In the early detection and prompt treatment of pre-eclamptic manifestations, as has already been stressed, preventive medicine has one of its greatest opportunities, but the treatment of eclampsia is still empirical and the results problematical at the best. In the pre-eclamptic state, quite simple treatment quickly yields beneficial results: if not, the pregnancy can be terminated before the patient's condition becomes critical. Prophylaxis it is impossible to over-emphasize, because, in the present state of our knowledge, it is only by the exercise of *really adequate ante-natal supervision* that eclampsia can be prevented and a considerable decrease in maternal mortality thereby secured. The astounding results in the clinics in which the patients receive very complete ante-natal supervision justify the claim that eclampsia is, save in a few instances, a preventable disease.

I am indebted to Professor J. M. Munro Kerr for the facilities afforded me at the Royal Maternity and Women's Hospital, and to Dr. John Walker, of Glasgow Public Health Department, for supplying information concerning deaths from eclampsia.

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STAMMERING.

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In dealing with the question of the inception of stammering we have to consider three main elements; the neurological, the psychological, and the habit factors.

The last is, of course, present in all cases. So, in the majority of cases, are both the first and the second, although in varying degrees. There are, however, certain stammers into which the psychological factor does not enter in any degree which necessitates its being specially dealt with; and others in which it is paramount, while the neurological element is negligible, and the habit factor enters more with reference to a habitual mental attitude than to the speech as such.

A classification of stammering is not easy; but it is necessary to recognise the existence of distinct types. A certain amount of failure to deal with this disorder is undoubtedly attributable to the attempt on the one hand to refer all stammering to one common type of origin, and on the other to see, in the wide variation in phenomenal disturbance connected with stammering, a correspondingly wide field of variation in type of this disorder.

The latter of these polar mistakes seems to be more or less dying out, if it has not already done so, and the former to have been substituted for it—doubtless on

the reaction principle; and, judging from the fierce attacks made on each other's methods by some of those who treat stammerers, to be holding the field at the present time. For if people will try to make out that all types of stammering without exception are referable to one kind of origin it is hardly to be expected that they will agree as to what that origin is. When it is recognised that, while actual type is much less variable than was at one time supposed, not all stammering can be explained on the grounds of an invariable origin, it will doubtless be admitted that no one line of treatment is ever sufficient to cure all stammerers.

Stammering has been classified by one authority into two groups; the hysterical type, characterised more particularly by the rapid repetition of sounds (often called "stuttering"), and the psychasthenic type, characterised by the inability to begin to speak.

In actual practice, however, I have not found this classification to be of much practical help, for various reasons. Moreover, as Dr. Worster-Drought says, one rarely gets the hysterical stammer now†, this type having chiefly shown itself as a result of war conditions, although the hysterical element tends to enter into a certain proportion of stammers.

Such classification as I have been able to make to any practical purpose shows three distinct groups, and in addition a fourth and a fifth group, less clearly demarcated, and with regard to which I am not yet certain whether they should be regarded as distinct, or merely as modifications of the first. The grouping is as follows:—

Group I.—The "true" stammer. This comprises that large majority of cases which would be described as neuro-functional, and in which there is almost certainly a congenital predisposition to stammering.

Evidence from many sources and of several kinds converges to show that such a predisposition exists, and that it is connected with the speech centre. Opinions differ as to the nature of the condition constituting this predisposing factor. Dr. Neill Hobhouse* considers it to consist practically invariably in a tendency to develop left-handedness, even where this is never observed.

But whatever its exact nature, its existence can hardly be doubted, despite the many attempts that have been made to show that stammering (meaning, presumably, all stammering) has an emotional origin. Psychologists themselves as a result of their experiences with stammerers, are coming more and more to recognise the presence of this neurological factor which, as expressed in the stammer itself, constitutes a tic condition.

At the same time we must recognise the very frequent presence, in addition, of a disturbing psychological element, which most often enters the field at a very early date; sometimes before the inception of speech, sometimes concomitant with, or following it; not infrequently arising as a result of the stammer itself, and often complicating the whole situation to such an extent that the tic element denoting the predisposition becomes swamped, and lost sight of. Yet its presence is again and again revealed in the form of a residue disturbance to speech after treatment on psychological lines has removed all hindrance of an emotional nature.

†Except in girl stammerers, the proportion of whom, to boys, is very small.
*N. Hobhouse. "Nervous Disorder in Infancy and Childhood."

Group II.—The “pure” psychasthenic stammer. An Irishism seems here unavoidable, for this type, in which the patient is unable to begin to speak, or invariably hesitates before beginning, but speaks quite freely once he has started, I do not myself consider should be regarded as a “stammer” at all. There is no stammer in the speech as such, and the difficulty in beginning really constitutes a “hold-up”, or inhibition. I therefore prefer to classify the condition as a “psychological speech hold-up”. It must, however, be classed with the stammering group.

In this type the special predisposition before referred to does not seem to be present, and the condition seems to be referable to an emotional factor only. There is none of the explosive stopping and starting which characterises so many stammers that are not of the “stuttering” variety. Some form of psychological treatment is the only one likely to be of any help in these cases, and complete relief has been known to follow quite a short period of treatment.

Group III.—The “pseudo-stammer”. This is a form which may develop at any age, as the outcome of a specific physical condition, and to which, so far as one can tell, no predisposition need exist. A bad nervous breakdown, a respiratory tic, chorea, spastic paraplegia, are all conditions from which I have known stammers to develop, without the slightest sign of stammering ever having existed apart from, or preceding them. Conceivably these might become habitual if not helped. On the other hand, the normal speech pattern has been well and strongly developed previously, and the tendency is for this to reassert itself as the disturbed physical condition disappears. Help for the speech along re-educational lines, however, is always worth while, as it alleviates the distress, shortens the period of disorganisation and obviates the chance of habit-formation.

This type of stammer is always the easiest to get rid of, largely because the habit factor does not need to be dealt with to anything like the same extent as in the more permanent forms of stammering.

The Fourth and Fifth Groups to which I have referred, and which would probably be better termed sub-groups, are (a) the “excitation” stammer, in which the patient stammers *only* when excited*, and (b) a fairly light type of stammer, which starts in childhood, but appears to be amenable to favourable conditions such as a regular and healthy life and generally happy conditions, with the absence of all emotional complications, and of too much excitement, and without any special guidance at all as regards the speech condition, or any notice being taken of it.

These cases are not so rare as is sometimes believed, and obviously constitute the origin of the very widespread supposition that any stammerer, if left alone, will “grow out of” his stammer, which has resulted in so many having grown tragically into it before they are brought for treatment. The fact that so much depends on environment and other conditions, and sometimes on very early factors, which will not permit of the “growing out of” the stammer, is overlooked, or rather not realised.

The fact, however, that it is never wise simply to trust to this happening, and that it is always advisable in cases of stammering to seek some help, need not blind us to the other proved fact that it does happen, but should, on the contrary, stimulate us to enquire into the why and the wherefore of an incidence which is too frequent to be simply set down as an anomaly.

*Almost all stammerers of course, are worse when excited, although I have known exceptions even to this rule.

Given favourable conditions, and the right type of parent or guardian, it is sometimes a simple matter, early in the child's life, to give advice which will enable the former to guide him out of his difficulty into the capacity to speak easily and normally; and, on the other hand, one knows of cases in which the mother or nurse has been able to do this successfully, apparently by an instinctive feeling for the right measures.

Under *Group I.* comes a not inconsiderable number of cases in which the psychological element, while never, of course, completely absent, presents no serious problem, and may therefore be considered as negligible so far as treatment is concerned. And while, throughout the whole of this group, which presents enormous variation in the phenomenal field, the factor of habit needs to be specifically dealt with, the question as to what line or lines of treatment any individual stammerer will be likely to respond to best resolves itself into the further questions, (a), Is there an emotional problem that requires adjusting? (b), If so, is it one of which the stammerer is fully aware? and (c), If he is unaware of it as a problem, how deeply below the surface of consciousness is it?

If the patient, despite his stammer, is of the by no means rare type that is well adjusted to life on the whole, and normally healthy, the psychological problem does not obtrude itself, and the line of work will be directed immediately towards restoration of the normal rhythm of speech, at the same time directly meeting the problem of habit, inevitably present on account of the unconscious nature of the speech function.

If, as frequently happens, the condition is aggravated by an emotional factor which is not too deeply buried, this can generally be dealt with by the speech therapist, or a Child Guidance Unit, particularly if the stammerer is caught young. There is an enormous range of possible complication here, and in dealing with children it is desirable to make as many contacts as possible with those responsible for them, both at home and at school, so as to discover what factors may be holding up progress, and so far as possible to adjust them. In certain cases removal from surroundings may be the only solution, and where this is impossible, recovery may be extremely protracted, even taking years, although one need never give up hope, since stammering is curable at any age.

Health conditions of every kind must be enquired into and adjusted where necessary, including those of vision, teeth, glands and every nervous trouble. It is waste of time to try to treat stammering while these are neglected, since every condition which in any way tends to sap vitality tends also to act as a deterrent to the ability to regain ease in speech.

Where the emotional factor is deep, as in all cases under *Group II.*, and many under *Group I.*, treatment along analytical lines (not necessarily deep analysis) is needed, and this should always be left to the psychological expert.

I have spoken of the "origin" rather than of the "cause" of stammering, because the use of the latter term tends to create some confusion as to what is meant. We hear of a great many "causes" of stammers, in the nature of frights, shocks, etc., but these must be regarded rather as in the nature of a "touch-off" to a condition which only awaits some such incident to show itself, and which more truly constitutes the origin. Incidents commonly called "causes" would be more correctly termed "secondary causes", or "exciting causes".

Normal speech, like every other function and activity, has its proper rhythm. In the stammerer this rhythm has been lost, and our task is to restore it. I use the word "rhythm" not, of course, in the specialised and limited sense in which it has come to be commonly understood, but in its more accurate sense of balance combined with flow, or fluency.

The application of a rhythm (*i.e.*, an illustration of the rhythmic principle) which is not proper to normal speech as such, as, for instance, in the attempt to make stammerers speak metrically, to emphasise words periodically, to "dwell on" the vowel sounds, etc.—all the well-known old tricks of elocutionary methods—is purely artificial, and has, therefore, no permanent value whatever.

All normal action, being free and unimpeded, and possessing natural balance, is rhythmic in the strict sense.

It may seem a far cry from the idea of analysis, or analytical treatment for instance, to that of rhythm, especially considering the unfortunate associations given to the latter word by loose usage and limitation of meaning. But perhaps the following considerations may make this point clearer.

We know that all malfunctioning presents a condition either of over-tension, tending to rigidity, or of insufficient tension, tending to flaccidity. Either state means a loss of the rhythm proper to the function in question. Stammering belongs obviously to the former class.

Our task is therefore to help the stammerer to release all undue tension, (which may extend far beyond the bounds of speech), and thus set up free rhythm in speech and in his general life.

While it is nearly impossible to free the speech permanently so long as there remains any permanent mental tension (the only reason, in functional conditions, for physical tension), the opposite is not true, owing to the presence of the neurological factor before spoken of. In nearly all cases the speech itself needs gentle and careful guidance out of the spastic condition of this tic factor into the freedom and ease of its own natural rhythm.

Three distinct, though by no means strongly demarcated, degrees of over-tension can be observed in stammerers. These tend to shade imperceptibly into one another, but they are sufficiently well-marked to make discrimination with regard to treatment very necessary.

They comprise: (a) cases in which over-tension is represented by the stammer itself, and generally by that alone. The rhythm of normal speech has been lost in the checking of the free flow, with accompanying incoordination, and the condition presented is one of over-tension as regards the function of speech. In other ways this type of stammerer is well adjusted, and physically at ease except for his speech.

(b) Cases in which a *general* over-tension is set up in the act of speaking in consequence of the stammer, but in that act only. As soon as the stammerer ceases to speak the tension is released.

(c) Cases in which a general over-tension supervenes, or tends to supervene, continuously. This tension varies in degree, and may be excessive.

The immediate objective, therefore, is to release all undue tension. I qualify the word because, as we know, a given degree of tension is implicit in every action, and in the very fact of existence. The *reductio ad absurdum* is a whole-

some practice, and it does us no harm to recall the fact that if *complete* relaxation were possible the result would be first disintegration and then disappearance.

In analytical treatment, the real objective is release of mental tension, with resultant freeing of the patient's emotional life, and a consequent restoration of its balance and rhythm.

The commonest and best known way of approaching the problem of over-tension is by means of general physical relaxation, in which the patient lies flat, and is induced gradually to relax the tension of body, limbs, etc., by the help of persuasion, the voice and manner of the instructor being properly adapted to this end. It is often possible to further induce physical relaxation by getting the patient first to exaggerate the tension by stretching the arms, legs, feet, etc., as much as possible. When the stretched part becomes tired the tension is broken by reaction.

From the first the stammerer is persuaded gradually to relinquish his mistaken efforts to speak, and that these hinder his ability to speak more than anything. Such persuasion may, however, prove abortive where the effort is chiefly due to an inner conflict, and the aid of the psychologist would here be called in. It is often found to be advantageous for the speech therapist to treat the stammerer at the same time that he is under psychological treatment, and at the West End Hospital for Nervous Diseases this is done.

It is usually by reason of his wrongly directed efforts that the stammerer develops the secondary tics or habit-spasms so often found in connexion with stammering. In the majority of cases these need not have any special notice taken of them as the tendency is for them to disappear as ease in speech is gained. At one time I believed that this was an invariable rule, but I have since had reason to alter this opinion, having had a certain number of stammerers in whom such habit-spasms remained over as a residue, until they practically constituted all that remained of the stammer; and on treating the tic as such the last of the condition is seen to be clearing up.

The treatment of tics, therefore, while it is an independent line of therapy, is relevant to that of stammering, and it may be worth while to give one or two points with regard to this. (a) Movements are given in which the normal sequence of tension, relaxation and repose, as exemplified in the action of the heart and lungs is followed out*. (b) The whole of this sequence must be strictly observed in this order; it is particularly important that the last shall not be omitted, this being the phase that there is a tendency to overlook (*e.g.*, in breathing practice). (c) The duration of the three phases must be equal. (d) Movement must be literally continuous; that is, there must be no jerking or checks of any kind. This ensures that no *more* tension than is proper to a given movement shall be present. (e) *Therefore* all movements must be of the simplest possible nature. (f) Each movement should start from and return to a position of rest. (g) The movements should be adapted to the part or parts affected. An echo of the homeopathic principle will perhaps here be perceived. Under this treatment tics as a rule disappear within a few weeks.

The habit factor is met by the gradual formation in the patient's mind of an association between the idea of feeling at ease in speech and the condition of being going to speak at all. For some time there is a more or less complete break

*M. E. Boole: "Logic Taught by Love," and other works.

between these two, but it can gradually be bridged, until speaking with ease and freedom becomes as spontaneous as was the original impulse to speech involving the stammer.

With regard to guidance of the speech itself, it may be of assistance to recall the analogy of a slow-motion film showing some perfect movement, such as the stroke of an expert tennis player, which elucidates normal rhythmic action. If our own speech be examined in an analogous way, the exact nature of the difference between normal and stammering speech *qua* speech is revealed. Having due regard to all that has been said on the matter of mental over-tension and emotional interference, a helpful mode of guidance may here be perceived.

It need hardly be said that the adequate treatment of this very difficult subject within the scope of an article of a few thousand words would be an utter impossibility. The most that I have been able to do is to give a few hints as to the nature of the disorder, and the more general principles by which one should be guided in taking up treatment.

Many years of special attention devoted to this most interesting of speech disorders, and the making and correcting (at least in part) of, probably, most of the mistakes that can be made, during this apprenticeship, have convinced me that those best fitted to deal with it are those who have the widest perception as to possible lines of treatment, combined with the clearest perception of the principles involved; who are prepared to admit that, at least so far as we can now see, there can be no one panacea as regards technique in treatment for all stammerers; who are willing, wherever it seems advisable, to pass a patient on to another, and, perhaps even more important, are able to see when this is advisable; and who are glad to share with other workers along lines differing from their own, the pleasure, as well as the responsibility, of relieving the patient of his difficulty.

THE TREATMENT OF COMPOUND FRACTURES.

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This article is a review of the various methods of treatment of compound fracture and a discussion of the problems which arise as the result of the opening of a fracture to the outside air.

A compound fracture is essentially one in which there is a solution of continuity of the skin over the fracture and this introduces two factors which are of the greatest importance in determining the final result. They are:—

- (i) The introduction of infection around the fracture.
- (ii) The escape of blood which in the closed fracture collects around the broken ends of the bone as a hæmatoma. Both these possibilities are of very great importance in modifying the processes of repair.