portion of internal white matter and external grey matter is great. It is possible, therefore, that the convolutions of a large animal out of a small animal a disproportion between the grey capsule and the white core of the cerebrum must result. This is compensated for by the extended cortex placing itself in folds or puckers, and thereby reducing the capacity of the capsule to a degree which becomes in correspondence with the white contents; consequently "the formation of the convolutions and furrows is simply the result of the tendency on the part of the superficial layers to increase by simple extension, and of a mutual space accommodation ('Raum-accommodation') of the grey substance and of the white conducting paths.”

It is but right that I should state that many years ago Baillarger arrived at very similar conclusions; and, further, that the theory in question has received independent testimony in its favour at the hands of my colleague, Professor George F. Fitzgerald. Some months ago, having constantly had occasion to appreciate the dissatisfactory nature of the current explanations as to the origin of the convolutions, I detailed to Professor Fitzgerald, as far as I could, the conditions of cerebral growth, and asked if he could account for the presence of the cortical furrows upon geometrical principles. The views which he advanced were identical with those of Baillarger and Jelgersma.

It may be said that the explanation which we have given is merely another way of stating what has so often been urged; the surface of the brain is produced when the convolutions are produced by linear arrests of growth, and that the convolutions are formed by exuberant growth in the intervening districts. In a certain sense this is perfectly true: but it will be seen that essential points are added. In the first place, a reason has been given which indicates the influences at work in determining the convolutions; and, in the second place, an argument has been advanced with the view of showing that the pattern sketched out has, in all probability, a deep physiological significance. Mr. Hill, in his masterly translation of Obersteiner’s work, “On the Anatomy of the Central Nervous Organs,” gives expression to the opinion that the convolutions serve to increase the brain area, and obey such definite rules as to depth as would, in the conditions of the problem of the pathology of chorea, whereby the various symptoms may be correlated in the conditions of the problem of the pathology of chorea.

Before attempting to suggest a new way of viewing chorea, whereby the various symptoms may be correlated and brought into a similar line of reasoning, it would be instructive to institute a comparison between chorea and another functional disease of the nervous system—viz., migraine. It would seem at first sight that no two diseases could differ more from one another than chorea and migraine; yet on the contrary “various forms of irritation, mental and reflex, belonging especially to the nervous system,” are one of the two great sources of chorea, the other, in his opinions, being the rheumatic condition. (Quoted from I. New, amy. cit.) It may be said that few writers have pointed out the corresponding contradictions in the various theories which have been propounded. It is needless to refer to them here. Suffice it to say that each is based upon some one element of chorea to the exclusion of others of equal, perhaps greater, moment; and that consequently none satisfies all the conditions of the problem of the pathology of chorea.
primary derangement of the vaso-motor centre. The latter, notwithstanding the arguments which have been brought against it, seems more probable. It would suggest that a similar explanation may be given of chorea. That the primary change affects the vaso-motor centre, or centres, and that the muscular movements are due to secondary vascular disturbances, is not in accordance with the views which recent physiology points to the cerebral cortex, not to the corpus striatum as affected in chorea,—thereby rendering them liable to take an abnormal and, as it were, independent action (a predisposition in this direction being assumed); and that, on this hypothesis, all the other symptoms of chorea admit of harmonious explanation is, I think, rendered probable by the following considerations:—

1. As regards the cardiac phenomena of chorea. Irregular vascular action is in some way disturbed in chorea, and the heart's action is probably of the nature of a murmur, which there is no evidence. That a cardiac murmur can hardly be explained on any other hypothesis. Assuming, however, that cardiac innervation is in some way disturbed in chorea—and early irregularity at least points in that direction—anti-cardiac nerve fibres must be present, hitherto, so far as I am aware, unnoticed, which makes the occurrence of a murmur extremely likely. Chorea is a disease mainly of that period of life when the body itself is in a state of growth, when it is therefore quite possible, just as in all other organs (with the exception of the blood-vessels and the brain), the growth of the various parts of the heart does not proceed pari passu. The increase in weight of the heart is more rapid than that of the vessels; and one may well suppose that the excessive muscular movements of chorea, along with irregular arterial action in the cerebral circulation, should result in occasional regurgitation and the development of a murmur. It is far more probable that they, too, are dependent upon deranged innervation, the diaphragm being immediately affected; and as the respiratory centre is closely connected with that which controls the heart and blood-vessels, there is little in the way of reason against the motor centres of the vaso-motor centre being obliterated a focus, with which may directly occasion the cardiac and respiratory, and indirectly the motor and other, phenomena of chorea.

2. The respiratory phenomena of chorea. —Little attention has been paid to the respiratory symptoms which all admit to occur in chorea. They cannot in every case be referred to irregular action of the thoracic respiratory muscles. It is much more probable that they, too, are dependent upon deranged innervation, the diaphragm being immediately affected; and as the respiratory centre is closely connected with that which controls the heart and blood-vessels, there is little in the way of reason against the motor centres of the vaso-motor centre being obliterated a focus, with which may directly occasion the cardiac and respiratory, and indirectly the motor and other, phenomena of chorea.

3. The effects of treatment during sleep. —This feature is eminently characteristic of chorea, being, in fact, rarely absent. That some change affects the cerebral circulation prior to the supervision of sleep is certain; that this change is closely connected with a variation in the blood-pressure is highly probable. One may well suppose that the cessation of the choreic movements is due to the same vascular change, pointing again to their dependence on some affection of the vaso-motor centre.

4. The effects of treatment.—It is beyond doubt that the removal of a palpable source of irritation may be followed by speedy cessation of chorea. In all such cases it is probable that the result is due to a decided lowering of the blood-pressure—possibly by the efferent fibres of the motor centre. Chorea has also yielded to large doses of chloral. In a well-known case which occurred in Glasgow a choreic patient took sixty grains of chloral, profound sleep prevailing on coming to bed; but with awakening there was no return of the chorea. In another case, which also occurred in Glasgow, thirty grains procured the removal of the disease. Several instances have also been recorded where chloroform narcosis brought the disease to its end. Finally, as regards the vascular system, it is well known. According to Whitta, the action of chloral is directed against the vaso-motor centre, and brings about a fall in the blood-pressure. Sir Thomas Whithan and others have been the last to suggest that, so that in such circumstances the vascular system is strongly affected in is the experience of everyone. The results which have been recorded by Professor M'Call Anderson and others from the treatment of chorea by antipyrin, point in this direction, and the occurrence with the lesser or less pronounced affection of the cerebral centres, motor, sensory, psychological, to take on abnormal action.

5. Post-mortem evidence. —Dr. Dickinson's investigations go to prove the profound implication of the vascular system in cases of chorea. His comparison of the disease to diabetes loses somewhat of its singularity on the above supposition.

6. The exciting causes of chorea. —If to be true that fright is by far the commonest excitant of the disease, we have therein another argument for referring the phenomena of chorea to deranged action of the vaso-motor centre. It is highly improbable that its influence is directed against the motor cells, which some assert, as these are not likely recipients of sensory impressions. Through whatever centres such impressions are conducted, it is fair to assume that the resting point is the vaso-motor centre. And with regard to all other forms of irritation, it is just as easy to believe that they affect the same centre as that they act directly on the cells of the cortex cerebri.

Finall, as regards the relationship between chorea and rheumatism, it is to be borne in mind that: (1) rheumatism is attended by all the phenomena of irritation, and is accompanied by a general disturbance of the vascular system; (2) that rheumatism following chorea presents no difficulties in the way of the sui generis nature of the former being considered; (3) that chorea supervening on acute rheumatism (some other authors have recorded cases of chorea occurring after scarlet fever) may sometimes follow scarletina or measles, or small-pox, may be explained by the unstable equilibrium of the nervous centres, including the vaso-motor centre, which is so apt to follow on febrile disease.

**ON CATARACT OPERATIONS:**

**THE ATER TREATMENT IN LIGHT ROOMS, AND BY AN ADHESIVE STRIP ON ONE EYE ONLY, THE EYE NOT OPERATED UPON BEING LEFT OPEN FOR THE COMFORT OF THE PATIENT.**

BY JULIAN J. CHISOLM, M.D., BALTIMORE, U.S.A.

The object of this paper is to give the results of my experiences in the after treatment of cataract extractions during the past four years. Up to that time it differed in no respect from that universally adopted. Indoctinated early in the belief that movements of any kind were prejudicial to an eye which had been freely opened for the removal of an opaque lens, I closed both eyes with care under compresses and bandages. I kept my patients on their backs in bed, and enjoined a passive state, with the avoidance of all unnecessary movements. Dark rooms were deemed an essential for successful treatment, and patients were secluded in them for two weeks. In other words, I carried out the universally restraining treatment without questioning its propriety.

All eye wards in hospitals have closed shutters to the windows, so that when cataract cases were under treatment all daylight could be excluded. In these black wards candle light was the necessary source of illumination for the courtiers and for the professional visit. In the last few years a decided change has taken place in this regard. In many eye wards the inner shutters are no longer closed. The heavy compresses which still cover the eyes of the patients exclude all light. They are not affected by the admission of daylight, while the service is in every way benefited. There are a few over-cautious surgeons who still use dark rooms and in some cases I think they will be found to have an enlightened experience. Four years since I found one of my friends, Dr. Michel of St. Louis, using strips of adhesive plaster as a substitute for the compresses and bandages. His patients seemed to experience no injury from the admission of a little light through the diaphanous material. He thought it more comfortable for his patients undergoing bed confinement not to have their eyes covered with either compresses or bandages. He showed me a few of his cases treated by this plan, and the results from the admission of a little light through the diaphanous material. He thought it more comfortable for his patients undergoing bed confinement not to have their eyes covered with either compresses or bandages. He showed me a few of his cases treated by this plan, and the results from the admission of a little light through the diaphanous material. He thought it more comfortable for his patients undergoing bed confinement not to have their eyes covered with either compresses or bandages. He showed me a few of his cases treated by this plan, and the results from the admission of a little light through the diaphanous material. He thought it more comfortable for his patients undergoing bed confinement not to have their eyes covered with either compresses or bandages.