all of whom were in good health. The man had been suffering for five years from recurring attacks of gastric pain and vomiting. After stopping work and abstaining from all but small quantities of predigested milk and other liquid foods for a few weeks, his vomiting ceased, and he rapidly gained strength and returned to work. This happened several times and each succeeding attack was more severe than the former until finally, before I saw him, he had not been at work for four months. Owing to circumstances which prevented me being in my office when the patient first called, Drs. Stockton and Woehert very kindly examined him for me. He complained of weakness, loss of flesh, poor appetite, pain in the epigastrium, eructations and vomiting. He was constipated most of the time, but occasionally had attacks of diarrhea. His skin was sodden; his urine amounted to 864 c.c. in 24 hours, and the urea to 16.41 grams; there was a trace of albumin, but no sugar and no indican; the acidity was normal and the microscopic examination negative. The thoracic organs were normal, though the pulse was weak and the capillary circulation poor.

The first examination of the stomach showed moderate gastric stasis but no marked stagnation. The total acidity was 56; the free hydrochloric acid registered .12 per cent.; no lactic acid was found. On October 5, I examined the stomach before breakfast and found a lot of the food eaten the night before—the odor of which was not offensive though the mass was somewhat yeasty. Free hydrochloric acid was present; lactic acid was absent; butyric and acetic acids were present; hemialbumoses and peptone were present in large quantities; rennet ferment was active; starches were not digested. Microscopically, a goodly number of large long bacilli and strings of cocci were found but no Oppler-Boas bacilli were discovered. Subsequent examinations revealed similar motor, chemical and microscopic conditions, and as there was never at any time epigastric tumor to be felt, a provisional diagnosis of benign stenosis was made. There was no history of hematemesis nor was any blood found in the gastric contents. Diet, gastric sedatives and local treatment proving of no avail, operation was advised. On October 19, Dr. Park made a median epigastric incision and found the lesser curvature and pylorus attached to the liver by recent adhesions which were separated and revealed a clean chronic perforating ulcer of the superior anterior surface, very near the pylorus. The perforation was large enough to admit a lead pencil and the chronic nature of the ulcer was apparent by the formation of a new epithelial surface over almost its entire depth and by the large amount of thickening in and about its margins. The pylorus was amply patulous. Pylorotomy was performed and the patient succumbed a few days later owing, doubtless, to the fact that he was seriously weakened and reduced before the operation and was much past middle age. Pyloric stenosis probably depended upon spasm resulting from the irritation of the ulcer.

436 Franklin Street.

DR. GEOFFROY, of Rome, has been administering a solution of resorcin in certain digestive disturbances, and a child in his charge died. The parents' sued him, and the medical expert summoned stated that resorcin is toxic and that an adult can not take over 2½ gm. To prove its harmlessness Geoffroy took large amounts for several days and died in consequence.

REVIEW OF THE PRESENT STATUS OF JONNESCO'S OPERATION.*

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The olden writers considered it proper to commence an allocution with a *captatio benevolentiae* and so do I; with what success, remains to be seen. At all events I feel obliged to make an attempt to dissuade you from harsh criticisms because my paper will necessarily fall short of my own demands; what then can I expect from you? If there be any blame, your secretary must share it with me, as his request for a paper came on a very late day, and I promised against my better conviction. Furthermore, I have to say in explanation of my choice of title, that while it is certainly wise to call an operation by a name fully expressive of the procedure, it is not less our duty to acknowledge the meritorious work of our confrères who have promoted science. The highest reward we can bestow is due to those whose genius has given us a meritorious method for alleviating human suffering. It is therefore fitting that I should call this operation—neurectomy of the cervical sympathetic—by the introducer's name.

If we desire to obtain an understanding of the effects to be expected by resection of the cervical sympathetic we must recur to the physiology of this important nerve; and here, in delving into details, we find more discrepancies than we could expect from a perusal of the text-books. Preeminently we must not forget that all results of physiologic research in animals have to be transferred with caution, into the realm of human physiology. The location of the nerve is different according to the species; and late effects have been well-nigh neglected by physiologists. While the previous observations of accidental lesions have taught us some things, Jonnesco's labors have already shed considerably more light, and he and his followers will give us still more.

Presuming that the essentials are fresh in the minds of my hearers, let me recite some rarer observations. Bidder says that after cutting the trunk the salivary gland atrophies. Gad says that electric irritation of the upper end of the severed trunk, while it remains in connection with the head, produces general contraction of the blood-vessels of the head, except those on the mucous membrane of the cheeks, lips and gums, where redness appears. Seeligmueller says that traumatic paralysis was published eight times previous to 1876; but that only twice, redness and raised temperature of cheek and ear were reported, and twice only, flattening and reduction of the substance of the corresponding half of the face. Brown-Séquard saw, 18 months after section of both sympathetics on the neck of the guinea-pig, distinct atrophy of the brain; after one-sided section, atrophy of the brain of the same side only; whereas, Vulpian only once succeeded in seeing the same result. Wagner seems to have been the first man to find (1865) that hypotony of the eyeball follows the section of the ganglion supremum, while the myosis was well-known. Panas has shown though, that this hypotony does not last. While Hippel and Gruenhagen have shown that irritating the trigeminus within the skull produces glaucoma, Abadie says that this is due to the sympathetic fibers accompanying the trigeminus.

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Thus, he explains the appearance of glaucoma fugax in the sound eye, after iridectomy on the diseased side, by reflex irritation of the sympathetic fibers of the good eye, similarly as the reddening of the sound side, by the irritation of the central stump of the severed sympathetic on the other side, in Dastre and Morat's experiment. If we follow the literature, of all the symptoms ascribed to section of the sympathetic in the neck the only constant one seems to be narrowing of the pupil. The latest peculiar observation is by Neuschueler (Jan. 26, 1899), who found microscopic hemorrhages in the subarachnoid space and in the ciliary body of cats and rabbits after section of the cervical sympathetic of the ganglion supremum.

After glancing at these physiologic reminiscences, let me approach our subject proper. Although Jaboulay made the first intended sympathetictomy on both sides, Sept. 2, 1895, and although Baracz had already proposed the full neurectomy of the cervical sympathetic in 1893, Jonnesco was the first man to do the full neurectomy on both sides (1896), and up till to-day he has performed more of these operations than all other surgeons together. He is, at the same time, the man who most persistently widened the field of indications. He kept his labors constantly before the eyes of the medical world, beginning in the *Comptes Rendus du Dixième Congrès de Chirurgie*, 1896. His description of the operation itself, which I herewith circulate,¹ may already be called classic. Let us not forget Abadie, however, since he seems to have established the indication for extirpating the ganglion supremum for glaucoma.

The original purpose of Jaboulay was the cure of epilepsy. The theory that exophthalmic goiter is caused by an irritation in the cervical sympathetics certainly covers the field of phenomena better than any other and clearly indicates the neurectomy of the whole chain of three cervical ganglia. An irritation of the cervical sympathetics ought to produce bulging of the eyes; as removal of the upper ganglia causes retraction of the bulbi. An irritation of the lower ganglia accelerates the heart and consequently section of these slows it. There are, however, accelerating fibers in the upper two thoracic ganglia, and here may be an explanation if the operation should fail in slowing the heart. We know least of all regarding the influence upon the thyroid gland; but, inasmuch as sympathetic fibers accompany the thyroid arteries, we can at least construe an influence, little as we really know of this kind of influence. Let us not forget that this theory does not explain all, for example, why the affection is generally on both sides, or why there are "*formes frustes*" where the swelling of the thyroid is wanting, or where the bulging of the eye is absent. Let us not forget that Filehne has made the meritorious discovery that exophthalmic goiter can be produced by section of the corpora retiforma if lesion of the fourth ventricle be avoided; that other phenomena may accompany exophthalmic goiter, as the tremor and nervousness which point to involvement of the central nervous system itself; that the extirpation of the goiter alone has often cured the disease, and that thus failures by neurectomy of the sympathetic may occur. But, the results thus far are very gratifying, and last, but not least, of all sur-

gical means neurectomy is almost devoid of danger—thus far only two deaths are recorded—while the extirpation of the goiter is very hazardous and necessitates the tying of the three or four thyroid arteries and is not better in its final effects than the neurectomy, while it does not meet the theory half as well.

The theory upon which Jonnesco attempted the cure of essential epilepsy is much less substantial. He thought, simply by producing hyperemia of the brain, to increase its nutrition and thereby possibly to cure inveterate cases, and it may be he thought of the experiments of Kussmaul and Tanner, showing that anemia of the brain produces an epileptic fit. The exasperating character of many cases of epilepsy and the well-known failure of any number of methods, the surgical included, must have led to the attempts at neurectomy, while the physiologic atrophy of the brain mentioned heretofore may have escaped his calculation. At any rate, the results have not been unfavorable as a whole, though not as gratifying as with Graves' disease and glaucoma; while the ultimate effects are, considering the novelty of the procedure (four years) unknown to-day in man.

The final results as far as ascertained and published to date, are: Jonnesco's operation for epilepsy: There were 45 cases (Feb. 11, 1899); 55 per cent. cured, 28 per cent. improved, 15 per cent. not benefited—one case cured of chorea simultaneously. Jonnesco's operation for exophthalmic goiter: Ten cases were operated on; 60 per cent. recovered, 40 per cent. improved. In one case of unilateral resection unilateral improvement followed. Shortest observation was for a period of four months *post operationem*. Jonnesco's operation for glaucoma: There were 8 cases where vision was not lost, and in each there was improvement, particularly in the glaucoma chronic simplex where iridectomy is useless. Here he removed the uppermost ganglia only, except in one case in which the exophthalmic goiter also was present. In all there were forty-two bilateral resections with no deaths from the operation. Later on six epileptics died. This is a grand record, indeed, for four years of assiduous labor, a result entitling Thomas Jonnesco to a place among the stars of the medical firmament, and to the honor of having the operation carry his name, Baracz and Jaboulay notwithstanding, although the latter's first case may have inspired Jonnesco.

Only the cool judgment of the whole medical profession can finally establish the merits or demerits of an operation. In the *Société de Biologie*, Déjerie criticized sharply the results obtained in epilepsy, particularly Chipault's, who, according to Schober's report, could not refute the statement that in Paris not a single cure had been obtained. Yet Professor Dupuy had also to acknowledge this. Paris having been the nidus of this operation, it does not speak well for its effect in epilepsy.

In glaucoma generally those cases were submitted in which vision was almost lost and iridectomy had been done in vain; still improvements were generally noted where vision was not entirely lost. Mohr had improvement from vision 5/15 to 5/9; field 5 to 10 degrees. Dayreux saw a failure of Abadie's. Demichieri, in Montevideo, had in three cases, very decided improvements.

Panaš and Jaboulay saw the hypotonia vanish in three months and assumed that the nervous influence

¹ Trav. de Neurol. Chirurgie par A. Chipault, Paris. Vigot Frères, 1897.

travels afterward through the vagus and trigeminus. Abadie saw in a case of two years' standing vision increase after several months from 1/10 on left, to 1/3, and on the right from 1/2 to 2/3, the pupils retaining their normal conditions, but in another case after a year the vision again deteriorated.

Dr. T. M. Ball, in St. Louis, Mo., had two improvements; but in a case of atrophy of the optic the result was nil. In exophthalmic goiter the most gratifying results were obtained by others than Jonnesco.

Jaboulay's first case, in which he removed only the middle of the trunk of the sympathetic, made a partial improvement; a second case of his improved rapidly after removal of the ganglion supremum alone, but died after ten days from congestion of the lung.

Combermarle and Gaudier report a case where the exophthalmos diminished; the pulse went down from 200 to 100; the precordial pain vanished, but the goiter remained. Gerard-Marchant saw the exophthalmos vastly diminished; Chauffard and Quénu saw no effect. We must not forget that Jonnesco himself did not extirpate the whole chain of ganglia at first, and that where it was intended, some operations remain technically incomplete, on account of the great difficulty in removing the cardiac fibers. Furthermore, some cases of Graves' disease are not primary, but the tachycardia is secondary to the pressure of a very large thyroid; here only the removal of the thyroid can cure, since the effect of the enlarged thyroid is to stretch, and thus diminish the influence of the vagus.

The number of cases I could gather in the literature accessible to me is very small, and probably this is the case in the at present inaccessible literature. After we know more of the very late physiologic effects in man, we shall know better how much risk is involved for the future well-being of a person deprived of both cervical sympathetics; and, considering the statement of Brown-Séquard about the atrophy of the brain in the animal, I do not wonder that the profession follows Jonnesco slowly. My impression is that the operation will come to stay after all that may be feared as to its sequelæ. The horrible cases of incessant epileptic fits should be operated on first, in larger numbers, as their pitiable condition permits us to consider no risk too great that holds out a prospect of relief. Here the American surgeons ought to study the late effects first; in almost blind glaucomas next, and in true exophthalmic goiter last.

If the corpora restiformia are the center of the affection, Jonnesco's operation interrupts the telegraph line, and this is the most complete theoretic basis of operation in Graves' disease. I have seen a post-mortem report which is in entire keeping with Filehne's experiment; while it is well known that changes in the sympathetic are just as often missed as found post-mortem in Graves' disease, and here, I think, Jonnesco's operation will come to stay, if it can be shown that atrophy of the brain does not follow.

884 Main Street.

THE AUTHORITIES have donated a tract of land near Moscow for the erection of a home for aged and indigent medical women. A society organized for the purpose is collecting funds to build and maintain it. Public sanatoria for consumptives are also planned at Massandra and Essentuki, and subscriptions are pouring in.

COMMON, BUT GENERALLY UNRECOGNIZED SYMPTOMS OF EYE-STRAIN.*

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It is now, and for several years has been, quite generally recognized that many headaches have their origin in some form of eye-strain; and persistent or frequently recurring headache without other obvious cause very soon suggests to the layman, as well as to the physician, the probability of the existence of some fault in the visual apparatus.

The truth of the relation of eye-strain and headache was not accepted at once by members of the medical profession and for a long period was slow in establishing itself in their minds. To-day, however, there are few who do not recognize this truth.

Almost if not quite as common as headache are other symptoms which are more rarely looked upon as having any relation to vision, but which should properly be classed with headaches as evidence of some imperfection in the eye.

One of the most frequent of these is pain in the back of the neck. This sensation is often described as a pulling or drawing, or a tense feeling. It is frequently mistaken for what is commonly called "muscular rheumatism." The pain often radiates down the back and to the shoulder, or may even manifest itself as a pain in the side. More commonly, however, it is limited to the back of the neck and is frequently more pronounced on one side. The statement that this condition exists is rarely volunteered by the patient who seeks the services of an oculist, because he does not think of it in relation to the eyes. Inquiry as to its existence, however, reveals the fact that it is present in about 80 per cent. of all cases of refractive error presenting themselves. I have come to consider it as almost pathognomonic of eye-strain, and rarely indeed have I seen it fail to disappear with the correction of the visual error.

Another symptom which I would class under this head is mental confusion, or confusion of ideas, or an inability to fix the attention upon a particular object of thought, without great effort. When the attempt is made to focus the attention upon some matter requiring concentrated thought, the mind soon wanders, and it is only by great exertion of the will that it is brought back again to the subject under contemplation. There may be difficulty in carrying out a line of reasoning, some part of it eluding all attempts at placing it connectedly in the line. Patients not infrequently speak of this symptom and observe that it is more troublesome the more the use of the eyes is demanded in the performance of their task.

It is worthy of remark in this connection, that, to the perfected eye found in man as contrasted with the eye of most of the lower animals, we probably owe in large measure the development of the higher faculties of our mind. For without the fovea, that small highly organized area of the retina, as found in the human eye, it would be impossible to give thoughtful attention to an object looked at to the exclusion of other objects. For to an eye without a fovea all objects in focus within the field of vision appear equally distinct. "How could we give exclusive attention to one thing if all other things

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