeed admirably because of its specificity is also given by Kitzinger, here for breathing for bearing down. "To practise, breathe in, blow out; then take a deep breath in through the mouth, fixing the ribs and diaphragm, and, holding your breath, with your chin tucked in against your chest, and arms relaxed by your side and slightly flexed at the elbows, lean on the fashion of a swimming position. Inhale and try to feel beneath the diaphragm and press down firmly and slightly forwards, feeling the muscles which will help you to squeeze your baby gently and evenly down the birth canal, at the same time deliberately releasing the muscles of the pelvic floor." (p. 109). Here is a highly structured sequence of responses where the feedback from each segment of behaviour will become the stimulus for the next response, the whole sequence involves kinaesthetic sensations. The suggestion: "It may help you to think of a tube of toothpaste which you are rolling up from the end with steady pressure" (p. 109) immediately breaks down the structured motor responses because it involves only visual sensations; there is no movement of the body akin to rolling up a tube of toothpaste. Instead of consolidating bearing down behaviour, such an instruction would interrupt and inhibit it as the sensory modalities of kinaesthesia and vision have not been functionally related in this example.

The relaxation procedures used in antenatal training are all based on Jacobson's Progressive Relaxation. The essence of Jacobson's method is to provide prolonged and intensive
training in relaxation for the purpose of achieving differential relaxation, where all muscles not in use are relaxed and so neuromuscular tensions are diminished. To quote "... an excess of slight or incipient tensions or movements, some co-ordinated and with well marked function and some not, involving in many instances small but in others great caloric expenditure, seems from one standpoint to constitute the very essence of what is commonly called nervous disorder. From this standpoint, the effect of differential relaxation is to eliminate such elements of motor disorder." (pp. 99-100'). The effect of relaxation is to raise the threshold of anxiety-evoking or tension-evoking stimuli. Muscular relaxation is antagonistic to the expression of anxiety. Granity Dwayne asserts "... relaxation would be an antidote to abnormal tension and therefore an adjuvant to the physiological process.—I suggest, however, that for the purpose of its application in obstetrics, we consider relaxation to be a condition in which the muscle tone throughout the body is reduced to a minimum.—For it we are able to reduce the tone of our muscular system, we can control experiment; and effects of this was that the reflexes of the body are diminished in power. We also know that the influence of the mechanism that records sensations arising within the body is much less pronounced in a state of muscular relaxation than in a state of muscular tension. Stimuli arising from the emotional system produce less intense reaction than in the case of tension in the muscular system. ... in applying this to obstetrics we can say that if the body is completely relaxed, it is impossible to entertain the emotion of fear." (pp. 199-200').

The physiological usefulness of relaxation lies in the temporary ascendancy of the parasympathetic nervous system which will inhibit sympathetic functions whilst psychological benefit comes from the inhibition of fear. Relaxation would not eliminate anxiety or fear for these responses are under specific stimulus control, what it achieves, however, is the temporary inhibition of such responses. The elimination of anxiety or fear could only be effected through deconditioning, where the association between stimuli and responses is extinguished or weakened. Deconditioning or desensitization of anxiety-evoking stimuli has been used extensively by Wolpe and others in the treatment of neurotic behaviour. Essentially the deconditioning procedure breaks down the associative link between a stimulus and a response by establishing an alternative response to the same stimulus. A brief description of this procedure is given by Wolpe in the following passage, where eating was used as an alternative response rather than relaxation. "Some years ago, studies on the induction and elimination of experimental neuroses in animals showed that these conditions were persistent habits of unadaptive behaviour acquired by learning (conditioning); and that their therapy was a matter of unlearning. The central constituent of the neurotic behaviour was anxiety, and the most effective way of procuring unlearning was repeatedly to feed the animal while it was responding with a weak degree of anxiety to a food stimulus. The effect of this was to diminish progressively the strength of the anxiety response to the particular stimulus so that it eventually declined to zero. Increasingly "strong" stimulus situations were successively dealt with in the same way; and finally, the animal showed no anxiety to any of the situations to which anxiety had been conditioned. The basis of the gradual elimination of the anxiety response habit appeared to be an example, at a more complex level, of the phenomenon of reciprocal inhibition described originally by Sherrington. Each time the animal fed, the anxiety response was to some extent inhibited; and each occasion of inhibition weakened somewhat the strength of the anxiety habit. The experiments suggested the general proposition that if response inhibitory to anxiety can be made to occur in the presence of anxiety-evoking stimuli so that it is accompanied by a complete or partial suppression of the anxiety response, the bond between these stimuli and the anxiety response will be weakened". The behavioural response as an alternative to anxiety most widely used is relaxation; relaxation is as much a part of behaviour as any more obviously "active" response. Deconditioning or desensitization to anxiety-evoking stimuli in therapeutic practice involves the presentation of stimuli in an ascending hierarchy of intensity whilst the patient is completely relaxed. The probability of such inhibition would seem to be more completely effective by the adaptive verbalizations of the trainee. The repeated presentation of such inhibition would enable the conditioned inhibition of the anxiety responses to develop. Effective deconditioning of anxiety, however, depends upon the systematic manipulation of those stimulus events which initiate and maintain the anxiety. What the critical stimulus constellations are depends upon the individual's life history. As they would vary from individual to individual it would not be possible to decondition anxiety in the group situation, unless the antecedents for behaviour were common to all members of the group. Lazarus has conducted a study in which his groups were homogeneously composed.

The more restricted use of relaxation for the control of muscular tension is the one that can be successfully exploited in antenatal training. Training in relaxation will enable a woman to identify tension in muscles and equips her with the responses for dealing with it. Some individuals are incapable of deep relaxation. In such instances, one can train them to perceive differences in tension by increasing and reducing the tension in any one set of muscles, until they can achieve complete relaxation. This usually applies in cases of hypertension where the individual has never experienced a state free from tension, even in sleep there are residual tensions. (In such cases the use of chlorpromazine, meprobamate or codein could be used to create the experience of relaxation, where indicated). Relaxation should not be a passive part of training where the woman merely fops into a state of oblivion, but rather a deliberate manipulation of muscles to heighten the awareness of feedback from the muscles. By experiencing the differential muscular tensions a woman will then be able to evoke them on command and so control a whole sequence of behaviour. One cannot necessarily relax away pain but one can relax away resistance which induces pain.

EDUCATION IN THE PHYSIOLOGY AND MECHANICS OF CHILDBIRTH AND LABOUR

Education is the preparation of the individual to meet demands made by body and environment, both physical and social. It is through instruction that we provide the models for behaviour. Descriptions of the physiology and mechanics of labour will highlight and identify the appropriate behaviours involved and so establish the goals of response that each individual should strive to achieve.

Another aspect of formal training is that it provides opportunities for the counter-conditioning of undesirable attitudes towards or beliefs of pregnancy. Exposure to scientific information will initiate more constructive verbal behaviour and thought, superstitious beliefs and misconceptions will be extinguished as they are replaced by situation appropriate responses. The contingencies for initiating, maintaining and extinguishing behaviour are inherent in any social group. Questions and statements which approximate the scientific model and body of facts, will be positively reinforced by the teacher through approval, her willingness to listen and explain further or to consider other perspectives or statements in opposition to the scientific dictates may be discouraged or non-reinforced by comments such as "That is not quite what happens" or "You do not fully understand this" or somewhat more forcibly, "That's wrong". These contingencies have acquired their potency through the evolution of cultural patterns. Subtle and complex properties of behaviour can be traced to subtle and complex features of the con-
Physiotherapy in Obstetrics

By Mrs. P. UNIACKE

Physiotherapy in obstetrics has come very much to the fore in the past 20 years, especially in the antenatal field.

"Natural Childbirth": This is attained "when on the physical plane labour is physiological and unobstructed and on the mental plane the mother-to-be is unafraid". This was the principal to be put into practice and, with the invaluable help of the late Helen Heardman's two books, The Way to Natural Childbirth and Physiotherapy in Obstetrics and Gynaecology, this has become quite simple.

The group situation can also be used as a platform to disseminate facts on child-rearing practices which conform to the cultural norms. Again, the contingencies in group interactions could initiate, modify or extinguish individual attitudes. Since the acquisition of complex social behaviour is long-term, complete regularization or conformity of child-rearing behaviour could not be achieved in the short time devoted to antenatal training. The guide-lines, however, could be established. What develops later would be determined by the mother's social milieu.

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