

would any other surgical operation. In such cases, we may with propriety give small doses of ether by inhalation, before practising evulsion. The operation as described has in its favour the fact that it, or some very similar one, will lead to ultimate recovery in cases of excessive increase of tissue over the turbinated bones.

Note.—Since writing this paper I have had reason to believe that my forceps would be improved if made somewhat heavier and stronger, than was at first deemed advisable.

The slight curve of the jaws is still considered as adding to its efficiency.

ART. XVII.—*On the Treatment of certain Forms of Phthisis Pulmonalis by Rest, and the Internal Administration of Atropia.* By ROBERTS BARTHOLOW, M.A., M.D., Professor of the Theory and Practice of Medicine, and of Clinical Medicine, in the Medical College of Ohio.

As respects the hygienical management of phthisis, the most important conditions in its treatment are held to be a dry and rather rarefied atmosphere, an elevated position above the sea level, and an active outdoor life. At the present time, owing to influences which it is unnecessary to explain, amongst the most popular health resorts for pulmonary invalids, are the Mediterranean resorts, Nice, Mentone, etc., and in this country, Aiken, South Carolina, and Florida. Notwithstanding the present popularity of these seaside resorts, it is doubtless perfectly true as stated above, that the most enlightened professional opinion is, that elevation and dryness are the most important qualities of a suitable climate for pulmonary invalids. That an active out-door life is always enjoined on phthisical subjects, will not, probably, be disputed. It is a common spectacle to witness phthisical patients at home, or at health resorts, laboriously engaged in the effort to take active exercise when the heart-beat is habitually at 90 to 120, and the afternoon temperature at 100° to 104° F. This spectacle, from my point of view, is a sad one—the body already consuming at a rapid rate, and the patient hastening tissue-waste by exercise.

It is not my purpose to discuss at present the large subject of a suitable climate for pulmonary invalids, or the influence of dryness and altitude. Time and space will permit me only to consider the question of exercise, and the influence of atropia, as a curative agent in some cases. Clinical facts which happened under my observation several years ago, induced some investigations which conducted me to the conclusion, that the therapeutical practices now almost universally adopted are based on an erroneous theory, and that we do not sufficiently appreciate the importance of rest as a therapeutical measure. Facts which contributed

to decide my opinions are, also, physiological. It will be most convenient to set forth the physiological data first, and then follow with cases on which my conclusions are principally based.

1. *The Rate and Character of the Waste in Phthisis, and the Influence of Exercise.*—No one needs to be told, that to phthisis, more than to any other disease, is the epithet "wasting disease," more especially applicable. Beside the destruction which is taking place in the pulmonary textures, the products of waste are continually escaping through the skin, the kidneys, and the intestinal canal. Beside the albuminous materials, composed of mucus and pus corpuscles, fibrous tissue, etc., the chlorides and phosphates are contained in large quantity in the sputa. Through the skin organic matters, and the salts above mentioned, escape in large amounts, and through the kidneys, urates and uric acid, phosphates, and not unfrequently albumen. Even more rapidly than by any of the above-mentioned channels of excretion, is the waste by the intestines when these organs are invaded by tubercular ulcerations. The elevated temperature of phthisis, like the elevated temperature of fevers, induces those serious structural changes comprehended under the term "parenchymatous degenerations."

When the sources of waste above mentioned exist, and when they are in active operation, what influence must the various kinds and modes of exercise exert? This is a physical problem, to the solution of which we are now, fortunately, able to apply some exact data. The rate and amount of tissue metamorphosis determined by active exercise, have been recently studied by Fick and Wislicenus, Flint, and Pavy. The observations and experiments of the last-named observer are especially fruitful of valuable results; they are the latest, and, at the same time, the most accurate and elaborate of any that have heretofore been made in this domain of inquiry. The observations of Fick and Wislicenus, made on themselves during the effort put forth in the ascent of the Faulhorn, ended the reign of Liebig's theory, which, till then, had been almost universally accepted, notwithstanding the antagonistic observations of Voit. According to the theory of Liebig, force in the body, whether in the form of nervous, muscular, or secretory, is the product of the disintegration of the particular tissue evolving it; in other words, that muscular force meant the oxidation and destruction of a portion of the muscular tissue, nervous force, of nervous tissue, secretory force, of gland tissue. By Fick and Wislicenus, it was shown that on a diet exclusively of carbonaceous food, enormous muscular work could be done without increasing the amount of urica elimination, and that therefore the muscles simply utilized the materials furnished them for the force needed, and did not themselves undergo disintegration. The reaction which, under these circumstances, set in against the theory of Liebig, was stayed by the important researches of Flint, made on the pedestrian

Weston. (*On the Physiological Effects of Severe and Protracted Muscular Exercise. New York Medical Journal*, June, 1871.)

As a result of these investigations Flint concludes that "excessive and prolonged muscular exertion increases enormously the excretion of urea," and that "the excess of nitrogen discharged is due to an increased disassimilation of the muscular substance." The experiments and observations of Flint were thus in entire accord with the theory of Liebig. It was not long, however, until the conclusions of Flint were challenged by a no less distinguished observer than the physiologist of Guy's Hospital, Dr. F. W. Pavy. The performance in England by Mr. Weston of his pedestrian feats furnished the opportunity to Dr. Pavy to repeat the observations and analyses of Flint, and to confirm or disprove them. The results of Dr. Pavy's most accurate, painstaking, and laborious observations are to be found in vol. ii. for 1876, of the London *Lancet*. (*The Effect of Prolonged Muscular Exercise upon the Urine in Relation to the Source of Muscular Power.*) Dr. Pavy finds with Flint, that the amount of urea eliminated is much greater when walking than in the period of rest. Applying the method for ascertaining the "work-value" of the nitrogen excreted, Pavy is conducted to the conclusion that "the force obtainable from the nitrogenous matter disassimilated is totally inadequate to supply the power for the work performed." He does not, therefore, agree with Flint, and with the theory of Liebig; but maintains with Bischoff and Voit, and Fick and Wislicenus, that the muscular force is evolved not from disintegrating muscular tissue, but from the oxidation of the carbo-hydrates and the production of carbonic acid and water. The greatly increased excretion of urea, simply represents, then, the consumption of muscular substance in the wear to which it is subjected in violent and prolonged exercise. So far as we are here concerned, it is most important to note that in muscular exercise not only are the carbo-hydrates consumed, but a considerable disintegration of the nitrogenous materials, also, takes place. During rest, on the other hand, only the consumption of material, sufficient to maintain the temperature of the body and to supply the force for the cardiac and other movements, is required.

In his examination by the methods of mathematics, of the work done in simple walking, Prof. Hughton has shown (*Animal Mechanics*, p. 53) that "a man walking 23.03 miles along a horizontal road, has done as much work as if he had lifted his body up a vertical ladder through a height of one mile."

An enormous consumption of material is, therefore, required in the performance of such tasks as those undertaken by Mr. Weston. During the period of exercise, all the food that can be eaten, digested and assimilated is inadequate, and hence the tissues of the body are soon required, first, and chiefly, the carbo-hydrates (fats, starch, sugar, etc.), and afterwards the nitrogenous (albumen, etc.). To the consumption of material

required to furnish the necessary force, we must add the wear of the machinery represented in the urea-waste. It follows that many days of rest and an abundant food supply are necessary to repair the damages caused by the powerful efforts put forth by the muscles in active exercise. Those who have habitually weak digestion could not execute the tasks accomplished by Mr. Weston, other things being equal, and must occupy much more time in effecting repairs, assuming that the digestive power is equal to the task.

If the physiological exposition above given be correct, it is certain that anything like active exercise must be injurious to pulmonary invalids, must increase the rate of waste already at a rapid rate, and must exalt the febrile heat. As respects the latter, it may be asserted that Weston's temperature fell below normal—to 96°.5 F. on one occasion, after prodigious muscular effort—a fact ascertained by Flint in New York, and Pavy in London. The modern doctrine of the transmutation of force adequately explains this lowering of temperature under these conditions. Under the circumstances of ordinary exercise at ordinary temperature, moderate walking exercise increases, to a slight extent, the body-heat. The more rapid consumption of oxygen, the increased rate of cardiac movement, the chemical action and the mechanical friction taking place in the working muscles, etc., account for the greater production of heat. That the temperature rises but slightly above the normal, is due to the fact that the regulating function of the skin suffices to prevent any accumulation of heat. The body-temperature in health reaches its lowest point in the morning. The quiet and repose of the night explain the morning depression of the temperature. Enforced rest produces the same results. In the number of this Journal for January, I have published some observations showing that a remarkable reduction of the rectal temperature takes place in rabbits when they are kept simply immovable in a Czermack's support. Although not to the same extent, yet in the same way, we find that the human temperature is lowered by absolute repose.

The foregoing physiological data justify the following formulæ for the hygienic management of phthisis:—

Active exercise is hurtful in phthisis when there is present any considerable fever. Quiet of mind and repose of body, as far as they can be secured, are essential to the curative treatment of this disease.

In chronic cases, with limited lesion, and consequently slight fever, moderate exercise may be serviceable, in so far as it improves the appetite and the digestion.

If exercise is considered desirable in phthisis, it should never be violent or protracted, and it should be taken, as far as practicable, when the body is fever-free.

How far the foregoing formulæ are justified in clinical experience will be set forth subsequently. I may, however, anticipate so far as to give

the regulations on this subject which I enjoin on my patients. The amount and kind of exercise must depend on two factors—the range of temperature and the condition of the digestive organs. If there be considerable elevation of the body-heat, if digestion be feeble, especially if diarrhœa exist, no exercise should be taken, except, it may be, the most moderate walking about the house or room. If the fever be slight and the digestion good, moderate walking may be permitted, and the proper time for this exercise is about three hours after meals, when the peptones are about to enter the blood, oxygen being then needed to perfect the changes. All phthisical patients should sit in the sunshine and breathe the out-door air a considerable part of each day, properly clad in cold weather.

2. *The Actions and Uses of Atropia in the Treatment of Phthisis.*—To the distinguished Professor of Therapeutics in University College, London, Dr. Sydney Ringer, is usually assigned the credit of having proposed the use of belladonna, and its alkaloid *atropia*, to arrest the sweats of phthisis. There can be no doubt that Dr. Ringer's publications have been most influential in drawing professional attention to the subject. In his valuable *Handbook*, English edition of 1871, Dr. Ringer describes the applications of belladonna to the various forms of sweating, but he does not once allude to its application to arrest the sweating of phthisis (p. 362 *et seq.*). In the next edition (third) Dr. Ringer states that he "has made many fresh observations, confirming the efficacy of belladonna to check sweating," and he narrates these without referring to the sweats of consumption (p. 437 *et seq.*). I am thus explicit in giving these references, because my own observations preceded the publications of Dr. Ringer by several years.

In a notable paper read a few months ago before the Harveian Society of London, on *Anhidrotics*, by Dr. Milner Fothergill, the remarkable results obtained by this acute physician from the use of atropia in the sweating of phthisis, are admirably set forth, and to Dr. Ringer is ascribed the merit of having first announced the important fact. It is always an ungracious task to set up a claim for priority of discovery; but in this instance the investigations which I have pursued are connected in a series of events demonstrating that my attention has been given to this subject continuously for ten years. In my essay on atropia, which received the prize of the American Medical Association at its annual session in May, 1869, I have stated in unmistakable terms the utility of atropia in arresting the sweats of phthisis. (*Transactions of the American Medical Association*, vol. xx. 1869, p. 675.)

I transcribe the passage referring to this subject:—

"*Atropia in Diseases of the Respiratory Organs, involving Structural Alterations.*—The various forms of cough accompanied by free expectoration are much benefited by atropia. A dry state of the bronchial mucous membrane and irritative cough dependent thereon, are unsuitable for the action of atropia.

I have observed remarkably beneficial results from the combined use of morphia and atropia in cases of phthisis, accompanied by violent cough, profuse expectoration, and hectic. The cough and expectoration, the hectic, and the exhausting sweats especially, are much relieved by it [atropia]."

The addition of morphia to the prescription, which is given in a footnote (p. 675), was made with a view to moderate cough. This declaration in regard to the beneficial effects of atropia in the treatment of phthisis, was written in 1868, and the observations were made during the previous year. The cases which I will presently narrate, the first one especially, will demonstrate that I have given close attention to the action of atropia in phthisis for at least ten years. Students of the Medical College of Ohio, who have attended my courses of didactic and clinical instructions, will remember my frequent allusions to the treatment of the sweating of phthisis by atropia. The theoretical considerations which decided my use of this agent are embodied in the following paragraph on the subject of the arrest of secretion caused by its administration:—

"What is the mechanism of this arrest of secretion? Pflüger has attempted to show that there is a connection between the nerves and the nuclei of the secretory cells of the salivary glands. If this be the case, the secretion would seem to be due to immediate excitation of the gland-cells, and not through the agency of the vaso-motor nerves by regulating the supply of blood. Von Wittich has shown that the sympathetic directly excites the secretion of the parotid, not by regulating the blood-supply passing through this gland, for the influence on its secretion is the same when the flow of blood is stopped. Provost, who has studied the anatomy and physiology of the sphenopalatine ganglion, has shown that avulsion of this ganglion is followed by greatly increased secretion of the Schneiderian mucous membrane. There can be no doubt, then, about the direct influence of the sympathetic over secretion; but the precise nature of this influence is not well understood. When, after the administration of atropia, the fauces are injected, and the face burns, the temperature being actually elevated, there is greatly diminished secretion notwithstanding the increased amount of blood in the capillaries. This result must then be produced by the action of atropia on those filaments distributed to the secreting gland-cells, and not merely upon the vaso-motor fibres."

It is proper to state that these remarks were written in 1868.

More recently, in my *Treatise on Materia Medica and Therapeutics*, I have expressed my clinical experience on this use of atropia (p. 288):—

"No remedy is so generally effective in relieving the sweats of phthisis. The one-sixtieth of a grain at bedtime generally suffices. The author was the first to indicate this use of atropia, in his 'Prize Essay.' Not only is atropia antagonistic in action to that condition of the sudoriparous glands resulting in the sweats of disease, but it equally antagonizes the hyperidrosis produced by such drugs as jaborandi.

"In connection with the subject of the use of atropia in the night-sweats of phthisis, it may be proper for the author to state that he has observed cases of phthisis which appear to him to have been remarkably improved by the continued use of this remedy."

In a practical question, such as the treatment of phthisis, theoretical considerations must be subjected to the test of clinical observation and experience. How much soever the plan adopted may appear to be supported by physiological considerations, it cannot be entertained for a

moment, if the experience gained by treatment is adverse to its utility. When, therefore, I perused the paper of Dr. Fothergill (*The Practitioner*, December, 1876, p. 409), it afforded me great satisfaction to learn that this able physician had arrived at results similar to my own. I quote his language:—

“We are indebted to Dr. Sydney Ringér for our knowledge of this property of belladonna; and the debt we owe to him can only be sufficiently estimated by those who have an extensive experience of phthisis, and who give the drug a fair trial. I have no hesitation in saying that the use of this agent completely changes the aspect of many cases of pulmonary phthisis. For the arrest of the exhausting night-perspirations of phthisis, belladonna is as potent as digitalis is in giving tone to a feeble heart. It is quite true that neither is very effective in the last and final stages of disease, for, indeed, nothing is very potent then; but in the early stages, the action of each is very pronounced. In the night-sweats of spreading caseous pneumonia, the administration of belladonna is followed in almost all cases by a decided arrest of the flux; and in many cases the arrest of this flux is accompanied by immediate improvement. A few of the worst cases only, go on entirely unaffected. In the colliquative sweats of the last stage, when the lung is breaking down extensively, the influence exercised is but small; still it usually palliates the drain to some extent even then. The loss of the salts of the body, in profuse perspiration, quickly exhausts the system; and the arrest of this drain commonly permits of the other measures being effective in improving the general condition. Whilst the loss goes on unchecked, improvement is impossible.”

In another part of his paper (page 415), Dr. Fothergill states with some particularity, the kind of cases to which the atropia treatment is especially applicable.

“The most common cases are those where a slowly spreading pneumonia involves one lung to the second, third, fourth, or fifth rib. There is a fast pulse, over 100, a temperature over 100° Fahr., cough, profuse night-sweats, and rapid wasting. It is in these cases that the utility of belladonna is so well seen. As soon as the profuse sweats are checked, the patient begins to pick up; the appetite returns; food is better assimilated; the sleep is refreshing; and the mind is much relieved. In fact the arrest of the drain of salts by the hidrosis at once inaugurates an improvement.”

I am able to confirm in every particular these important observations; my experience has been identical; but some of the cases to which I now invite the attention of the reader, have been under my observation for nine years, whereas Dr. Fothergill's experience is comprehended within the limits of one year. That I have not brought forward my experience before, except in the brief paragraph from my Treatise, written in 1876, is simply due to the fact, that time is required to demonstrate the results in an essentially chronic malady like phthisis. Moreover, in this disease it is difficult to follow the movements of the patients, who are peculiarly prone to seek the advice of every pretended specialist, and who are often absent for change of climate. The cases to follow have been under my own observation, and for a sufficient length of time to obtain results, and they are now accessible for examination.

Illustrative Cases. CASE I.—Mrs. R——, æt. 25; married; blonde; slight in figure; weight, 95 lbs.; with a narrow chest. Three sisters died of phthisis, and both parents. She had had more or less cough for

several years. After the death of her last sister, she became very despondent, took but little food, and refused to go out of the house. Her cough was almost incessant, she had hectic and profuse night-sweats, and the menstrual flow ceased.

Physical examination, to which she submitted with reluctance, furnished the evidence of extensive consolidation of the superior lobe of the left lung, softening and extrusion, and probably of the existence of a small cavity; commencing deposits in apex of the right lung. Her pulse was habitually above 100; respirations 40; temperature, in the evening, 102° F. Expectoration was purulent and characteristic. Conceiving herself to be doomed, she became indifferent to life; and as her appetite was poor, she took no other nourishment than a little milk, and bananas and oranges, for weeks at a time. She spent the most of her time on the bed, and rarely left her apartment. As she was extremely opposed to medicine-taking, especially if ill-tasting, I gave her a solution of atropia, one grain to ʒij of water, of which she took two minims, morning and evening. This prescription was made in the winter of 1867-8, and owing to a misunderstanding of my directions she took it in increasing quantity for two years. I was several times, during that period, summoned to see her in consequence of the appearance of decidedly toxic symptoms. An improvement, which is only suitably characterized by the term remarkable, took place in her condition. The cough lessened, the expectoration disappeared, the fever and sweats ceased; she gained very considerably in weight; the menstrual flow appeared again; she became *enceinte*. During the period of pregnancy, she rounded out and presented an astonishing appearance of vigorous health. She was confined without accident, of a healthy male child, in 1871. She had an abundant supply of milk, and was able to nurse her infant the usual period. The child has proved to be vigorous; and free, in a remarkable degree, from the usual infantile diseases. At the present time, Mrs. R— seems in excellent health, and weighs, probably, 115 pounds. She still coughs a little, and has done so, more or less, ever since the results were obtained as above described; but the cough is due to habit. There has been no reason for making a physical examination recently; but some time ago (about one year), I found on exploration of the chest the evidences of the former existence of disease, but no signs or symptoms of lesions now active in the lungs. There seems to me no reason to doubt that a cure has been effected.

Commentary.—This case illustrates in a most striking manner the principle of *rest* as applied to the treatment of phthisis. The almost total cessation of exercise, doubtless, contributed an important share to the curative process. The waste which was already proceeding at a rapid rate, was not increased by muscular effort. Another source of waste—that by the sudoriparous glands—was stopped by the use of atropia. Moreover, in consequence of its action on the respiratory centre, and on the pneumogastric nerve, it is probable that atropia affects the nutrition of the pulmonary parenchyma.

Another feature of this case, which must be regarded as instructive, is the meagre diet. For months Mrs. R— ate only fruit, milk, and a biscuit or two (cracker), and this sparingly. A diet so meagre is opposed to all of our present notions on the subject of feeding in phthisis. The

most potent hydro-carbons are, as everybody knows, now considered essential. She not only refused aliment of this kind, but when she was induced, for the purpose of experiment, to take it, the intestinal disorder which followed seemed to demonstrate that the peculiarities of her appetite were instinctive.

Case II.—Mrs. C. G.—, æt. 45, widow, and mother of two boys. Her usual weight is 124, hair blonde, eyes blue. No hereditary tendency to phthisis.

Mrs. G. began to cough eight years ago, or when she was thirty-seven years of age. The existence of pulmonary disease was then recognized, and she had a variety of treatment, including change of climate. She came under my care six years ago when the symptoms were pronounced. She had lost considerable flesh; her cough was extremely harassing; the expectoration profuse; and she had hectic and night sweats. On physical exploration, the greater part of the superior lobe of the left lung was ascertained to be consolidated, and coarse moist sounds were abundant in this region. During the course of the next year (five years ago) a cavity, estimated to be the size of an orange, was excavated in the left infra-clavicular region, and the area of consolidation extended downwards to the lower border of the fifth rib. Her evening temperature during the first year of my attendance averaged 102.5° F., and the sweats were profuse. No systematic plan of treatment was carried on during the first two years. Mrs. G. saw me occasionally, but she tried on her own responsibility various methods of treatment, including six months of movement-cure and oxygen inhalations. She spent one winter in western North Carolina, another in Florida. It was during the next year (two years ago) only that Mrs. G. began to pursue systematically the plans which I instituted. Her condition then was deplorable. She was much emaciated—her body-weight being only eighty-five pounds. Her appetite was poor, and she vomited after every meal. Her pulse was rapid and weak, temperature in the evening frequently 103° F., and the sweats profuse. She coughed up in the morning an ordinary coffee cup of matter—the contents of the considerable cavity which now occupied a large part of the apex of the left lung. Moist râles, blowing and jerking inspiration, prolonged and blowing expiration, indicated the commencement of caseous deposition in the right infra-clavicular region, fortunately, however, limited to a small area.

Mrs. G. had taken cod-liver oil and whiskey during the greater part of three years, and various tonics and expectorants. I advised that the cod-liver oil and whiskey be continued, and prescribed atropia and morphia as follows: R.—Atropiæ sulph. gr. j; morphiæ sulph. gr. viij; acid. sulph. dil. ℥j; aquæ, ℥vij.—M. Sig.—*Five to ten drops in water three times a day.* This prescription, or formulæ corresponding, the quantity of morphia being lessened considerably as the cough subsided, has been used during the whole of my subsequent attendance. When the vision was much disturbed the dose was reduced, but distinct symptoms of atropinism have been constantly present. Antipyretic doses (gr. xv–℥j) of quinia were occasionally administered. She was encouraged to keep quiet, rather, and take only moderate exercise.

Beside the belladonna or atropia the remedies taken under my supervision were about the same as those which she had been taking for several years before, and the result which followed must be due to this agent.

The gross results may be summed up as follows: Her cough has ceased, and she has no fever and sweats; her appetite is good, and she has gained much in weight. On physical exploration of the left lung the following facts are evident: On inspection a considerable depression exists under the left clavicle, the diametrical measurement indicating a contraction—antero-posterior of half an inch; on percussio, a note high pitched and hard over the depressed area; on auscultation, no moist sounds, faintly tubular breathing, and voice sounds limited to the site of the cavity, and vesicular breathing, and voice sounds over the whole of the left lung. No trace of the lesions which had begun in the right lung.

Although my patient seems now (January, 1877) free from her pulmonary trouble, she is pursued by another evil. The long-continued use of atropia, combined, as it has been, with a diminishing quantity of morphia, induced a habit which even now pursues her with wakefulness, aching of the limbs, etc.

An opportunity to examine this patient will be afforded to any competent physician who desires to ascertain her present condition.

Commentary.—Mrs. G. during the course of my treatment frequently alluded to the beneficial effects of “the remedy for cough.” Without being at all aware of the nature of the agent, or of the purpose for which it was employed, she had a strong sense of its remedial power. This was, probably, instinctive—just as the syphilitized patient experiences a sense of satisfaction from the use of iodide of potassium when this agent is removing existing lesions—not a reasonable judgment formed after a consideration of the results accomplished, but a mere feeling of well being associated in his mind with the use of the remedy.

It will be said, doubtless, and with much apparent reason, that in Mrs. G.’s case, the result accomplished is due largely to the favouring influences of change of climate, travel, etc. This criticism, however, is not justified by the history. Although she was undeniably improved by a change of climate on three occasions, the improvement was not maintained. Year by year her course was downward, and she had reached the lowest point when the administration of the atropia was resumed to be continued without intermission until the beginning of the present year.

The greatest difficulty was experienced in securing the faithful administration of the atropia, notwithstanding her own sense of its value, because of the presbyopia, and the confused vision which almost deprived her of the solace of reading during a large part of the time. No damage has resulted in any way from this long-continued use of the atropia in Mrs. G.’s or Mrs. R.’s ease.

As I am now collecting numerical data, to show the real value of atropia in the treatment of phthisis, I withhold for the present the publication of my other cases—some of which appear to be completed, but others are still under treatment. Those I have narrated here are amongst the first submitted to the plan of treatment recommended in this paper, and they have been longer under my observation than any other cases.

The numerical method to have any value must deal with a large number of cases, and all the agencies concerned in producing given results must have due weight. I have been fortunate in the number as well as the distinctive character of the cases set apart for investigation. I deal sparingly in dispensary and hospital cases, because they are followed with difficulty, and their statements cannot always be depended upon. As respects the character of the cases, they of course include all the forms of phthisis and all the stages. As respects the results of the treatment it will suffice to state now that all cases are not cured, but that the percentage of recoveries is surprisingly large.

Considerations in regard to the Administration of Atropia.—As the susceptibility to the action of this agent varies in different individuals, an inflexible rule as regards the dose cannot be made. I have usually administered about $\frac{1}{400}$ th of a grain (five minims of a solution of one grain to the ounce of water) two or three times a day. As the effects of atropia are very persistent, usually two doses *per diem* will suffice to maintain a constant physiological action. If the quantity be so large as to produce great dryness of the mouth, retention of urine, and serious disturbances of vision, the patient may refuse to continue it. Moreover, large medicinal doses, although entirely safe, may cause irregular action of the heart. My observation is that the persistent daily use of moderate doses is preferable to the occasional administration of large doses. It suffices to cause moderate dilatation of the pupil, slight dryness of the mouth, and a little flushing of the cheeks.

When the cough is troublesome morphia may be combined with the atropia. When vomiting occurs strychnia may be given in the same prescription. When indicated, the alkaloids, strychnia, atropia, and morphia may be dissolved in diluted muriatic acid instead of distilled water.

A serious difficulty frequently encountered in the treatment of phthisical subjects is a restless and hopeful disposition, which leads to frequent changes in the medical attendant, and to the trial of every new remedy. As in most cases, considerable time must elapse before any permanent improvement can be effected, it may happen that all the moral resources of the physician will be sorely tried to induce the patient to use the remedies in a proper manner and for a necessary period.

CINCINNATI, Ohio.

ART. XVIII.—*So-called "Second Sight" of Old People.* By SWAN M. BURNETT, M.D., of Washington, D. C.

LEGENDS of so-called "second sight," in persons advanced in years, are by no means uncommon, but I am not aware that any scientific examination of such a case has been placed upon record.