Consumption and chronic diseases : a hygienic cure, at patient's home, of incipient and advanced cases.

Contributors

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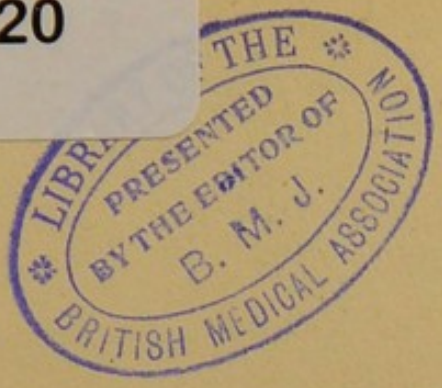
Consumption And Chronic Diseases

Densmore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THE following extract is taken from the New York *Times* of October 26, 1899, from an account of the second day's proceedings of the annual meeting of the New York State Medical Association, held in the hall of the Academy of Medicine. Dr. Herman Biggs read a paper on "The Advance of Our Knowledge of Typhoid Fever." The italics are supplied :

"*Hygiene is a subject that is not studied and not taught in this country. There is scarcely a medical school in which the students have a single course of lectures on general hygiene which is worthy of consideration.* In most of them the subject is not taught at all, excepting incidentally in connection with bacteriology and medicine. *The natural result is that the medical profession, as a class, is very deficient in a proper knowledge of the subject or of any appreciation of its importance.* . . .

"The laity, *knowing still less than the medical profession*, is content with the existence of bad sanitary surroundings so long as they do not offend the sense of sight or smell. Consequently we in the United States, who, in almost all other practical matters, and in those concerning the comforts and luxuries of living, are far in advance of European countries, in this matter which concerns our health and lives are fully a generation behind.

"In the way of improvement, which Dr. Biggs believes is sure to come, he recommended : First, *by the teaching of hygiene in our public schools and our universities ;* second, *the establishment of schools for advanced work in preventive medicine ;* third, the education of men to fill the position of medical officers of health, and the provision for them of adequate compensation and tenure of office."

Consumption and Chronic Diseases

A HYGIENIC CURE, AT PATIENT'S HOME OF INCIPIENT AND ADVANCED CASES

A POPULAR EXPOSITION OF THE "OPEN-AIR TREATMENT," WITH LATEST DEVELOPMENTS AND IMPROVEMENTS

BY

EMMET DENSMORE, M.D.

AUTHOR OF "HOW NATURE CURES,"
"THE NATURAL FOOD OF MAN," ETC.

"I cannot help believing that curative medical treatment will, by and by, resolve itself, in great measure, into modifications of the food swallowed and air breathed. Food and oxygen—the body and breath of life—are before all, through all, and back of all vital action."

—OLIVER WENDELL HOLMES, M.D.

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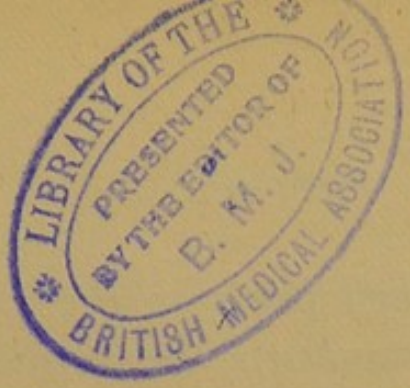


PREFACE.

The Society for the Prevention of the Spread of Consumption and other Forms of Tuberculosis was formed in London, in 1896, and at a special meeting held at Marlborough House the Prince of Wales accepted the chairmanship.

During the first half of the present year public interest has been much augmented by magazine essays and discussions in the public press concerning the marvellous results obtained in the treatment of consumptives, in all stages of the disease, at Dr. Walther's sanatorium at Nordrach, in the Black Forest of Germany.

Some twenty-five branches of the above-named Society have been formed in the chief cities of England, up to July of the present year. The methods adopted by the Society are the education of public opinion through the press and the promotion of all means for the prevention of the spread of consumption; and the Society is making special efforts for the establishment of sanatoria in England for the treatment of consumptive patients of the poorer classes by those hygienic means which have come to be known as the "open-air treatment." Considerable

progress has also been made in the United States; there are several sanatoria established by public money, already built or building, where the poor are treated somewhat on the lines followed at Nordrach.

One of the great advantages of these sanatoria, as pointed out by the promoters of the Society for the Prevention of the Spread of Consumption, will be that each sanatorium will become a centre of a propaganda for the teaching of those laws of hygiene which are essential for the cure of consumption as well as the prevention of its spread. If the teachings put forth in this book are sufficient to enable any one of ordinary intelligence successfully to follow a treatment that will cure consumption at one's home, then every such household becomes a similar centre of a propaganda for the spread of such hygienic knowledge—of which, in both England and America, we stand in great need.

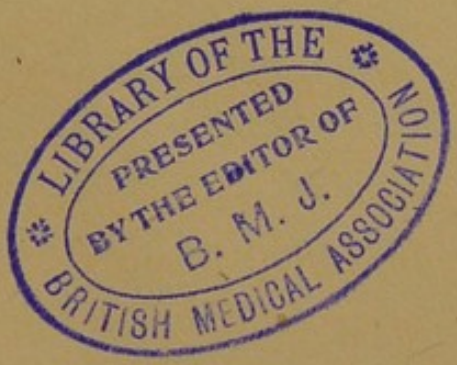
In the meantime, where are the sanatoria? Practically they are yet to be built; when compared with their need there are none worth mentioning. To be sure, there is a sanatorium at Nordrach-upon-Mendip, delightfully situated and excellently managed and equipped; and there are others projected and in process of building. But these are for the well-to-do. Urgently and effectively as philanthropists are working to bring about the erection of sanatoria for the poor, it will yet be many years before such sanatoria are constructed, equipped, in operation, and adequate

for the great need that is perceived and admitted upon every hand.

The object of this book is to make known the methods and the success of this treatment; and that it can be followed by the patient at his own home.

EMMET DENSMORE.

78 Elm Park Road, London.



CONSUMPTION.

I.

I have a friend in New York, a dental expert, who is also a graduate in medicine. He has had for many years the most enthusiastic faith regarding the efficacy of homeopathic remedies, and especially of high triturations, in the cure of disease. This gentleman has also for years been much interested in the matter of diet, and whenever there is an opportunity, my friend and I have considerable conversations upon the subject of medicine and hygiene. Calling upon him last December, I was much interested in an account he gave me of some wonderful results achieved by a German physician, a Dr. Reinle, who has a sanatorium at Harrison, New York. My friend explained to me that his attention was first drawn to Dr. Reinle and his method by the great benefits which had been received by the Rev. William R. Alger, D.D., of Boston. My friend's brother, who is also a dental surgeon, has been acquainted with Dr. Alger for over twenty years. Dr. Alger is well advanced in age, he has habitually overstrained his nervous sys-

tem by excessive mental labor, and, in consequence, his health has been deteriorating for more than a score of years. Fortunately for him, some three months ago, having learned of the marvels of Dr. Reinle's treatment, Dr. Alger availed himself of the privilege of treatment at Dr. Reinle's sanatorium. After he had been under treatment about two months, he called upon the dentists. The brother said to my friend, after Dr. Alger's departure, that it would appear that a miracle had been wrought; that Dr. Alger appeared twenty-five or thirty years younger than upon the occasion of his last seeing him, a few years previously.

I learned from my friend that Dr. Reinle gave no medicine, that his treatment consisted largely in putting his patients to bed, and in administering a half pint of milk every thirty or forty minutes while the patient was awake. I learned also that Dr. Reinle had made some marked cures upon consumptive patients, and that the benefits arising from his treatment were especially noteworthy in all cases of emaciation.

I have been for more than forty years intensely interested in hygienic medicine, and especially in the treatment of disease through diet; and I paid a visit to Dr. Reinle and his sanatorium at once. Dr. Reinle had gone to the city the morning of my call. His superintendent, seeing by my card that I am a medical man, gave me an opportunity of conversing with a

physician, Dr. Joseph W. Besant, who had been a patient at the sanatorium for some two and one-half months. I learned from Dr. Besant that he was a graduate of the New York University Medical College, and received from him a history of his own case. Dr. Besant had been practising medicine for a year; was taken in December, 1897, with typhoid fever, which terminated in pleuro-pneumonia. Dr. Justus J. Spreng, of New York, treated Dr. Besant until January 1st, when he pronounced his case hopeless. Dr. Charles F. Adams was then called in, but after ten days' treatment decided that nothing more could be done for him. Dr. Harry P. Loomis was then called, and, with Dr. Adams, treated Dr. Besant until the middle of March, when they sent him to the Loomis Sanatorium at Liberty, Sullivan County, New York. While at the sanatorium, Drs. Stubbert and Wells, of Liberty, New York, attended Dr. Besant, and after a week he grew worse and left the sanatorium. Dr. Besant was then treated by Drs. Whitcomb and Paine, both of Liberty, who stated that Dr. Besant probably would not live beyond September. During this period Dr. Besant grew rapidly worse, and was advised by Drs. Stubbert and Wells to return to the sanatorium, where he was placed in the infirmary, under the care of special nurses. Here his fever grew continually worse, despite the application of ice. In the middle of September, Drs. Stubbert and Wells declared that nothing further could be

done for the patient, and advised his sister to take him home to die.

Dr. Besant returned to New York, and up to October 11, 1898, the following physicians were attendant upon him: Dr. Adams, Dr. Spreng, Professor F. T. Allen, Dr. Cyrus Edson, and Dr. Frank E. Miller, all of New York City. Dr. Allen suggested a southern climate, and Dr. Edson treated Dr. Besant with inhalation and injections for twelve days, during which period Dr. Besant rapidly grew worse.

Dr. Miller then suggested to Dr. Besant that he put himself under Dr. Reinle's care. On Wednesday, October 12th, Dr. Reinle saw Dr. Besant for the first time, and the latter had a pulse of 145 beats per minute and a temperature of 105 degrees; he had exceedingly poor heart-action, and was very excitable, weak, and emaciated. Upon the arrival of Dr. Besant at Harrison it was necessary to carry him upstairs, and at the time he weighed but 106 pounds. From October 12, 1898, to January 26, 1899, Dr. Besant steadily improved, and gained twenty-nine pounds in weight. He was then examined by Dr. Miller, who said that his temperature was perfectly normal; and that while his heart and lungs were still far from being completely restored, there had been a most remarkable change for the better.

Dr. Besant also told me that he had sent his sputum to the Carnegie Laboratory, where it was examined

by Dr. Brooks, who pronounced it free from tubercular bacilli.

Dr. Miller has been so impressed with Dr. Reinle's success in treatment that he has sent Dr. Reinle a large number of consumptive patients. Dr. Miller says that when he suggested to Dr. Besant that he should put himself under the care of Dr. Reinle, that he (Dr. Miller) was of the opinion there was little or no hope for the patient, and that the end was only a question of the immediate future. When he examined Dr. Besant fourteen weeks later, Dr. Miller pronounced Dr. Besant out of danger, and said that his complete recovery seemed assured if he continued Dr. Reinle's treatment.

I saw Dr. Besant a few days before Dr. Miller had made the examination and had pronounced him out of danger. I was profoundly impressed. I noted Dr. Besant's pulse, and found it considerably too rapid, and with some indications of a weakened heart. At the same time it was difficult to comprehend that the full-faced and ruddy-complexioned young man before me only a few months previously had been pronounced by skilled experts to be in the last stage of consumption.

I had before known in a general way that undoubted cases of consumption had been cured, and I had known of the increasing popularity of the open-air treatment, and was aware that consumption specialists on both sides of the Atlantic are coming more

and more to the opinion that climate is a less important consideraion in the treatment of this disease than had formerly been supposed, and that outdoor air and a nourishing diet are conditions first requisite, but I was not prepared for what I found. Here was a man before me with the vigorous eye and joyous face which are characteristic of convalescence. To all appearances there was no more danger of Dr. Besant's dying with consumption than as if he had never had it. I conversed with several of Dr. Reinle's patients and with his employees. I learned that it was not unusual for his emaciated patients—whether from tuberculosis or not—to begin to take on flesh from the outset, and to gain one, two, and three pounds a week is common.

II.

In my conversation with Dr. Besant, I saw before me strong evidence that the dread scourge, consumption, is amenable to hygienic treatment. I had long been convinced that medicines are quite unnecessary to those who are leading a hygienic life. Dr. Reinle's system seemed a marvel of simplicity. His cure consisted of three requisites: first, a superabundance of nutrition in the form of milk, not sterilized but made blood-warm, administered every hour or oftener in quantities of four quarts per day, or more; second, complete rest in bed until such time as the patient's temperature has become approximately normal; and third, provision for the patient to breathe the outdoor air night and day. I said to Dr. Reinle that it seemed to me that large numbers of sufferers could be reached by his system through correspondence; and that persons suffering from consumption who, for any reason, might not be able to avail themselves of the facilities of his sanatorium, could be instructed in his three cardinal principles of cure, and could be so directed that they would be able to realize at their own homes the essential advantages of his treatment; and granting that patients so treated might not make as rapid

progress toward recovery as those under the immediate personal scrutiny of the physician, they would, nevertheless, continue to improve, and eventually so improve as to be considered cured. Dr. Reinle replied that it is quite impossible for a layman to take this treatment safely and successfully; that the knowledge and presence of the physician are necessary to safely guide the patient; that only the skilled physician is able properly to decide when the patient is to take milk, how often, and when the quantity is to be decreased or augmented.

I saw at once that this discussion opened up a most important inquiry. I had taken considerable interest in the National Association for the Prevention of Tuberculosis, organized in London under the patronage and personal initiative of the Prince of Wales; and I was aware that several sanatoria had been established in different parts of America at considerable expense both by government aid and by private endowment, designed especially for the treatment of consumptives who are without money or in very moderate circumstances and unable to avail themselves of those opportunities for treatment which can only be had by travel and by the expenditure of considerable sums of money. Entering into a correspondence with the officers of these various sanatoria, I found that the patients at these institutions seemed not to make anything like as much progress as had been made by the patients at Dr. Reinle's sanatorium.

Pursuing my investigations, I was greatly impressed with two prominent facts. First, notwithstanding these endowed sanatoria are equipped with the latest devices for the treatment of consumption and are officered by thoroughly trained and skilful physicians aided by an efficient corps of trained nurses, that their percentage of cures is very much lower than Dr. Reinle's, and that the rate of progress of the most favorable patients in these sanatoria is decidedly less than the progress of Dr. Reinle's patients. In the next place, I was struck with the meagre facilities with which Dr. Reinle's institute is equipped as compared with all of the above-mentioned sanatoria. These sanatoria as a rule have been constructed with reference to altitude, dry soil, and pure air—away from highways, and thus insured against the contamination of dust. Either the cottage plan has been adopted, where there is a succession of small dwelling houses, separate from each other and granting the greatest privacy and isolation, or large buildings have been constructed and so arranged as to give rooms with a southwestern or southern aspect and to give the freest possible ventilation. Dr. Reinle's institute, on the contrary, consists of an ordinary dwelling house situated on a public highway. There was no thought when the building was constructed of the uses to which it has been put, and it offers no special facilities. Indeed, Dr. Reinle commands only such facilities as are afforded in any roomy suburban house. And yet

in such a building, and without any of the advantages afforded by the endowed sanatoria, he produced here a much larger percentage of cures. Not only this, but the endowed sanatoria, as a rule, accept only those patients who are in the incipient stage, whereas Dr. Reinle takes anybody that comes or that can be carried to him. In many instances the patients are those who have been given up to die by their physicians, or, as in Dr. Besant's case, had been discharged from a well-known sanatorium as hopeless.

My long familiarity with the wonders accomplished by hygiene and simple remedies made me differ with Dr. Reinle as to the possibility of successfully directing the cure of consumptive patients at their own homes. The underlying motive which prompted me to write "How Nature Cures" was the hope and expectation that I might be able to teach those of its readers who are earnest and thoughtful to so order their lives that they would have no fear of illness and no need for physicians. The essential features of Dr. Reinle's cure consist in a milk diet, absolute rest, and fresh air. The more I pondered upon the problem the more confident I was that large numbers of people who, for any reason, are unable to avail themselves of the advantages of Dr. Reinle's treatment may be so directed as to realize at their own homes substantially the same benefits that may be obtained at a sanatorium, and I determined to put my views to the test; with what success will be related hereafter.

III.

John Arthur Gibson in the (London) Nineteenth Century, for January and March, 1899, gives an interesting account of his personal experience at the Nordrach Sanatorium (in the Black Forest, Germany) for the cure of consumption. Mr. Gibson considers himself in some degree qualified to write upon this subject because of his training as a chemist; but more particularly competent because he has been a consumptive attacked with acute phthisis, and because he has been apparently entirely cured by the system of treatment which he sets out to explain.

Mr. Gibson completely broke down in health in the summer of 1895; he was then twenty-eight years of age, and had been ill for nearly two years without being in the least informed as to the nature of his difficulty. He was examined by some prominent physicians in Belfast, Ireland, who explained to him that he was in an alarming condition—that he not only had acute phthisis, but that he was suffering from a severe attack. His weight at that time was 133 pounds. His physician prescribed that he must have a complete rest, that he should remove to the country, and stop all work and worry. He stayed some three

months in the country and took two or three quarts of milk daily. He had no hope of ever getting any better; indeed, at the outset, his weakness increased, his night sweats were worse, his cough increased, and his throat became more inflamed. However, owing, as Mr. Gibson thinks, to the milk and nourishing food, he gradually began to increase in weight and gained about five pounds.

After three months he met a friend who had been to Nordrach, and who, before going, had been ill with consumption for seven years. This friend had made two voyages to the South Seas, and had spent two years in the mountains of Switzerland, and had exhausted, so far as he was acquainted, every known treatment without any apparent benefit. He then heard of Nordrach, and was cured in three months; is now living in England, and is able to attend to his business winter and summer. From what his friend related to him of the treatment and success at Nordrach, Mr. Gibson decided to give Dr. Walther's sanatorium a trial, having become fully persuaded that if a cure for consumption is possible, this course offered the best chance.

Mr. Gibson arrived at Nordrach in October, 1895. His weight was then 138 pounds. In three and one-half months he gained thirty-eight pounds, and was discharged entirely cured at the end of January. It will be seen that Mr. Gibson gained considerably over two pounds a week for the entire sixteen weeks.

Mr. Gibson testifies that during the three years since he left the sanatorium he has worked as hard as ever before in his life. He follows the same course at his home that was insisted upon at the sanatorium; his windows are kept open winter and summer; he never uses an overcoat or umbrella in the coldest or wettest weather, and, although he has been drenched many times without changing his clothes, he never gets a cold. In July, 1898, Mr. Gibson was examined by experts before the British Medical Association at Edinburgh, and his lungs were found to be in a healthy condition. During the last three years he has not been absent from business a day on account of illness, whereas formerly he was subject to colds and general ill-health, and was always thin and delicate.

Mr. Gibson also states that instead of his case being an isolated one, there are hundreds of others who have gone through the same course at Nordrach, who, like him, appear to be perfectly cured. It is from such data as this that Mr. Gibson urges the philanthropists of England to provide liberally for the establishment of sanatoria throughout Great Britain.

Nordrach is surrounded by trees, has an elevation of some 1,500 feet, and has the advantage of being isolated from town or village. In consequence, the patient has an opportunity of getting the purest air, as the windows of the sanatorium, winter and summer alike, are kept wide open for the entire night as well as day. Since a life in the open air constitutes a very

essential part of the Nordrach treatment, Dr. Walther aims to give his patients as near a life out of doors as possible, and in some cases the windows are completely removed from the frames. As a result of this, when a patient has become accustomed to the change, there is no danger of chills, whatever the changes in the weather may be. Very soon this method of perfect ventilation becomes very pleasant to the patient; and those who come from damp and rainy climates like that of England find themselves instinctively opposed to the closing of windows. Those patients also who go from a low-lying country seem greatly benefited by the rarefied air at 1,500 feet of elevation. The necessity for the greater expansion of the lungs insures the taking in of large quantities of fresh air; and at the same time, absolute rest being insisted upon, the lungs of the patient enjoy the best possible condition for healing.

This matter of rest is, perhaps, not second in importance to the pure air. Dr. Walther takes care to prevent every form of overexertion. In the early stages of treatment he not only puts his patient to bed, but forbids any mental work or even any exciting conversation. Dr. Walther is of opinion that more consumptives are destroyed by overwork than in any other way. In serious cases patients are required to remain in bed for months; at the same time, the patient is encouraged to eat quite as much while in bed as afterwards while exercising.

As the patients improve, permission to get up and dress is given, and gradually, as the improvement continues, the patient is directed to begin very short walks and at a very slow pace. These walks are greatly increased until, when the cure is completed, patients often walk five and ten miles at a time, and with the best results.

Winter, in a temperate climate, is quite as favorable for the treatment of consumptives as any other season of the year. The invigorating temperature stimulates the appetite, and the patient is more likely to gain weight. One can hardly believe, without having seen it, the extent of the hardening which the treatment at Nordrach induces.

The patient is encouraged to sleep ten hours each night, being required to be in bed at nine and to arise at seven o'clock. This necessary rest is insisted upon even when the patient is not able to sleep as much as desirable, and especial warfare is waged against overexertion in any manner.

The novel feature in the Nordrach system consists in a superabundance of nourishment. Dr. Walther maintains that the most important requisite is that the patient shall gain weight; that weight-gaining is an absolute requisite for successful treatment. In consequence, Dr. Walther uses every means to persuade his patients to eat the largest amount of food possible. While this course is not arbitrarily insisted upon, the doctor's influence upon the patients is so great that

they usually find themselves eating the required amount, although this is said to be double the amount that the patient would eat were it not for this systematic encouragement and moral coercion.

In consequence of this course, the weekly gain in weight is often very surprising. One patient gained eight pounds in one week, and another, during his stay at Nordrach, doubled his weight. As the weight increases the patient is more and more encouraged. The weekly weighing is a great stimulus, and as the patient learns that the increase is a measure of the rate of his progress, he is stimulated more and more in his efforts at overfeeding. Again, every symptom of improvement, every fresh sign of returning health adds fresh encouragement, and the departure of cured patients for home is an added stimulus. As his weight increases, the patient feels his strength augmented and his cough gradually leaving him. In consequence of this his whole system gets more rest, and the more rest he gets the more he can sleep. He finds himself in an endless chain of benefits.

There is a similar phenomenon in the matter of eating. The more the patient eats, the more his vital force is increased and the greater his power for the consumption and digestion of food. No medicines are given, Dr. Walther claiming that the only effect of medication is to damage the power of digestion. The patient lies down for an hour before each meal. There is the ever-recurring blessed trinity of hygiene,

pure air, and abounding nutrition. The pure air stimulates the appetite, the increased amount of food results in augmented nerve force, and with the increased vital force there is greater enjoyment in rest and an increased power to sleep.

IV.

Dr. Rowland Thurnam, associated with Dr. Neville Gwynn, has established a Nordrach sanatorium on the Mendip Hills in Somersetshire, England. In 1895, Dr. Thurnam was attacked with hemorrhage, and found himself in the incipient stage, and with an acute attack, of phthisis. He consulted an eminent specialist in London, who advised his friends that his attack was of the gravest nature; indeed, he told them that it did not matter where Dr. Thurnam was sent, that the end was only a question of a short time.

Having heard of Dr. Walther's sanatorium, Dr. Thurnam sought and obtained admission in September of 1895. He remained seven months, and was discharged cured at the end of March, 1896. In the following November he was taken down with a severe attack of typhoid fever. After this had run its course he found he was left with a return of serious consumptive symptoms, and he went to Nordrach for a second time.

During Dr. Thurnam's first term at Nordrach he was, very naturally, greatly interested in the details of Dr. Walther's treatment, and after he had been there two months on his second visit, Dr. Walther

took a holiday and left Dr. Thurnam in charge of the sanatorium. After Dr. Walther's return Dr. Thurnam remained with him until the end of the year as his assistant.

Drs. Thurnam and Gwynn spent the greater part of the time during 1897 and 1898 seeking for the best location in England for a sanatorium like that at Nordrach, and selected an estate on the Mendip Hills. There are sixty-five acres of land, made up of woodland and open paddock ground. They have a large building that was made for a convalescent retreat, and since being remodelled on Nordrach lines it is admirably adapted for a consumption sanatorium. It is situated about eight miles from Cheddar or from Wells—the nearest two railway stations. A writer in the Bristol Western Daily Press for January 17th gives an interesting description of Nordrach-upon-Mendip, and of what he found there on a visit made in midwinter. No matter what the weather may be, one finds nearly every door and window in the place wide open; the rooms are kept warm by hot-water pipes, and no fires are used excepting in the dining-room.

There is no such thing as dusting in the establishment. The floors are waxed, so that they can be readily washed without causing dampness. The furniture is so constructed that there are no ledges or mouldings where dust can accumulate, and it is coated with varnish, so that the housemaid's mop may be applied without fear of injury. There are no

carpets, except a small strip in each patient's bedroom, and the walls are without paper. The only window hangings consist of a small length of curtain material in the bedrooms to insure a degree of privacy, and this can be taken down frequently and washed. There are no dusting operations, because, says Dr. Thurnam, if you move the dust off one piece of furniture and flick the duster in the room, or even out of the window, it finds its way back again, and so you are simply displacing it without getting rid of it. You are housing instead of exterminating the mischief it may contain. And so this new medical science attacks the disease just where it thrives—in stuffiness and dirt. Consumption is weakened and killed by sunlight, fresh air, and general cleanliness.

Dr. Thurnam maintains there can be no cure without weight-gaining, and this is carried to its logical conclusion in the Nordrach treatment. The ordinary layman who associates dyspepsia with phthisical complaints is puzzled to know how a person in enfeebled health can assimilate the quantity of food which this Nordrach system compels the patient to take. The expert answers that when the patient begins to get well as the outcome of the sanatorium treatment, the dyspepsia, being a symptom of the disease, vanishes. At the Mendip home there are three meals a day, and no "snacks" must be taken between meals. Cold meat, with plenty of milk sterilized on the premises after it has come from a choice

herd of Jerseys, and a liberal quantity of butter are the staple foods for breakfast. For dinner there would be two kinds of cooked meat with potatoes and other vegetables, stewed fruits and cream, and a little confectionery. The breakfast is served at eight, dinner at one, and tea and supper combined—also a substantial meal—at seven. All the food is plain and wholesome, and there is an insistence on the plate being cleared. The two doctors exercise a watchful eye from positions at the top and bottom of the table. Plates upon which the patient has left any portion of his meal, however small, must not be removed by the waitresses until the doctor has signified permission. At first the stomach of the weaker class of patients naturally rebels against so much food, but a few kind, persuasive words stimulate the unhappy diner to a supreme effort, and experience shows that it is amazing how much a person can eat when forced to it. Each person is weighed every Monday, and there is a friendly rivalry as to who will gain the most—a veritable race to grow fat. The newcomer is impressed with the necessity of eating three times the ordinary amount of food—one portion to replace the normal waste, a second to atone for the extra waste of the disease, and a third to put on weight so that the system may be strengthened and finally overcome the inroads of the ailment. The doctor in charge apportions to each patient the share of meat which he considers ought to be consumed.

In various parts of the grounds are sheltered nooks, where the feeble patient, when not in his own room, may rest at full length of his couch, and when allowed walking exercise he may leisurely perambulate the extensive paths which encircle the house. He breathes only the purest air. Day and night, in all weathers, the windows are open. The plan might not answer in a city suburb, where the midnight marauder has to be guarded against, but away in the sanatorium on the Mendip the consumptive will be able to drink in fresh, pure air every hour of the twenty-four.

The Practitioner for July, 1899, contains a contribution from Dr. Thurnam, "First Results of the Nordrach Treatment in England," from which the following extracts are taken:

"The temperature chart we use as a guide in deciding the order of the day for each case, each patient taking his own temperature in the rectum four times daily. He is visited before 8 a.m. in his bedroom, where he has passed the night with the widest open windows in every kind of weather, the bedroom being, of course, free from all unnecessary or elaborate furniture, carpets, and bed or window hangings of any description. Provided that the early morning temperature has not exceeded 98.4 degrees Fahrenheit, the patient is told to take a walk in a certain direction after breakfast and to return by twelve o'clock. The

walk is regulated by the force and direction of the wind, so as to let it be as sheltered as possible; the length of it, as well as the amount of ascent, and the solitude or companionship of the promenade are arranged to suit the powers of the particular case, it being our intention that the second measurement of the temperature, taken immediately on returning, shall not be above 100.3 degrees. Within these limits we find it safe to go. Every patient, on returning from his walk, rests for one hour on his basket couch, and at 1 p.m. dinner is taken. A short visit from the doctor between twelve and one decides where the patient shall go or how he shall employ himself in the afternoon; usually a short walk and a long rest in the woods are prescribed. Before 6 p.m. the temperature is again measured, and at a third visit, between six and seven, one hears how the day has been passed, and notes the general effect on the patient and his temperature chart. After supper the company scatters itself about the grounds; 9 or 9:30 sees all the patients in bed.

" Meals, the hours of which I have so far only noted, are taken under supervision, so to speak. At breakfast the patient helps himself to coffee, eggs or meat, and bread and butter, the latter articles in plentiful supply. Dinner and supper are served out by either myself or my colleague, it being our intention to individualize; i.e., to suit each portion of food to the individual requirements of each patient. The rooted disinclina-

tion of most phthisical patients to food has to be overcome by encouragement, moral suasion, even cheerful bullying, and it is a well-known rule that no plate will be removed until it has been cleared to the satisfaction of the doctor.

"A certain number of cases have to be kept in bed, the causes which determine this being elevation of temperature—in most cases above 98.2 degrees in the early morning requiring rest in bed—general feebleness, hemorrhage, or in some cases the restlessness and excitability of the patient. For all such cases in bed, the discipline of feeding continues, neither the fever, nor, in the majority of cases, dyspepsia being allowed to interfere with the amount or nature of the nourishment taken. Both by those in bed and by the others, about half a litre of milk is drunk at each of the three meals; the diet is ample and of any ordinary mixed type, the quantities of bread, butter, and farinaceous foods generally being above the average; no food is taken except at these three meals.

"The weights are taken each week; in satisfactory cases there is a striking and regular increase. At the same time, week by week, the distances and gradients of the walks are extended, till as many as twelve miles are covered in the morning, without the temperature —measured immediately upon returning—reaching 100 degrees. Such extensive walks are only arrived at very gradually, the snail's pace of the first few

months gradually giving way to an even rate of slow walking. By these means the whole muscular system is strengthened, especially the heart muscle; the air is gradually taken further and further into collapsed or sluggish lung, and the increase of weight is distributed evenly over the body.

"I have given you a very brief outline of our treatment. The results we desire thereby to produce are: (1) Increase in weight; (2) abolition or very great improvement of the ausculatory signs of phthisis; (3) disappearance of bacilli; and (4) such general strengthening of the whole physique that the patient can go back to the work and excitement of ordinary life without fear.

"That this has already been possible, and will, as the months go on, be further realized, I submit in proof the following tables and notes of patients who have been, or are being, treated here since we opened on January 11, 1899:

"GROUP I.—Cases who have left the sanatorium —eight. Of these, four absolute cures; one relative cure; three ameliorations. Percentages in such a small number of cases are unsuitable; therefore I give below short details of each of these eight cases.

"Note.—In addition I might point out case 11 and case 21 in Group II, who have not actually left the sanatorium (though they will do so before this paper is published), but are cured. Both have no abnormal lung symptoms, have lost their bacilli, and have gained

respectively eleven and one-quarter pounds and seventeen and one-half pounds in weight. The three ameliorations have left for personal reasons and quite against our wishes.

"GROUP II.—Consists of sixteen cases, given in order of admission, their conditions before treatment varying from extensive destructions of portions of one or both lungs to merely slight involvement of one apex. They are in no sense 'picked cases,' and all at present are in the sanatorium under treatment.

"Note.—Cases 11 and 21 are bacilli-free and about to leave cured. Case 17 has continuous high fever and remains constantly in bed; gain of weight is large; some improvement of lung symptoms. Case 14 has a very great area involved, and the heart is drawn out of position; shows steady improvement both in weight and lung condition. Case 20 had pneumothorax about a year ago; arrived here with much cyanosis and fever; is now walking a little; cyanosis and fever disappeared, and air is slowly entering the left lung.

"Out of the above twenty-four cases, No. 15 shows little or no improvement, and No. 28 improvement in weight only. All the rest are either cured, ameliorated to a more or less degree, or are progressing so very favorably that I am expecting to count them among the most successful results of the sanatorium's first year of work.

GROUP I.—CASES WHO HAVE LEFT THE SANATORIUM.

Case.	No. of Weeks in Sanatorium.	Condition on Arriving.	Condition on Leaving.	Weight.		Total Gains.	Remarks.
				On Arriving.	On Leaving.		
1 Cure.	13	Bacilli found before, but not while here. Considerable lesion at R. apex. Great nausea, frequent vomiting, very emaciated. Fever.	No bacilli. No lesion discoverable. Walks ten miles with ease. Health completely re-established. Fever absent.	st. lb. 8 5 (117 lb.)	st. lb. 11 1 (155 lb.)	lb. 38	Is hard at work.
2 Cure.	12	Bacilli found before admission. L. apical lesion two years old. Recent extensive hemorrhage.	No bacilli. No lesion discoverable. Active. Walks ten or twelve miles.	9 ½ (126½ lb).	10 4½ (144½ lb.)	18	At work.
3 Amelioration.	13	Bacilli numerous. Chronic case. Extensive disease of R. lung with cavity. Fever.	Bacilli still present. Much fever. L. much drier. Physique much restored. No fever.	10 3½ (143½ lb.)	11 4 (158 lb.)	14½	Continues well.
4 Relative cure.	11½	Bacilli numerous. Old-standing obscure case of some years. Hemorrhages; very thin and weak. Fever.	Bacilli very few. No lesion discoverable. Change in physique most remarkable. No fever.	7 3½ (101½ lb.)	8 12½ (124½ lb.)	23½	Continues to improve at home.
5 Cure.	16½	Bacilli found. Lesion small but active. Hemorrhage. Fever.	No bacilli. No discoverable lesion. No fever. Walks ten miles.	8 7 (119 lb.)	9 13 (139 lb.)	20	At work.
6 Cure.	18	Bacilli found. Disease in R. lung very extensive.	No bacilli. Symptoms absent.	8 3½ (115½ lb.)	9 3½ (129½ lb.)	13½	Hard at work.
7 Amelioration.	14½	Bacilli. Extensive disease of both lungs; cavity at L. apex cyanosed. Fever.	Bacilli present. R. lung almost free from abnormal sounds. L. much improved. Cyanosis and fever disappeared.	8 4 (116 lb.)	8 11½ (123½ lb.)	7½	Continues treatment at home.

GROUP I.—CASES WHO HAVE LEFT THE SANATORIUM.—*Continued.*

Case.	No. of Weeks in Sanatorium.	Condition on Arriving.	Condition on Leaving.	Weight.		Total Gains.	Remarks.
				On Arriving.	On Leaving.		
8 Amelioration.	17	Bacilli. Old extensive disease of L. lung; recent of R. Much dyspnoea. Fever. Six weeks in bed.	Bacilli present. Fever disappeared. Great general improvement of body and lung.	st. lb. 7 5¼ (103¼ lb.)	st. lb. 8 10 (122 lb.)	lb. 18¼	Continues treatment and improves at home.

GROUP II.—CASES STILL UNDER TREATMENT.

Case.	Length of Stay in Weeks.	Condition of Disease on Admission.	At Present Time.	Gain in Lb.
9	20	L., old, diffuse disease. R. recent, acute.	L. much improved. R. cleared up.	17½
10	18	R. old, diffuse; cavity.	Area much diminished.	16½
11	18	L. apex, small, old-standing.	Disappeared. B. absent.	11½
12	18	R. much disease; cavity. L. also involved.	Improvement in both. Temp. from 37° to 40°.	21¼
13	17	L. apex, small.	Almost disappeared.	17½
14	17	R. recently involved. L. one-half destroyed.	R. healing. L. fibrous. Walks 300 yards daily.	37½
15	16	L. chronic, scattered.	R. apex become involved. L. statu quo.	5
16	15	R. apex, recent; hemo.	Small drying cavity remains.	41½
17	15	Extensive, chronic, both lungs.	General clearing up.	13¾
18	13	R. old, extensive. L. recent.	R. improved. L. cleared.	25
19	13	R. apex, recent. L. extensive.	R. nearly free. L. improved.	20
20	12	R. scattered disease. L. airless after pneumothorax.	R. improved. L. air enters to an increasing extent.	14½
21	12	R. extensive. L. commencing.	Nil cured.	17½
22	11	R. extensive; cavity. L. slight and early.	R. cavity closing. L. quite free.	30½
23	11	L. extensive, old disease.	But little improvement.	17½
24	11	R. extensive. L. old cavity.	R. much drier.	24

V.

While visiting the sanatorium at Nordrach-upon-Mendip an incident was narrated that interested me greatly. Dr. Thurnam was explaining that all their rooms were engaged for months in advance, and that it was literally impossible to accommodate all applicants. He said that a Liverpool lady, finding that her daughter was suffering from a severe attack of acute phthisis, in great alarm brought her to Dr. Thurnam without correspondence or notification. The first the doctor knew the ladies were at his door. Upon being refused admission, the lady said to Dr. Thurnam that she would return to Cheddar and wait for a vacancy in the sanatorium. Dr. R. W. Statham, residing in Cheddar, had called upon Dr. Thurnam at the opening of his sanatorium, and had taken the deepest interest in the Nordrach system, which Dr. Thurnam had fully explained to him. The Liverpool lady, upon her return to Cheddar, placed her daughter under Dr. Statham's care; and reports soon reached Dr. Thurnam that Dr. Statham's patient was making rapid progress toward recovery.

There is located at Axbridge, a village adjoining Cheddar, the St. Michael's Home, a charitable insti-

tution under Catholic management, where even hopeless cases of consumption are admitted. Dr. Statham is the visiting physician, and has the medical direction of the inmates. I learned from Dr. Thurnam that after Dr. Statham's visit to Mendip he had revolutionized his practice at the St. Michael's Home; that he had opened wide the windows, even in midwinter; that he was giving his patients milk at every meal, together with a full diet on the Nordrach plan, and that the residents of Axbridge and Cheddar were marvelling at the revolution which had been wrought in the institution; that undoubted and severe cases of consumption were now being cured, where before the St. Michael's Home was locally known as the Home for the Dying!

Dr. Thurnam kindly gave me a letter to Dr. Statham. The doctor was visiting patients when I called at his residence, and I did not have the pleasure of meeting him; but a member of his household kindly gave me a letter to the Mother Superior in charge of St. Michael's Home.

During my walk to Axbridge I fell in with a young man who said he is the son of a former gardener at the home. He spoke with great enthusiasm of the wonderful work they are doing in the way of restoring to health consumptive patients who had been pronounced incurable by their physicians. He spoke in particular of one case which had been much discussed in the neighborhood. It was that of a post-

man from Southampton, whose physician had sent with him a diagnosis showing his to be a hopeless case. The young man said that when the postman had been at the home for three months, Dr. Statham wrote to the postman's physician stating that the patient was making favorable progress, and that Dr. Statham hoped the young man would be able to return to his work in another three months, and asking his physician to make application to the post-office, praying that the former postman's place might be kept open for him. At first the physician wrote back stating that it was simply impossible for the young man to recover, and declining to make the application; but after further correspondence application was made, and it was understood in the neighborhood that the postman was about to return to his work.

I presented my letter to the Mother Superior, who very kindly showed me over the home, and gave me an opportunity to see all the patients. She pointed out the young postman, Mr. Bufton. He told me that he had been weighed that morning, and that he had gained just fifty pounds during his stay at the home—something less than six months. He had just returned from a long walk, from which he said he experienced no fatigue; and I could not detect the slightest trace of illness in his appearance. He had been under treatment longer than any of the patients I saw at Dr. Thurnam's, and although he was not as bronzed by the sun and wind, he yet

seemed, perhaps, more vigorous than any I saw there, and, no doubt, ranks with any of them in extent of recovery made.

In chatting with one of the patients at Nordrach-upon-Mendip, and without any promptings upon my part, he remarked that he rejoiced greatly for himself and comrades for the opportunity to realize the great benefits from this beneficent treatment; but expressed great regret that there seems no way to extend these advantages to the poor. I replied to him that I was hoping to accomplish something in this direction; that I was expecting to publish a book on the new treatment for consumption, and that I hoped many such sufferers could be reached. When being shown through St. Michael's Home I recollected with great vividness the above conversation. I was greatly rejoiced to find that because of the provisions of this blessed charity, here the poor were realizing benefits quite as great as those offered to the well-to-do in Nordrach sanatoria.

We went into the dining-room where the women patients were eating. Each one of them was provided with the indispensable pint of milk, and their plates were heaped with meat and vegetables. The Mother Superior said that each of the patients is given a pint of milk three times a day, and that they are so liberally provided with nourishing foods that the increased expense to the home for food alone is fully two hundred pounds per year. She pointed out a half-dozen men

A GROUP OF DR. STATHAM'S PATIENTS. REPORTED CASES DESIGNATED BY NUMERALS.

and three or four women whose recovery seemed as marvellous as anything related by Mr. Gibson in the Nineteenth Century.

Upon my return to London from my visit to St. Michael's Home, I wrote to Dr. Statham, asking him if he would give me an account of his work. The following letter and accompanying reports explain themselves:

"THE HALL, CHEDDAR, SOMERSET,
"9th *August*, 1899.

"Dear Sir: At last I am able to forward you the reports of some of the phthisical patients at St. Michael's Home. Of course, sufficient time has not elapsed for one to be able to say if the good results obtained will be permanent, as the patients come from a class which necessitates their returning to work as soon as they leave the home. I shall, however, try to keep in touch with them for some time. Again, at St. Michael's Home our percentage will not compare favorably with other sanatoria, as we take them in all states and conditions. For example, I had one patient sent last week who arrived in a dying condition, and died two days afterwards; this has happened on several occasions since my connection with the home. I am afraid we can only look forward to relatively cure them, as otherwise the number that would benefit from the charity would be so limited. Our object must be to teach the patients to live according to the

principles suggested by the Anti-Tuberculous Association.

"The charts, etc., I have enclosed will show you some cases that are cured and have left, and others progressing favorably, and one (Sarah Durston), the worst case in the home, which shows signs of yielding to the treatment; also an interesting case (Louisa Fisher), who has been at the home for one year and eight months. The first sixteen months showing gradual loss of weight with increasing disease, under the old treatment, and the last four months, under the new treatment, she more than regains the weight she lost; her condition is improved and she walks two miles daily.

"The printed form is a facsimile of report sent by medical man on admission; at the back I have written my remarks as regards improvement, exercise, sputum, etc.; to each case is attached a temperature chart, at the bottom of which you will see the weights from week to week. During the last three weeks you will notice that the great heat has, in some cases, affected the weight and temperature. I also enclose photo of some of the men, and have marked at the back in blue pencil the number corresponding to that on their respective papers.

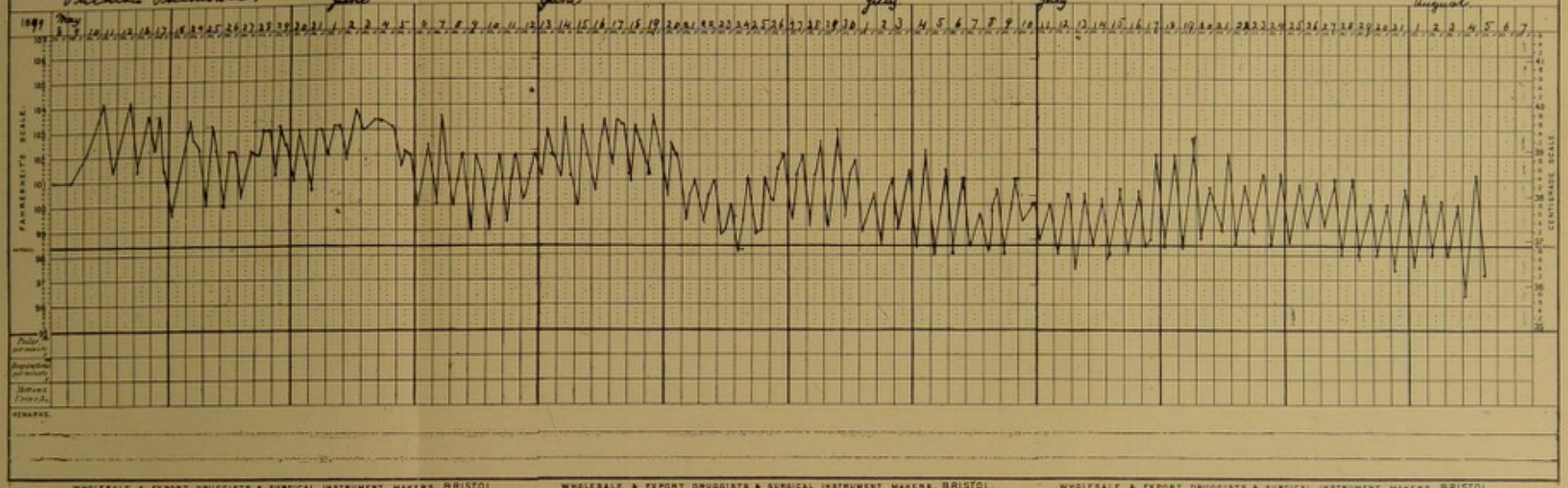
"Sincerely yours,

"R. W. STATHAM."

FERRIS & COMPANY'S IMPROVED CLINICAL CHART. FERRIS & COMPANY'S IMPROVED CLINICAL CHART. FERRIS & COMPANY'S IMPROVED CLINICAL CHART.

NAME Sarah Burton | RESULT | AGE 19 | SEX F | OCCUPATION School Keeper | AGE | SEX | OCCUPATION | RESULT | AGE | SEX | OCCUPATION

DISEASE Phthisis Pulmonalis

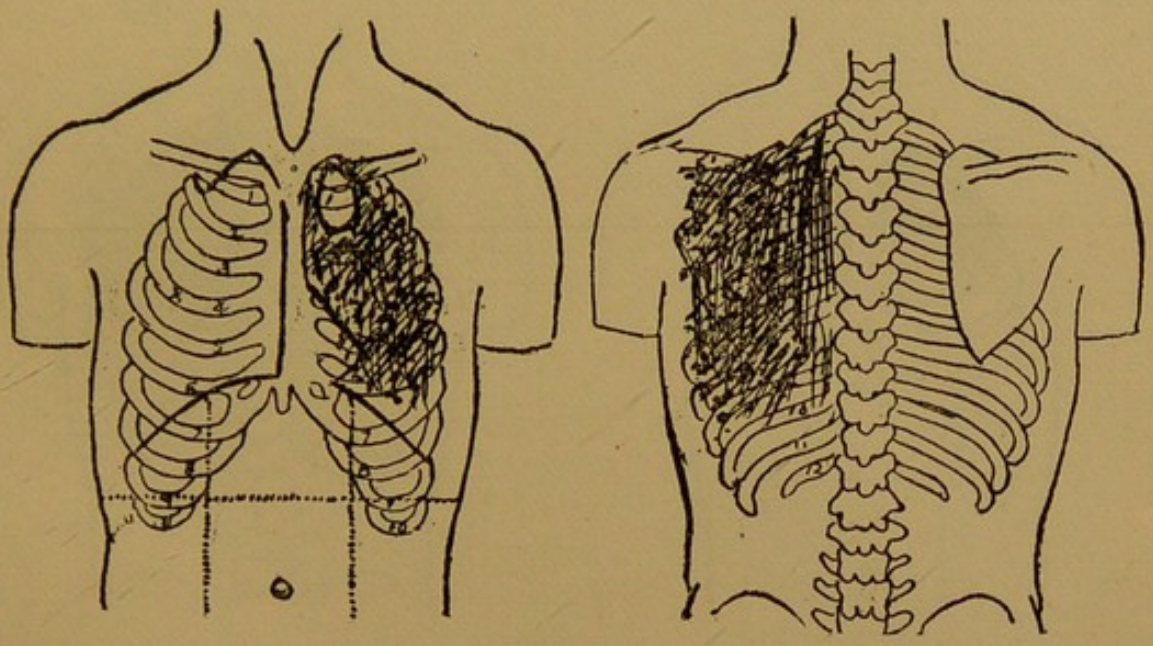


REMARKS.

WHOLESALE & EXPORT DRUGGISTS & SURGICAL INSTRUMENT MAKERS, BRISTOL. WHOLESALE & EXPORT DRUGGISTS & SURGICAL INSTRUMENT MAKERS, BRISTOL. WHOLESALE & EXPORT DRUGGISTS & SURGICAL INSTRUMENT MAKERS, BRISTOL.

The case of Sarah Durston is presented first, and a facsimile of Dr. Statham's drawing and fever chart is reproduced—the latter somewhat reduced in size. Dr. Statham furnished temperature charts for the majority of the cases which he reports; but it has not been thought necessary to reproduce the others.

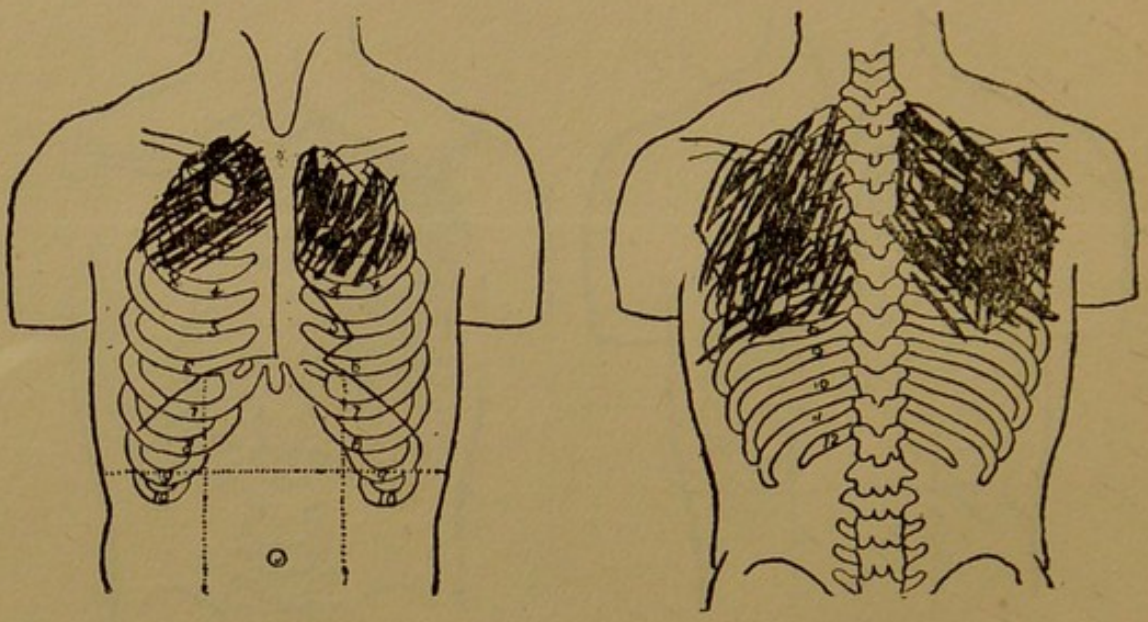
Medical Certificate.—Applicant's name, Sarah Durston. Address, Axbridge. When did phthisis first appear? January, 1899. In what form? Tubercular glands in neck; night sweats; cough; etc.



Present state of disease? Third stage. Cavities? Left lung (apex). Dr. Statham's remarks: This case has not been weighed except on entering, when she weighed six stone, eight pounds. Her chart is most interesting, showing the gradual drop in temperature. She has been kept in bed the whole time (three

months), in bay windows, all open night and day, and kept most rigidly on the diet, with full quantity of milk. Her lungs are improving, and the expectoration, which was most profuse on entering (clustered bacilli), is about one-third less now. I feel confident had she not come into the home she would not have lived a fortnight.

Medical Certificate.—Admitted March 28, 1898. Applicant's name, Louisa Fisher. Address, London. When did phthisis first appear? Two years ago. In



what form? Pneumonic. Present state of disease? Consolidation of right apex; great bronchial rales.

Upon the above, Dr. Statham remarks: This case shows the advantage of open-air treatment. For a twelvemonth after she was admitted she got gradually worse, the physical signs increasing, weight

gradually decreasing; expectoration getting worse, with bacilli increasing. Now all the symptoms are reversed: lung signs better; weight increased (see chart); expectoration much less; cough less; no night sweats; walks three and four miles every morning.

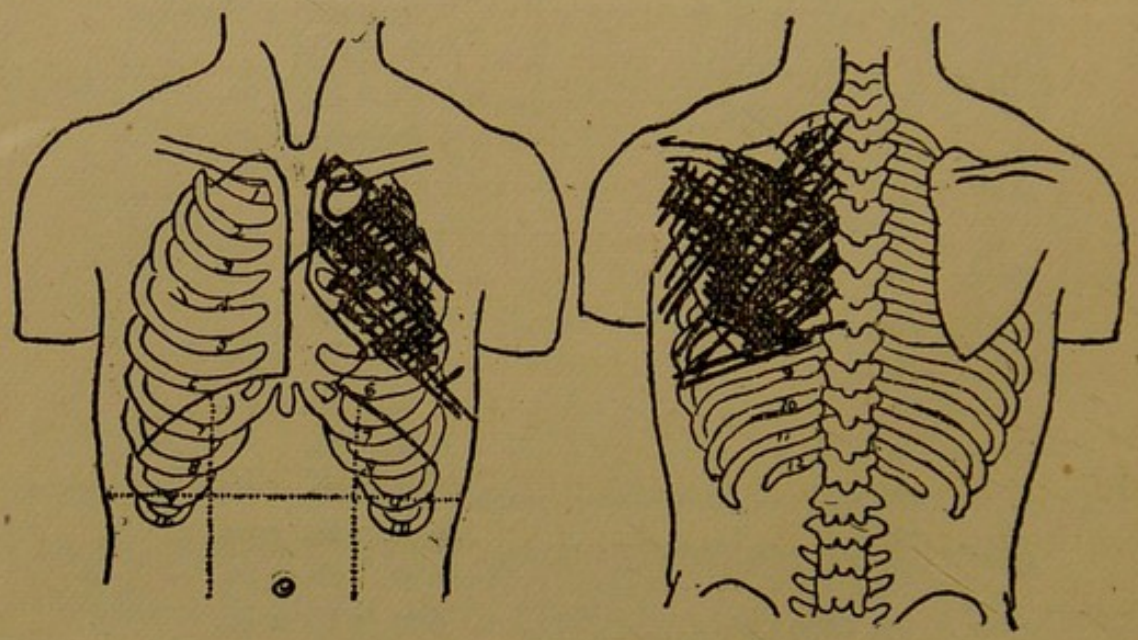
The weight chart to which Dr. Statham refers above is as follows, showing difference under old and new treatment:

OLD TREATMENT.

March	25, 1898	7 stone = 98 lb.
April	8, "	7 stone.
	22, "	7 stone.
May	6, "	7 stone.
	20, "	6 st. 13 lb. = 97 lb.
June	3, "	6 st. 12 lb. 8 oz.
	17, "	6 st. 13 lb. 8 oz.
July	1, "	6 st. 13 lb.
	15, "	6 st. 9 lb. 8 oz.
	29, "	6 st. 9 lb. 8 oz.
Aug.	12, "	6 st. 8 lb.
	26, "	6 st. 8 lb.
Sept.	9, "	6 st. 8 lb.
	25, "	6 st. 6 lb.
Oct.	7, "	6 st. 3 lb. 8 oz.
	21, "	6 st. 4 lb. 8 oz.
Nov.	4, "	6 st. 5 lb.
	18, "	6 st. 2 lb. 4 oz.
Dec.	16, "	6 st. 2 lb. 4 oz.
	30, "	6 st. 1 lb. 4 oz.
Jan.	13, 1899	6 st. 2 lb. 4 oz.
	27, "	6 st. 2 lb. 8 oz.
Feb.	10, "	6 st. 2 lb.
March	10, "	6 st. 2 lb.

NEW TREATMENT.

March	24,	1899	6 st. 2 lb. = 86 lb.
April	4,	"	6 st. 5 lb.
	28,	"	6 st. 6 lb. 8 oz.
May	5,	"	6 st. 6 lb. 8 oz.
	12,	"	6 st. 8 lb. 8 oz.
	19,	"	6 st. 9 lb.
	26,	"	6 st. 9 lb.
June	2,	"	6 st. 9 lb. 8 oz.
	9,	"	6 st. 11 lb.
	16,	"	6 st. 12 lb.
	23,	"	6 st. 12 lb. 8 oz.
	30,	"	6 st. 13 lb. 8 oz.
July	7,	"	6 st. 13 lb. 8 oz.
	14,	"	7 stone.
	21,	"	7 st. 2 lb.
	28,	"	7 st. 3 lb.
Aug.	4,	"	7 st. 4 lb. = 102 lb.



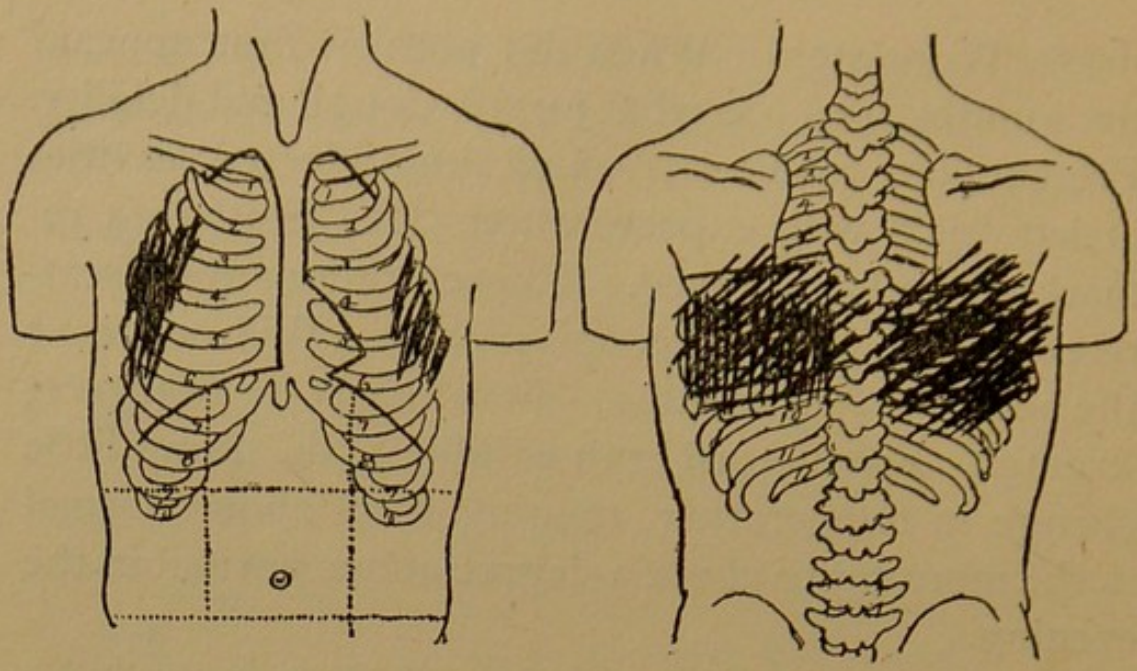
Medical Certificate.—Admitted April 28, 1899. Applicant's name, Margaret Young; aged 20. Ad-

dress, Worcester. When did phthisis first appear? Six months ago. In what form? Cough and debility. Present state of disease? Left lung affected; cavities at left apex, with expectoration. Dr. Statham's remarks: Much improved. Expectorations less; scattered bacilli; walks three miles daily. Will not leave the home for four months. Fever chart for Margaret Young: From April 20th to May 15th, shows little change in temperature, ranging from about normal in the morning to about a degree above normal in the evening.

On April 22d, weighed 5 st. 9 lb. 8 oz. = 79½ lb.; June 2d, 6 st. 5 lb.; June 9th, 6 st. 5 lb.; June 16th, 6 st. 6 lb.; June 23d, 6 st. 8 lb.; June 30, 6 st. 8 lb.; July 7th, 6 st. 9 lb.; July 14th, 6 st. 8 lb. 8 oz.; July 21st, 6 st. 9 lb.; July 28th, 6 st. 10 lb. = 94 lb.

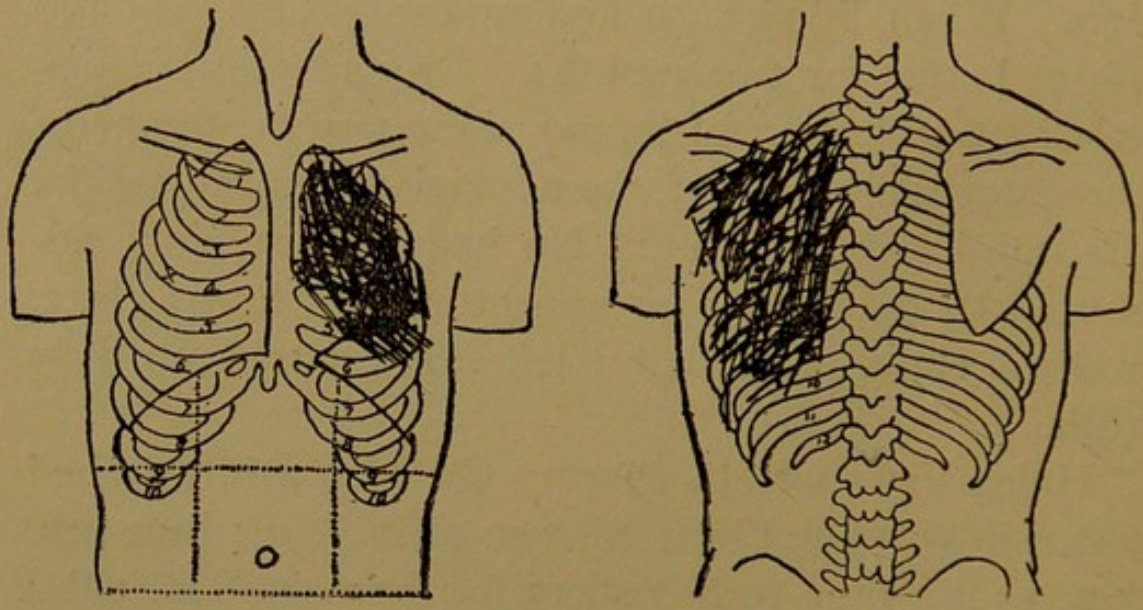
Medical Certificate.—Admitted April 4, 1899. Applicant's name, Helen Fry; aged 41. Address, London. When did phthisis first appear? One year ago —got better for two months. Present state of disease? Congestion of lungs; night sweats; temperature; great wasting; hemoptysis; expectoration. Dr. Statham's remarks: No hemorrhage since admitted to the home; no expectoration; lungs clear; walked eight miles daily; left home cured on July 18th.

Helen Fry's weight chart: On May 4th, weighed 7 st. 2 lb. = 100 lb.; June 2d, 7 st. 11 lb. 8 oz.; June 9th, 7 st. 13 lb.; June 16th, 7 st. 13 lb.; June 23, 8 st. 1 lb.;



June 30th, 8 st. 3 lb.; July 7th, 8 st. 5 lb.; July 14th, 8 st. 7 lb.; July 21st, 8 st. 9 lbs. = 121 lb.

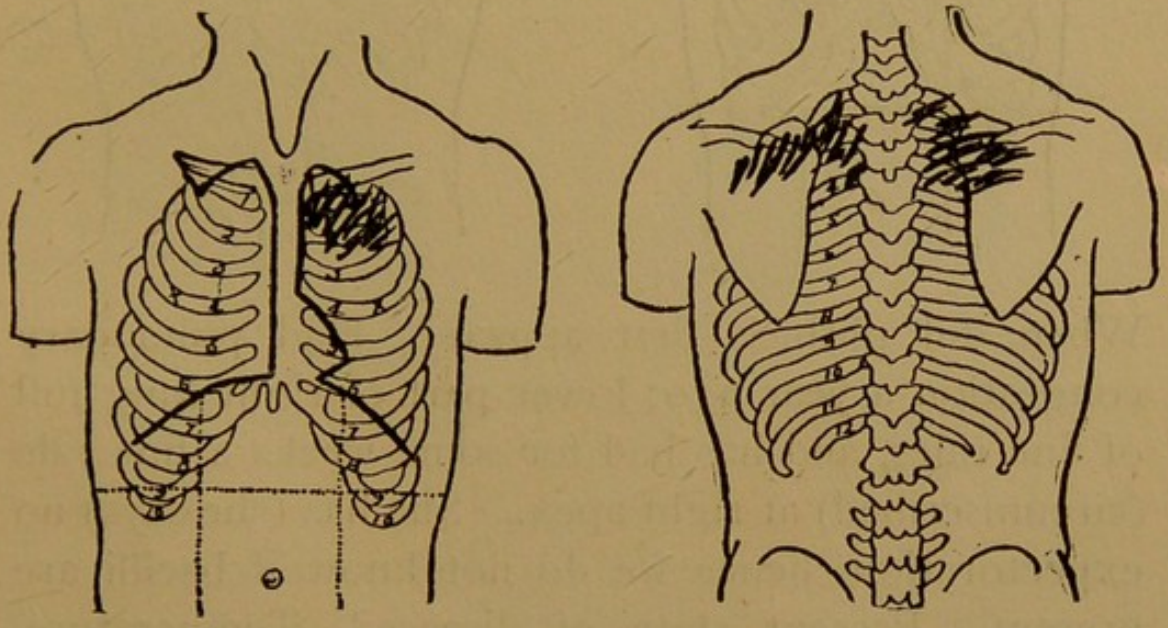
Medical Certificate.—Admitted January 24, 1899. Applicant's name, Edith A. Drew. Address, Bath. When did phthisis first appear? About three months



ago first attended, but cough and loss of voice reported previously. In what form? Hemorrhage on six occasions. Present state of disease? Consolidation most marked in bases and left apex; no sputa. Dr. Statham's remarks: This case came in before we began the new treatment, and in two months gained four pounds. When put under new treatment, she gained gradually each week, notwithstanding her walking four to six miles per day. Expectoration became free from bacilli, and ceased before leaving.

She weighed on January 1st, 9 st. 4 lb.=130 lb.; July 28th, 10 st. 7 lb.=147 lb.

Medical Certificate.—Admitted May 4, 1899. Ap-

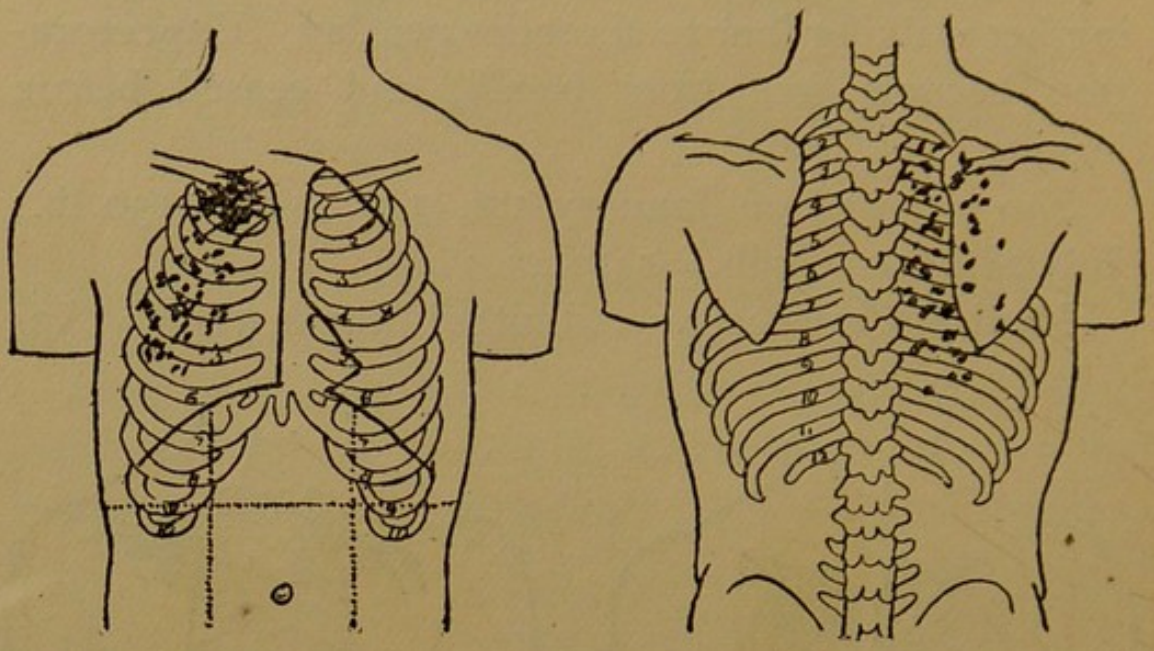


plicant's name, Rose Eucher. Address, Birmingham. When did phthisis first appear? November 19, 1898. In what form? Hemoptysis. Present state of dis-

ease? Infiltration of left upper lobe; no cavities. Dr. Statham's remarks: Left the home cured; returned to service; lungs clear; no expectoration.

She weighed on May 4th, 9 st. 10 lb. 8 oz. = 136½ lb.; July 14th, 10 st. 9 lb. = 149 lb.

Medical Certificate.—Admitted April 18, 1899. Applicant's name, Elsie Greenslade. Address, Devon.



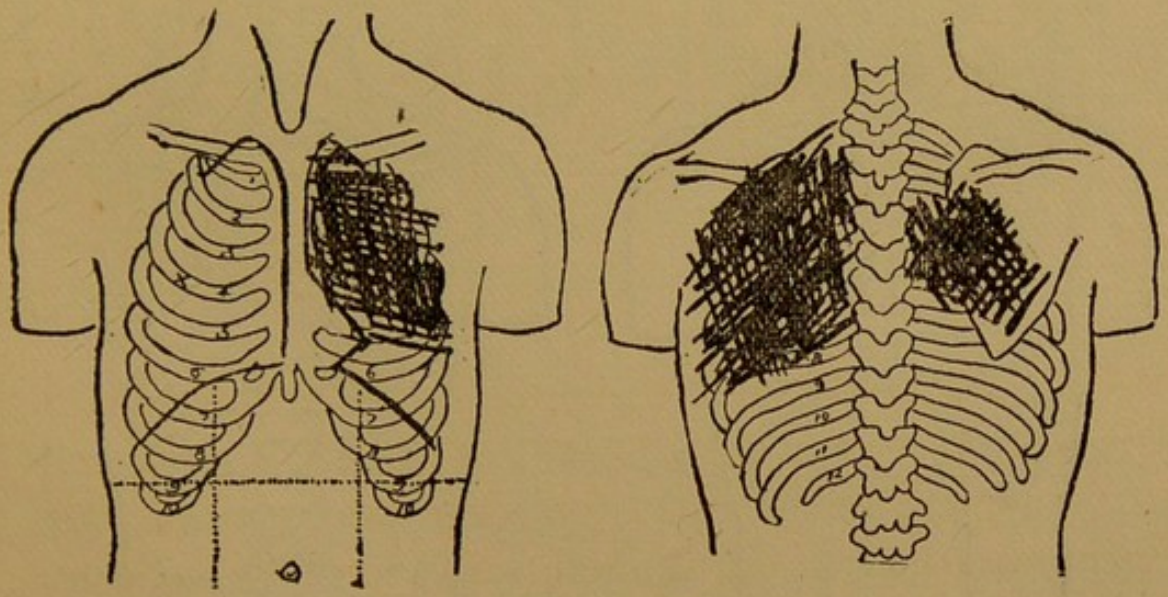
When did phthisis first appear? Had pulmonary congestion a year ago; lower part of right lung full of fine rales, and has had for some weeks a fine rale (circumscribed) at right apex. She has (she says) no expectoration, hence we do not know if bacilli are present. Present state of disease? Temperature, when seen here in the morning, natural; gaining weight now. No cavities. Dr. Statham's remarks: About a week after admittance she had slight attack

of measles, which prevented weight being taken. Slight expectoration in the morning followed (no bacilli), and stopped before she left. Walked six miles daily and made good weight. Left the home quite cured.

She weighed on April 22d, 9 st. 6 lb. = 132 lb.; July 28th, 10 st. 5 lb. = 145 lb.

MALE PATIENTS.

No. 1. Medical Certificate.—Admitted February 10, 1899. Applicant's name, E. Bufton; aged 25.

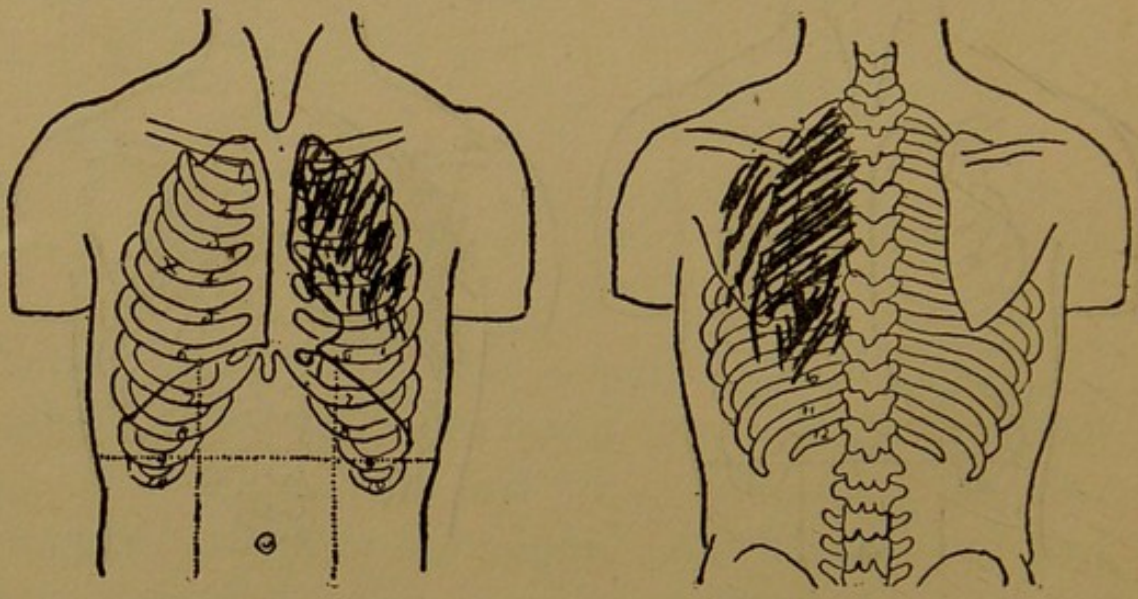


Address, Portsmouth. When did phthisis first appear? October, 1898. In what form? Hemoptysis. Had been refused membership by a Friendly Society. Present state of disease? Commencing

cavity left apex; prolonged breathing on right upper lobe; no temperature; lost one stone in weight; much expectoration. Dr. Statham's remarks: No signs of cavity; lungs clear; no expectoration. Two stone heavier than he has ever been in his life. Walks six to eight miles daily. Returned home cured on August 10th.

Weight on February 10th, 8 st. 11 lb. = 123 lb.; July 14, 12 st. 5 lb. = 173 lb.; August 4th, 12 st. 4 lb. = 172 lb.

No. 2. Medical Certificate.—Admitted April 18, 1899. Applicant's name, William Batt. Address, Bristol. When did phthisis first appear? Two years

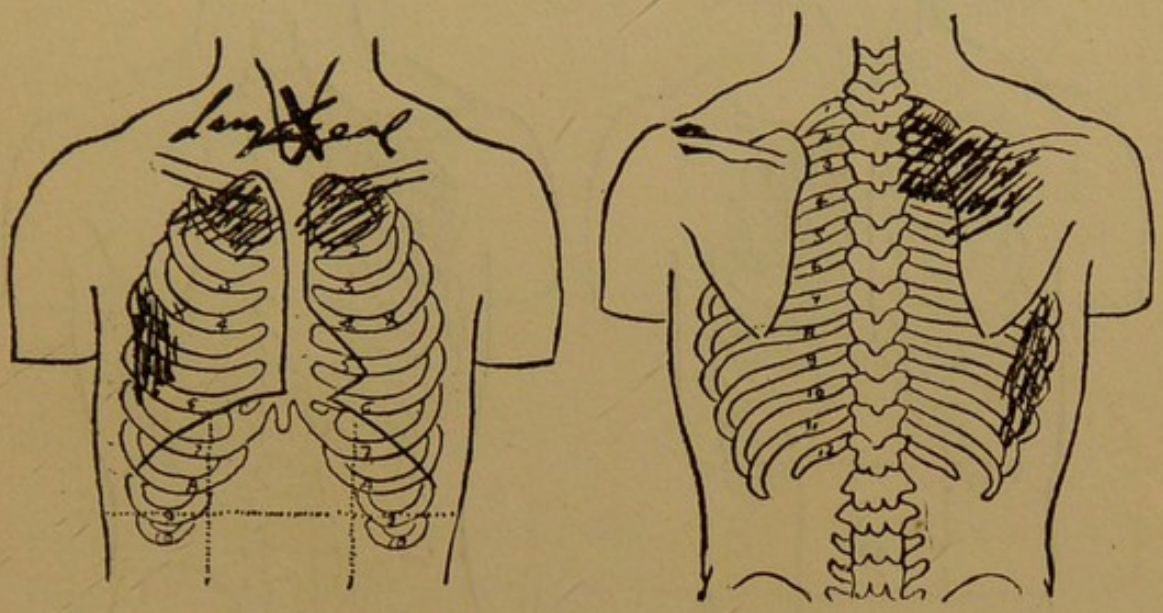


ago. In what form? Pulmonary. Present state of disease? Consolidation and excavation; cavities in upper lobe, also upper part lower lobe left lung; expectoration containing bacilli. Dr. Statham's re-

marks: Physical signs quite normal; no signs of cavitation; no expectoration. Walks eight miles daily. So improved that his wife did not know him when she met him on the road.

Weight on April 22d, 8 st. 11 lb. = 123 lb.; July 28th, 11 st. = 154 lb.

No. 3. Medical Certificate.—Admitted February 27, 1899. Applicant's name, Clement Howard. Ad-

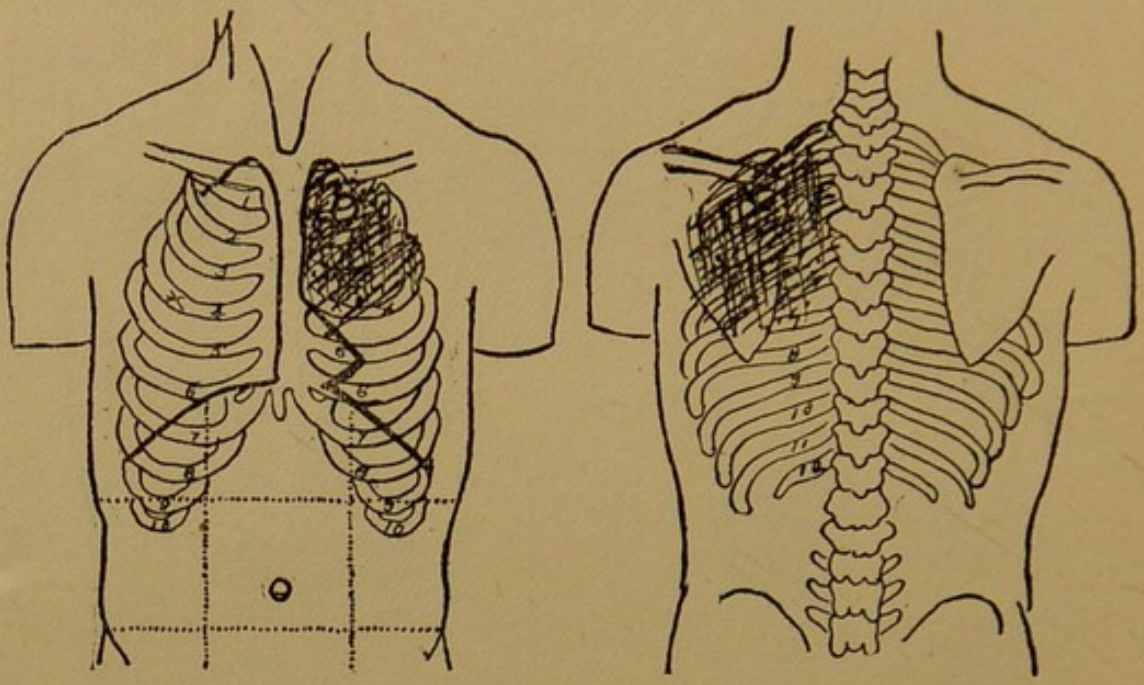


dress, Clerkenwell. When did phthisis first appear? About twelve months ago. In what form? Tubercular laryngitis. Some chronic phthisis at one apex. Present state of disease? Chronic in lung. Laryngitis rather severe. Dr. Statham's remarks: All the symptoms of this case are much improved, especially the laryngitis. Walks six miles daily; never gets rise of temperature; has made steady gain in weight; will

not leave home for some time owing to throat mischief. Do not expect him to put on more weight, as he is above the average for his height.

Weight on March 3d, 8 st. 9 lb. = 121 lb.; July 21st, 10 st. 10 lb. = 150 lb.; August 4th, 10 st. 9 lb. = 149 lb.

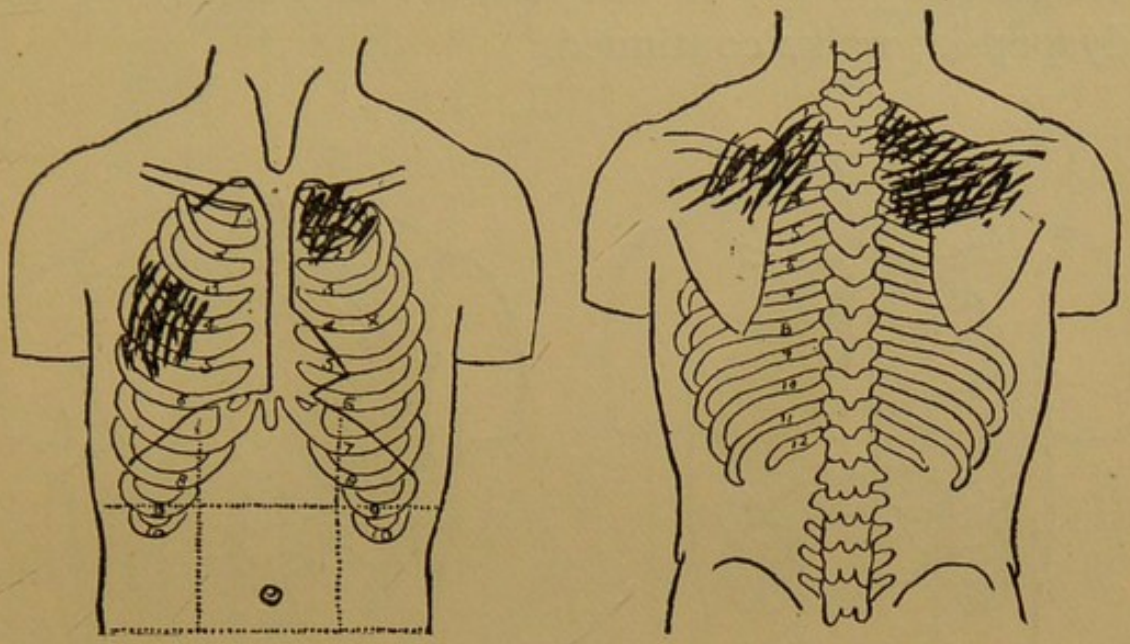
No. 4. Medical Certificate.—Admitted April 17, 1899. Applicant's name, Alfred Squires. Address, London. When did phthisis first appear? About



three years ago. In what form? Catarrhal inflammation. Present state of disease? Apparently quiescent. Cavities in left lung. Dr. Statham's remarks: His condition on entering was anything but quiescent, there being expectoration and moist rales over upper half of left lung, both back and front. Now expectoration much less; gaining in weight; walks three to four miles daily.

Weight on April 18th, 8 st. 4 lb. = 116 lb.; July 28th, 10 st. 2 lb. 8 oz. = 142 lb. 8 oz.

No. 5. Medical Certificate.—Admitted April 14, 1899. Applicant's name, John Wilkins. Address, Bristol. When did phthisis first appear? Eleven

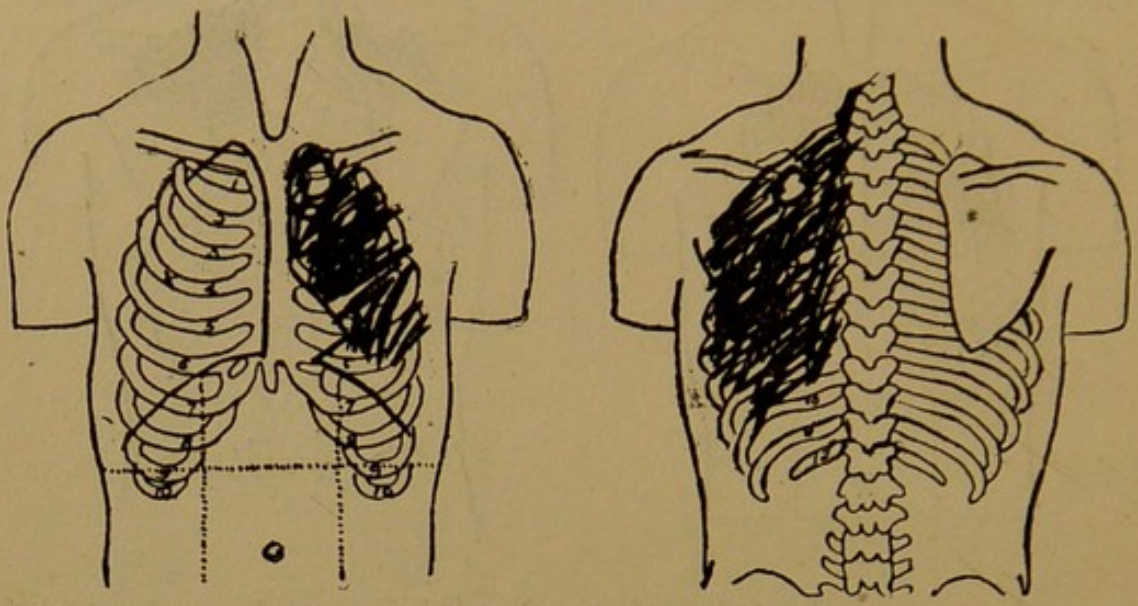


months ago. In what form? Dry cough and wasting. Present state of disease? Consolidation of left apex; no cavities. Dr. Statham's remarks: Much improved. Expectoration about one-third, and no hemorrhage, which he had daily for a month after admittance. Walks six miles daily.

Weight on April 14th, 8 st. 6 lb. = 118 lb.; August 4th, 10 st. 9 lb. 8 oz. = 149 lb. 8 oz.

No. 6. Medical Certificate.—Admitted April 18, 1899. Applicant's name, John Dealey. Address, Reading. When did phthisis first appear? Four

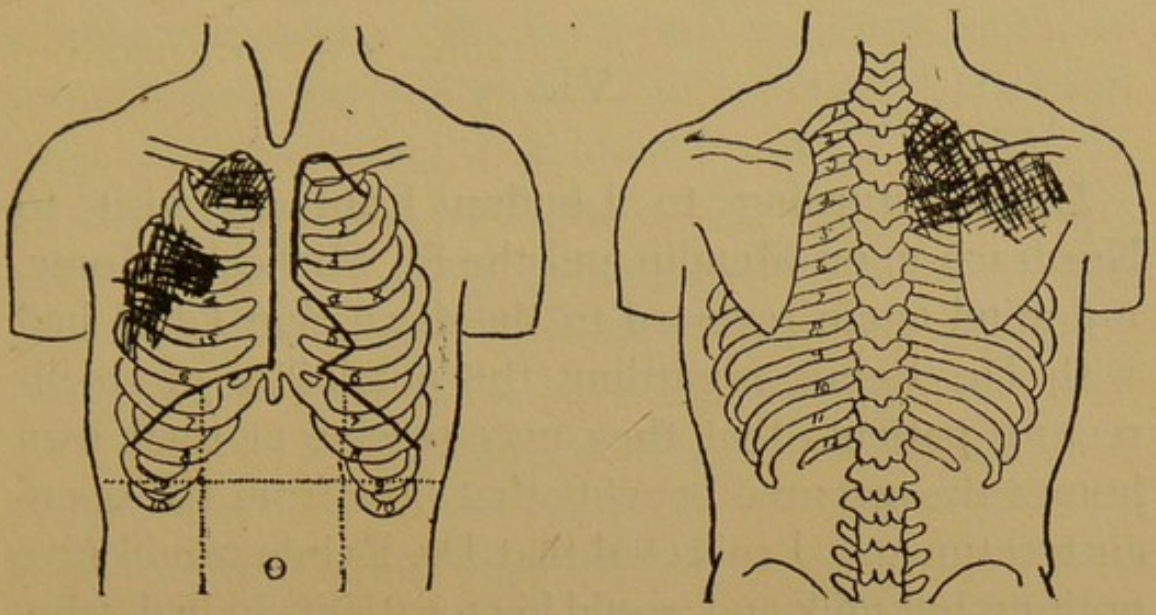
years ago. In what form? Tuberculosis. Present state of disease? Contracted cavity top left lung, small cavity posteriorly; much expectoration. Dr. Statham's remarks: Much improvement; expectoration less. Walks six miles daily. Steady gain in weight; slight rise in temperature in June owing to dyspepsia; walks continued.



Weight April 18th, 8 st. 12 lb. = 124 lb.; August 4th, 10 st. 7 lb. 8 oz. = 147 lb. 8 oz.

No. 7. Medical Certificate.—Admitted March 3, 1899. Applicant's name, Sidney Scudamore. Address, Croydon. When did phthisis first appear? Some months ago. In what form? Tuberculosis of right lung. Present state of disease? Not very active. Cavities right lung in front third and fourth interspace; apex fibrous. Dr. Statham's remarks: No cavity discerned on entry and slight expectora-

tion. Now walks eight miles a day; temperature normal; no expectoration. Height about 5 ft. 6 in.



Weight on March 4th, 8 st. 5 lb.=117 lb.; June 30th, 9 st. 12 lb. 8 oz.=138 lb. 8 oz.; August 4th, 9 st. 12 lb.=138 lb.

VI.

Upon returning to London from my visit to Nordrach-upon-Mendip and the St. Michael's Home, my mind again reverted to the discussion I had had with Dr. Reinle regarding the possibility of so directing patients that they may receive at their own homes the essential benefits that flow from the open-air treatment. I reflected that Dr. Reinle would give nothing but milk and would keep patients in bed, who, if treated on the Nordrach plan, would be fed on a mixed diet, and would be directed to exercise. On the other hand, the Nordrach method would insist upon a record of temperature four times a day, and a visit by the physician three times a day, and a decision as to whether the patient should remain in bed, recline on a sofa, sit on the lawn, or go for a walk, and if the latter, point out the direction and extent of the walk. At Nordrach the doctor takes his seat with his patients at table; he bears in mind the records and symptoms of each case, and he fills each patient's plate, more or less, in accordance with his (the patient's) supposed needs. There is none of this routine in the milk treatment, and yet, as stated in the outset, there is equally marked and satisfactory success.

I do not, therefore, conclude that the strict supervision exercised at Nordrach has no value; it may, indeed, be very important on account of the very different regimen. Manifestly the exclusive milk diet is much more easily digested and assimilated than the large quantities and considerable varieties of food given at Nordrach; and when it is remembered that all consumptives have greatly weakened digestive powers, and that the Nordrach patients are fed meat, fish, poultry, milk, eggs, bread, potatoes, sweets, and pastries, and in quantities more than ample for a robust laborer engaged in severe toil, it seems not unlikely that a close superintendence is needed. An exclusive milk diet, on the other hand, is simplicity itself. It contains all needed elements of nutrition, and is more easily digested than any other food. Then when it is remembered that this system consists in giving a half pint of raw milk, preferably made blood-warm, every thirty, forty, or fifty minutes until four, five, or six quarts are taken in the twenty-four hours, it is seen there is far less need for the scrutiny insisted upon in the Nordrach method.

At the St. Michael's Home I found equally remarkable cures as at the ideally situated sanatorium at Nordrach-upon-Mendip. The latter is at an elevation of 800 feet and at the summit of a long range of hills, away from any highway and with the winds passing over woods and sheep pastures and with almost no ploughed fields. The St. Michael's Home is situ-

ated at the base of the same hills, not far from a much-travelled highway, and in the midst of a thickly settled neighborhood; and its patients, while enjoying a general supervision by a most skilful physician, get on finely without that thrice-daily attention thought to be necessary at the Nordrach sanatoria. It seemed plain that the similarity of results obtained at the three sanatoria so differently conducted is due to the fundamental similarity in methods. There is the same persistence in breathing outdoor air, night and day; the same superabundance of nourishment; and the same complete rest.

Why, then, should not a fourth method, if the three essentials be provided and insisted upon, be equally successful? If a patient provides himself with the same open air, the same superabundant nutrition, and the same rest, is there not every reason to expect similar results?

The following incident furnishes strong presumptive evidence that patients can be successfully treated at their own homes. I was recently in conversation with a physician who has been connected with a sanatorium conducted on the Nordrach system, and who is about starting another one in England. In speaking of the pressure there is to obtain admission in these sanatoria, and the hardship of one correspondent who could not obtain admission for some months, the doctor remarked that he had given him directions which would prevent him from getting any worse.

It at once occurred to me that if the doctor could give directions that would arrest the disease, he could give directions that would make the arrest permanent.

Dr. J. G. Sinclair Coghill, deceased, formerly senior physician in the Ventnor Hospital for Consumptives, Isle of Wight, in the February issue of the Nineteenth Century, indirectly sustains the opinion that a sanatorium and the presence of a physician are not indispensable for the successful treatment of consumption. After making some strictures upon Mr. Gibson's essay printed in the January issue of that magazine—and to which I have referred in preceding pages—Dr. Coghill makes the following quotation from Mr. Gibson:

"Here are the features of the cure: nourishment, rest, and fresh air. Of the three, the overfeeding is by far the most important, for it is conceivable that a cure might be effected by this means alone, which could never be accomplished by rest and fresh air only."

Dr. Coghill retorts: "Surely, if this is the case, why take the temperature four times a day? Why require to receive a visit from the doctor three times a day? Why, if overfeeding alone suffices, should it be necessary to be ordered to bed, to lie on a couch, to sit outside, or to go for a long or a short walk? Why, indeed, should it be necessary to go to Nordrach or from one's home at all?"

In other words, Dr. Coghill did not credit Mr. Gibson's statements. To his mind these claims seemed absurd; but any inquirer has only to visit Dr. Walther's sanatorium at Nordrach or Dr. Thurnam's at Nordrach-upon-Mendip to be convinced that Mr. Gibson has not overstated the facts. Similarly, an examination into the facts of the milk treatment will show that my statements are not exaggerated. And when one comes to realize these marvellous restorations to health, and the simplicity of the means used, the reasonableness of Dr. Coghill's deductions must be admitted.

My first patient is the case of a friend, a lady residing in Pennsylvania at a distance of about 500 miles from New York. She is now sixty-seven years of age, and has suffered from dyspepsia and delicate health since her youth. Her weight, judged by her height, should be 135 pounds. She reports that at twenty she weighed 132 pounds. Since thirty years of age she has gradually but slowly lost weight. Fifteen years ago she weighed 115 pounds and contracted chronic bronchitis.

About twelve years since, this lady was taken with influenza, which was epidemic in her vicinity. She recovered from this attack in due time, except she was left with a cough which has continued ever since, and has gradually grown worse. She was taken with the first hemorrhage in 1889. At that time she weighed 107 pounds, and remained at about that weight for

some years. Her cough and expectoration continued. In the autumn of 1896 she had an acute attack, and went to a sanatorium in Oil City, Pennsylvania, to be treated by inhalation. The sanatorium was under the management of an advertising doctor, and the formula for the inhalation was not given. She remained three weeks, when the doctor said to her that her temperature was then normal; that the inhalations had destroyed the bacilli; that she could at once return to her home, and that she would continue to improve and gain in weight. When the patient was discharged as cured she was suspicious that the doctor was sending her home to die, as she could not see that she was any better and her cough seemed worse. The doctor's prognosis proved correct. She returned to her home weighing eighty-two pounds. She soon began to gain in strength, and her cough was much better, although at best it was a very bad one. Her weight gradually increased from eighty-two pounds until at the end of a year she weighed 107—a gain of twenty-five pounds.

About this time she again began to lose weight and her cough increased, and at the beginning of the present year (1899) she weighed ninety-five pounds. At this time she was again taken with an attack of la grippe, and her condition was said to be critical by the local physician.

About the first of January, 1899, I wrote, recounting Dr. Reinle's success in treating consumption, and

urging her to come to New York for treatment in his sanatorium. She replied that she was so situated that it was impossible for her to leave her home.

On the 10th of January I wrote, giving her directions for treatment. A letter from her stated that milk was distasteful, and that when she had taken it she had increased difficulty of digestion and what appeared a clogging effect upon the liver. She was given permission to take a small teaspoonful of sugar with each glass of milk whenever she preferred it sweetened, and directed not to take any other food. She was to begin with one-half pint every three-quarters of an hour until she had taken at least three quarts in the twenty-four hours; later on she would be able to take more. I directed that for a time she must remain in bed, and although it was midwinter and in a locality where zero weather is not uncommon, her window must be kept open day and night.

This patient displayed from the outset a sturdy, resolute determination to follow any treatment that promised good results. She soon was able to take three quarts of milk per day, and gradually increased the amount until at the end of six weeks she was taking five quarts per day. However, her dislike of milk was so great that she ventured to take a full pint every hour and a half instead of the half pint every forty-five minutes. She had flatulence and a feeling of overfulness. She never felt hungry and she had no relish for the milk. On account of the

lack of relish, and after she had followed the treatment over two months, I gave her permission to take one meal per day of meat or eggs, as she might prefer. One day she tried some meat and the next day an egg. She had no hunger, and no more relish for the meat and eggs than she had for the milk; and since milk was thought to be better she concluded to confine herself to the one food. I then suggested that she might try once a day some stewed prunes or figs with the milk; but she found no more satisfaction with the fruit than she had found with the meat and eggs, and discontinued it.

This lady has been a lifelong invalid; she has taken the nauseous drugs of the old school and the various packs and baths of the water-cures; and after the third week she wrote me that the milk diet was the most disagreeable treatment she had ever taken. Among some scores of persons to whom I have prescribed this regimen during the present year, this lady and one other patient are the only ones who have made serious complaint as to its disagreeableness. I call especial attention to this as the results in her case have proven an ample reward for self-denial and sturdy will-power; and in the hope that other invalids who may be persuaded to give this treatment a trial will be encouraged to persevere until they gain a similar reward.

This patient did not at first gain flesh, and had only gained six pounds on the 10th of March—after nearly

two months of treatment. Much of the time for the next two months she gained three pounds per week. This record is made up during the latter part of September. Her weight has remained unchanged for some weeks, ranging from 130 to 131 pounds; and this notwithstanding the fact that she has greatly lessened the amount of food taken each day. During February, March, and April she took five quarts per day. During May, June, and July she reduced the quantity to four quarts. She felt as great fulness or repletion on the four as she had done on the five quarts, but gained only three pounds, her weight increasing from 127½ to 131½. She has since taken three quarts per day, and twice a day she has taken, in addition to the milk, an ear of green corn with butter. For my English readers I will explain that "green corn" is usually a selected variety of maize, especially sweet and tender and eaten boiled or roasted, when the grain is said to be "in milk." Maize, when fully matured, is more difficult of digestion than wheat or oats, and less difficult than peas or beans; and, like green peas and "string" beans, green corn is a wholesome food and totally different from the matured grain. I have recommended this patient, instead of green corn, to take twice a day a small portion of bread which has been baked four or five hours in a slow oven, or ordinary bread which has been baked a second time—"Zweiback," the Germans name it.

As this lady's treatment progresses I will recommend a further reduction in the amount of milk until she takes about three pints to two quarts a day, and a sufficient amount of the thoroughly baked bread with fruit, green vegetables, and butter to keep up her weight.

The use of milk as a food is usually thought to induce a torpid action of the liver and a constipated action of the bowels. I have found its action just the reverse. This patient has for years depended upon aperient medicines. Within a few days from the beginning of the milk diet there was noticed a distinct improvement in the action of the bowels, and after a few weeks there has been a free and natural daily motion. I soon found that this patient's experience was not an isolated case; that all who have taken an exclusive milk diet or who have made milk the principal feature have either been greatly improved or have had constipation entirely overcome.

I was at first puzzled with this result, as I had always supposed that the use of milk tended to constipation. Upon reflection I remembered that in Switzerland there is practised what is called the "whey-cure." Patients at sanatoria where the whey-cure is given are required to breathe fresh air, take as much exercise as their condition will allow, are furnished a full diet, of which milk forms one of the principal features, and each morning, an hour before breakfast, each patient is required to drink several glasses

of whey obtained from the milk of goats. Patients begin with one or two glasses, and increase the amount until they often take three pints each morning. This practice at once induces a free action.

Nothing is added to the goat's milk to make the whey; when the cream and casein are removed there remain only water, milk, sugar, and salts. As the composition of cow's milk is very similar to that of the goat, this milk diet gives in another form double the amount of whey that is administered to the whey-cure patients in Switzerland. Given in the form of milk, even when no other food is taken, the action is not as aperient as the whey—but all the more desirable on that account. It is more natural. This lady formerly had severe palpitation of the heart, which wholly prostrated her and gave great solicitude as well. She has had no return of this since April. Her cough and expectoration are very much improved, and a portion of the time seem wholly cured. The condition of her nervous system is greatly improved, and she sleeps better than for years. I have letters from her and her daughter which are most enthusiastic in describing the gain that has been made. At the outset she was an invalid requiring assistance. In six months' treatment she is transformed, no longer requiring assistance, and able to be of service to others.

It is quite true she cannot be said to be cured. But when we consider that she is sixty-seven years of

PORTRAIT OF SECOND PATIENT, PAGE 61, AFTER FIVE MONTHS' TREATMENT.

age; that she had been gradually losing flesh for thirty years; that for fifteen years she has not weighed, in her best health, more than 107 pounds; that she has gained thirty-five pounds in six months' treatment, and is now near her normal weight; that her heart palpitation and insomnia have been overcome; that her cough and expectoration are much of the time wholly overcome; that her afternoon temperature, which at the outset was from 100 degrees to 101 degrees, has been reduced to normal—when all these facts are considered it is not too much to say that here is a case of phthisis which has been arrested and that we have every reason to expect that the arrest will be permanent.

The second patient, a young Brooklyn woman, twenty-two years of age, has always been of a delicate habit and frequently in frail health. In May, 1898, she came home from a ride in the trolley cars with a severe chill, and was very ill. She seemed to have taken a bad cold and had a violent cough. The family physician was called; he examined her lungs and said that one of them was involved, and that the case required watchful attention. During May and June, while under medical treatment, she lost twenty pounds. In July she was sent to the hills in Connecticut, where there is considerable elevation. Her cough stopped at once, and in four weeks she gained sixteen pounds, but upon her return she began coughing again. From that time on her health was

very poor. She had a constant, hard, dry cough; she slept badly, sometimes very little, and much of the time her difficulty and distress in breathing were sufficient to keep other members of the family awake.

On January 1, 1899, she was again seized with a high fever and increased coughing, accompanied with diarrhea. After declining for some weeks, at the advice of friends another physician was called, one who is reputed skilful in similar cases. He found her temperature 104; he said that the diarrhea was a symptom of her disease; that her lungs were badly involved, and that the case, although not without hope, was a very serious one; and that a very unfavorable feature was the fact that her disease was making such rapid headway.

The day following I was asked to see her and to determine whether I thought the milk and open-air treatment held out any promise for her. I found the symptoms alarming. It was ten o'clock when I called, and her temperature was 103 degrees—strong evidence that the physician who had taken her temperature the evening before had found it 104 degrees. She had been emaciating rapidly for a fortnight, and was losing four to five pounds per week in weight. In addition to the night sweats, great nervousness, inability to sleep, and the diarrhea, I found there was depression upon the right side, and such a sinking of the right breast that it was practically gone. The case had every symptom of galloping consumption.

And when I reflected that the family physician does not usually inform a patient with incipient phthisis the full gravity of the case, I was confident the physician who had examined the case the day before, and had remarked upon the rapidity with which the patient was getting worse, had recognized a case of quick consumption.

This young lady was not fortunately situated. Her parents occupied the small top flat of an apartment house, and she occupied a small bedroom at the north, adjoining the drawing or reception room. The south end of the apartment is divided into a kitchen and dining-room—the latter fortunately having two south windows. I explained to the parents that they must give up the dining-room to the patient, that she must have a cot put up in it at once, and that both windows must be kept open. The mother kept no servant and was caring for a family of four adults. She readily consented to the change. There was no fire in the dining-room; the two windows were opened at once, and the hallway and doors connecting with the drawing-room were also opened, as well as the drawing-room windows. The parents were unusually free from prejudice, and were unusually willing to try what might fairly be called an extreme experiment. However, I encouraged them greatly by providing them with Mr. Gibson's article in the January Nineteenth Century, and calling attention to the fact that at Nordrach Dr. Walther often removes the window from the frame—

an insurance that the patient will not surreptitiously close the window when no one is on guard.

There was no need for solicitude in this matter, as the patient and the parents readily co-operated. The winter of 1898-99 in Brooklyn is said to have been the coldest for some years. There was no fire in the extemporized bedroom, and yet both windows were usually open night and day, and even during the worst blizzards one window in the bedroom and one in the drawing-room were kept sufficiently open to cause good circulation to pass through the entire flat. In my morning calls I often found the mother wrapped in furs. I had expressed some solicitude lest the friends of the young lady when she had shown unmistakable indications of recovery would come too often and remain too long, but the mother soon assured me that there was no danger; that the friends found the room so cold that they remained in it only a few minutes.

I gave the same directions as to the clothes to be worn next the body and for the bedclothes as given on pages 154 and 155; and milk, prepared as directed on page 56, was the only food except occasionally a teaspoonful of sugar with a glass of milk, or instead of sugar she was permitted a few ounces of plain candy each day.

She remained in bed continuously for three months. The rapid amelioration of the symptoms of acute phthisis was remarkable. The temperature receded

day by day, and in a fortnight her morning temperature was often normal, and in the evening it rose from 100 degrees to 101 degrees. The diarrhea ceased after a few days. The first night after beginning treatment she felt better than for months; and soon she slept nine and ten hours without coughing, and much better than she had done for years. After ten days she slept one to two hours in the daytime, and nine to ten hours of uninterrupted sleep at night. After two months she gradually discontinued the sleep in the daytime and increased the amount at night, usually sleeping eleven and twelve hours and sometimes fourteen hours of continuous sleep.

The change wrought in her appearance was quite noticeable after three or four days, and very marked in the second week. She had had for months a doughy complexion, with face pale and emaciated, and her eyes lifeless. In addition, since her attack of acute phthisis on the first of January her eyes and face had that peculiar expression common with consumptives who are apparently marked for death. Within a week from beginning treatment her cheeks began to fill out, and her face had taken on a more healthy hue.

She gained weight slowly at first, but her face was much less emaciated in appearance, and the sunken breast had been restored to a normal appearance when she had gained only a few pounds. She had occasional exacerbations of the symptoms—

especially a return, once in two or three weeks, of high temperature, and soreness of the chest and increased coughing. Very naturally, at such times, her parents were very solicitous. Although the treatment, as they thought, had been effective enough to bring about a temporary abatement of the more severe symptoms, they feared that the cessation had only been temporary, and that the fires of the disease were flaming up anew and might not again subside. I assured them that these accessions of symptoms are usual and to be expected under hygienic treatment.

I am writing this report at the expiration of seven months since beginning treatment. The patient spent nearly three months in the country. Much of the time her temperature has been normal in the evening and a half to a degree below normal in the morning. Pulsation persists in continuing too rapid, running from 100 to 110 per minute, and increasing to 120 whenever there is an exacerbation of symptoms. She has bicycled a little, very moderately, and has done considerable walking. For weeks at a time she has been free from cough and expectoration. Her tongue, which her mother says has been inflamed and coated for years, and which at beginning of treatment was swollen, very red, and with deep gashes, is now normal. She does the family marketing, and is able to do several hours' work, assisting in the housekeeping without undue fatigue. She has gained in weight thirty-five pounds. She has been a teacher in

a Sunday-school for some years, and since her return home she has met a half-dozen of her fellow-teachers and companions, some of whom she had known intimately for years, who did not recognize her until she challenged them. All traces of the invalid have left her face, which is not only plump, but is brown with the sun and outdoor air.

At the time of commencing treatment this young woman had had granulation of the eyelids for over four years. She had treatment months at a time for this difficulty by a specialist, who succeeded in considerably ameliorating the symptoms. However, for a year before beginning treatment, upon awakening in the morning her eyelids were frequently fastened together by these granulations; she frequently had occasion to remove them two or three times during the day. The granulations began to improve at once, and at the end of a few weeks there was very little trace even in the morning of any accumulation. Much of the time during the past six months she has had no trace of them; when there has been an active accession of the symptoms of phthisis, there has been, for a week or two at a time, a return of the granulations.

The patient is far from a condition in which she can be pronounced cured. She must have a more normal pulsation, and the freedom from high temperature and from cough and expectoration, which she has had for weeks at a time, must extend into months and even years before she may be said to be

cured. At the same time to say that the disease has been arrested does not state the case. The signs of galloping consumption which were unmistakable are all gone, and, as before said, there have been weeks at a time when there has been no cough, no expectoration, and no pains or soreness in the chest. Moreover, these periods of freedom are lengthening, and the exacerbations are growing milder and less frequent. In the light of the cures which have been made by the Nordrach and the milk treatment, it does not seem too much to expect an ultimate cure. To my mind, the persistent, rapid pulse and the occasional recurring returns of afternoon temperature, coughing, and soreness in the chest serve to emphasize the seriousness of the attack; and since the patient has evidently had the beginnings of consumption actively at work in her system for years, it ought to surprise no one if a year or two are required to effect a complete restoration.

My third patient was a young Brooklyn man, about thirty-five years of age, to whom I was called the last of February. He had had an attack of acute phthisis two years previously. A year before he had gone to Colorado, and for a time was in a sanatorium near Denver. He returned only to find himself growing worse, and in September, 1898, he consulted a well-known consumption specialist of Brooklyn. The doctor told him he was already in the second stage; that usually he did not care to accept such cases, but

that he would do what he could. The patient continued treatment—which consisted chiefly of a daily inhalation—for four months, when he became so weak that he could no longer go to the doctor's office. During the latter part of this treatment the doctor prescribed chloral, and when I was called his only rest was obtained by a resort to that drug. He had already taken sixteen bottles of Brown's Chloraldine. He was emaciated to a skeleton.

I called in consultation a New York specialist. After examination the doctor said that the patient was in the last stage; that he believed the case hopeless; and that there was not a consumptive specialist in America that would admit the possibility of his recovery.

The patient was removed from a poorly lighted and poorly ventilated room into a large one of three windows, with a southern exposure. The chloral was taken away from him from the first, allowing for a few days some Mariani wine, and afterwards no stimulants and no sedatives. The result achieved in the space of eight weeks seemed magical. His pulsations were reduced from 140 to 120 to 125 per minute, and his afternoon temperature was reduced one to two degrees. His cough and expectoration were both lessened, and he began to gain flesh. At the outset he could sleep only one or two hours out of the twenty-four, and not more than ten to fifteen minutes at a time; in six or eight weeks he was sleeping seven

or eight hours out of the twenty-four, and often slept three or four hours continuously. The expert called again at this time, was greatly astonished at the improvement, and expressed the opinion that a recovery was probable.

This patient at first had no faith in the milk treatment; he disliked the taste of milk. By dint of much effort I was able to get him to take five, and sometimes six, pints in a day; but after a few weeks he reduced the amount to about four pints per day. I explained to him and to his family the necessity for full nutrition, but he seemed to be self-indulgent, and he refused to take it when the taste was unpleasant. When visiting the sanatorium at Nordrach-upon-Mendip, and observing the success Dr. Thurnam achieved in persuading and insisting that his patients take food against their inclination, when necessary, it seemed to me that perhaps I could have had better success with this patient had I realized the extent to which this course may be pushed. Some of Dr. Thurnam's patients, at the beginning of treatment, were induced to take large portions of food even if they were, now and then, obliged to eject the contents of the stomach. The strange part of this is the fact that these patients soon were able to retain their heavy meals, and, in due time, were encouraged to persevere by decided gains in weight and strength and by a decreasing aversion for food. I feel confident that if this patient could have been induced to take double

the quantity of the milk, he, too, would have made a recovery. He employed another physician upon my departure for London, who changed the regimen and allowed stimulants; and the end came in July. I feel confident that when I was called the patient would not have lived a month but for the change of treatment; and the view is shared by the members of his family and by the expert referred to above.

The fourth case is that of a young man, twenty-five years of age. As he worked in a factory ten hours a day, he was obliged to breathe a dusty atmosphere. He was taken on the 7th of November, 1898, with entire loss of appetite, pain in chest, and great difficulty in breathing. He consulted a Brooklyn consumption specialist, who said that his right lung was completely spotted, and that his left one was somewhat affected. The specialist insisted that he spend all the time possible in the open air; and from that time until the following March he spent ten to twelve hours of nearly every day in Prospect Park. The specialist gave him a teaspoonful of the solution of creosote in a half glass of water at meals, and an inhalation treatment every day for fourteen weeks.

At the end of that time he was able to resume work. When he began treatment he weighed 134 pounds, and when he resumed work he had gained seven pounds. During the first week in May he again experienced a relapse. He was again examined by the specialist, who said that he still had one spot upon

his right lung, and advised treatment. The young man was unable to comply with the advice from inability to make the necessary weekly prepayment.

At this juncture he called upon me. He had lost three pounds of the seven he had gained by his fourteen weeks of rest and treatment, weighing 138. He had little appetite, great distress from food, and pain in his chest where the specialist had located the affected spot. His pulse was rapid and his temperature a degree above normal. His tongue was red, swollen, and heavily coated. He said that, if possible, it was necessary for him to continue his work.

Bearing in mind the advantages from heavy feeding which had come to Dr. Walther's patients at Nordrach, I concluded to ascertain if the patient might not continue his work, and still make progress toward recovery. As he could have his window open at the factory and at home, I impressed upon him the necessity of the wide-open window at all times. His work at the factory gave him all the exercise he needed, although, of course, not of the right sort, and not helpful like that in the open. I advised him to lie down as much as possible, stopped his use of bread and potatoes, and prescribed a diet composed largely of milk and meat. He took a quart of milk and four slightly cooked eggs for his breakfast. He took a second quart of milk at the factory during the forenoon. At twelve o'clock he usually took a beefsteak with some twice-baked bread and a third quart of

milk. He took a fourth quart during the afternoon, and for his supper some meat and some leaf vegetables, and a final quart of milk during the evening. In a few weeks his soreness and pain in the chest were gone; he had gained several pounds in weight; he had no distress with his food; he slept well, and all his symptoms were improved. In the early summer he broke his collar-bone, which laid him up for some weeks. As his family was not in favor of a treatment so much out of the usual order, I conjectured that he did not follow the treatment as thoroughly as he might have done. His weight now, in the early days of October, is 151 pounds—nearly normal, and more than he has ever weighed before. His tongue is much improved, and all the symptoms are better. I have recommended him to reduce the amount of milk to one-half, to take his food hereafter only at his three meals, to take nothing for his breakfast except a quart of milk and some twice-baked bread, and to see to it that his weight does not much further increase.

I have not related this history to recommend such a diet under ordinary circumstances, but because the case ought to be recorded. I am confident the young man would now be in a better condition if he could have rested, and could have taken a diet composed wholly or chiefly of milk. He would have been freed from a great strain upon his vital forces, and better able to regain vigorous health. At the same time it

is an interesting experiment, and the considerable gain which he has made, despite his unfortunate overstrain and surroundings, is an impressive testimony to the efficacy of the Nordrach system of diet for consumption.

The fifth case is that of a young man living in New Jersey, near New York City. He was born in 1874. His father had hemorrhages in 1871, from which he apparently recovered; he was taken again in 1877, and died of consumption in 1882. The son had two attacks of inflammation of the lungs when he was four years of age—one in the summer and the other during the autumn. One lung was then badly congested, and he was considered very ill.

In September, 1893, he had a hemorrhage, which was repeated on the two following days. After remaining at home for six weeks he resumed work and continued it until the end of the following December. He then gave up work on account of spitting blood and on the doctor's advice. In June, 1894, he had his fourth hemorrhage, and during the following August he had three more. He then went to the Catskill Mountains on the doctor's advice, and remained until March, 1895. In the following May he had another hemorrhage and again another in June. Following this he was very ill, with bad cough and rapid loss of strength.

In July, 1895, he began treatment under the direction of Dr. Salisbury, which consisted chiefly in an

exclusive diet of minced meat and hot water. About six weeks after beginning the Salisbury treatment he began to gain in weight and strength. He continued the meat diet until the first of January, 1896, when he felt obliged to give it up; meat became so repulsive that even the sight of it made him feel ill. He then employed another physician, who directed that he eat anything that he fancied. It is noteworthy that this patient was much improved under Dr. Salisbury's treatment; so much so that he was able to do clerical work from November, 1895, until the last of May following.

Early in June, 1897, he went again to Stamford, in the Catskill Mountains, and remained until September. While there, in August, he had another bad hemorrhage. He returned home in September and resumed his work for a short time, but was soon obliged to give it up, and he has not been able to work any since.

From November 26, 1897, to January 15, 1898, he had seventeen hemorrhages; he was confined to his bed, was very weak, and his symptoms were alarming. In September, 1898, he went to Liberty, New York, on account of the reputation which that place has of having a climate favorable to consumptives. On the night of his arrival he had a bad hemorrhage, and the next morning one of the worst he ever had. He was threatened with heart-failure, and was brought back to his home at the end of a week. The following

December he had pleurisy, and in January, 1899, he had la grippe, and was much weakened by both attacks. He had a slight hemorrhage in February, making about thirty in all.

On May 16, 1899, he began to take milk, in accordance with my directions, as an exclusive diet. He entered into this part of the treatment with enthusiasm. Like the average consumptive, he was in great fear of a draught and had kept his windows closed. His nervous system was so far undermined that he did not feel equal to lying in a dark room, and he had been in the habit of keeping a lamp burning in his bedroom. He had always worn heavy, closely woven, woollen underclothing, and also heavy woollen, non-porous outergarments. In consequence, his skin was flabby and weak, which made him unduly sensitive to a draught or change of temperature. He was adverse to the adoption of the porous cotton undergarments. He was advised that the lamp must not be kept burning in his bedroom, and that at least one window must be kept wide open. As we were at the beginning of summer, and as ventilation is better during the warm weather, I hoped for good results, even if the best conditions could not be assured. He was advised to remain in bed for some weeks, but as he was so nervous, and, when by himself, so lonely, it seemed best not to insist upon these conditions.

He soon began to improve. I was in London from the last of May until August, and received frequent

reports giving enthusiastic accounts of his improvement. At the end of three months—by the middle of August—he had gained eighteen pounds. During June and July his temperature had been usually about normal in the morning and about one degree above normal in the evening. His complexion and general appearance had greatly improved, and all his friends and acquaintances were amazed and delighted. Since the middle of August he has not done so well, and by the 10th of September he had lost four pounds. He suffered from the hot weather and lost his appetite for milk. On the 15th of October his friends report that his cough is worse and that his appetite is poor. I urged them to try to persuade the patient to do what he ought to have done at the outset; namely, to take to his bed for some weeks, and to follow my directions regarding his clothing and the opening of the three windows of his bedroom. With a view to giving the patient and his friends confidence in all the features of the treatment, I advised the brother and mother of the patient to visit my second patient, the young Brooklyn woman and her family, and to learn from first hands the results that have been obtained from absolute rest in bed, the wide-open windows, and from porous clothing. He is quite willing to take the milk; it is the rest in bed, the fresh air, and the porous clothing which he does not understand and is not willing to adopt. I am hoping that the visit will be made and that they will be so impressed

that they, after realizing what has been accomplished, will insist upon the essential features of the open-air treatment.

This young man would, no doubt, recover if he would take complete rest in bed, continue the milk just as he had been taking it, and would have his windows sufficiently wide open. However, where the skin is so much enervated by too much clothing, too heavy and too tightly woven, as in this case—and, indeed, in the case of most consumptives—the porous undergarments and the porous bedclothes are also of importance; and when a life is in the balance every measure should be insisted upon that promises assistance.

The sixth case is that of a young lady residing in London, who came to consult me early in July. She was twenty-seven years of age, five feet three inches in height, and, in accordance with tables prepared by insurance companies, her normal weight should be 130 lb. = 9 st. 4 lb. She has always been delicate and somewhat emaciated. At about the age of twenty her weight was 112 lb., or 8 st. Last autumn she had a slight attack of influenza, which ended in a cough and a weakened throat—difficulty in speaking and considerable pain. In the spring she had a second and more severe attack of la grippe, followed by the same cough and throat difficulty. Later on she consulted a physician, who explained to her father that her only safety lay in a change of climate, and recommended the east coast.

Her parents felt unable to send her, and, as the weather got milder, the throat symptoms were somewhat abated; but she continued to emaciate until, when she came to me, her weight was 5 st. 12½ lb., or 82½ lb. Her father's house was entirely shaded by trees. Enough trees were removed to allow some sun in the house and garden, and absolute rest was prescribed. She reclined three or four hours a day in a hammock in the garden, and an hour or two on the sofa beneath an open window. Her bedroom window was wide open night and day, and, fortunately, her mother was willing to open the remaining windows night and day also. She was advised to take an exclusive milk diet. She began with three quarts per day, and in less than a week was able to take four, which she continued to take daily, except during one or two unusually hot days, when the milk had turned sour. This patient's lungs were not yet seriously involved, but she was very anemic, was quite weak, was still suffering with difficulty of the throat and with a greatly increased emaciation. She had much the appearance of one already in consumption, with a peculiarly bright eye and great pallor. She had also been suffering for some time with diarrhea. She gained three pounds the first week, four the second week, and, when she called at the end of three weeks, she had gained ten and one-half pounds. She had a good color, and had almost wholly recovered from the appearance of being an invalid.

She had the glad, happy look that had so impressed me upon the faces of the patients at St. Michael's Home.

Since returning to America I have had frequent reports. She has continued to gain one pound per week, and writes me that her improved appearance is remarked upon by all acquaintances, and that some of them had recently met and failed to recognize her.

A young Englishwoman who had been in frail health for some time was taken with what she supposed to be a severe cold in September, 1897. The "cold" was not relieved, and by November she had night sweats and loss of voice and the first appearance of blood in the expectoration. She was worse in December, and remained much the same until March, when she consulted a physician in Newcastle. The doctor frankly told her that she had consumption, and recommended a warm climate—South Africa was contemplated. This doctor told her that he was fearful that she could not recover in England, but advised what he called "stuffing"—that she should take not less than three pints of milk daily and a large amount of food; that she should keep in the open air the entire day through; and that she should sleep with her window wide open. Shortly after being diagnosed by the Newcastle physician, her friends consulted two others, who confirmed the diagnosis of the physician, and one recommended that she be sent to Florida and the other to Algiers. Not being able to go south, she

PORTRAIT OF SEVENTH PATIENT, PAGE 80, AFTER SIX MONTHS' TREATMENT; AND OF THE BABE REFERRED TO ON PAGE 121.

went to the north coast, stopping with a friend and relinquishing all work. She very much disliked milk, and only took from a pint to a quart in the day. She followed the doctor's recommendation about air, and returned to London in August somewhat improved, but without having gained much, if any, weight, and she had a recurrence of the hemorrhage while in London. By September her friends had become acquainted with the Nordrach treatment and again sent her to the country. Acting upon the idea that fresh air, rest, and superabundant nutrition are everything, and that situation and climate are not material, she was sent to a farmhouse in the Midlands. The farm is situated in the marsh district at the edge of the fens, where the tides not unfrequently come up to the house, and heavy fogs are frequent. At that time she weighed eight stone, and by the middle of the following February she weighed nine stone eight pounds, having gained twenty-two pounds. While in the Midlands she took from three pints to two quarts of milk per day, and used her best endeavor to eat a large amount of other kinds of food. She took considerable soup, some meat, a small amount of bread and butter, with a plentiful supply of vegetables and cheese. She took five hours' exercise daily in the open air. Upon her return she had no night sweats and no further expectorations.

Previous to her going to the Lowlands in September, she had taken some phosphorus and large

quantities of cod-liver oil. Having become acquainted with the Nordrach treatment, in which no medicines are administered, she discontinued the cod-liver oil and all medicines, and her rapid recovery dated from the time she went to the Lowlands, and began taking the large amount of milk with an abundance of other foods, and being especially careful to remain in the open air all the day, and to sleep at night with the window wide open. Curiously enough, this fight for one's life is not carried on without difficulty, even when the patient is among friends. She kept two windows of her bedroom wide open even when the fogs and dampness from the moor were filling her bedroom, and when asleep her relatives would frequently tiptoe into her bedroom and, if she were asleep, close her windows. Having become accustomed to the fresh air, the result of the closed windows was to awaken her shortly after they were closed, and she invariably reopened them. After a time her relatives found, first, that she was not getting worse, and, second, that their efforts to close the windows were futile, and she was permitted to have her way.

This young woman devoted a year to a recovery that would probably have been accomplished in half the time on such treatment as is recommended in this book; her case, however, illustrates the potency of the principles of the Nordrach treatment, and confirms my contention that, however desirable sanatoria may be, they are not indispensable; and that the cure of

consumption may be confidently expected at the home of the patient.

The first patient in the foregoing list writes me that her brother, seventy-eight years of age, was so much impressed by the benefits attending the milk treatment that he concluded to make an experiment upon himself. He had noted, during recent years, that he was gradually losing flesh. He began the milk diet last February, weighing 141 pounds. For the greater portion of the time he took three quarts a day, and in five months he had gained eighteen and one-half pounds. I have not learned whether he recognized any other benefit; but any physician will recognize that one at so advanced an age, who is year by year gradually losing flesh, whose weight is considerably below normal, and who by so simple a change in diet increases it by such an amount, must be much better nourished than before. The better nourishment guarantees greater vital force and an increased power for work or for withstanding attacks of disease.

The second patient had not long taken the treatment until she had made such improvements that her mother and sister adopted the milk diet. Both the sister and mother were anemic and somewhat emaciated. The sister was subject to frequent attacks of hemophilia, or severe attacks of bleeding from the nose, and the mother to attacks of faintness, with which she had been troubled for years. They each added from two to two and one-half quarts of milk to

their diet. They took nothing but milk, except for one meal a day, when their food consisted of bread twice baked, meat, and such fruits and vegetables as are herein recommended. In five months the sister had gained thirteen pounds and the mother eighteen pounds; the one has no further attacks of hemophilia, and the other none of faintness.

A young woman, teacher in a public school in New York, found herself in declining health. She had no cough and no serious symptoms, except that she had in a few months lost twenty pounds in flesh, and was already too thin when this emaciation began. She was anemic; she felt unable to continue her work, and had concluded to give up her position, although in great need of her salary. A friend who had visited Dr. Reinle's sanatorium advised this teacher to drink milk at and between her meals. She followed the advice, taking from two to three quarts per day. In three months she had regained her flesh, her pallor had disappeared, and she was in such vigor that she no longer felt her work oppressive.

When I arrived in London the first of June, a young lady called upon me who was engaged in typewriting. She complained that she had no appetite, felt weak, and not able to continue her work. She had a doughy complexion, a poor circulation, and complained of cold feet and hands. She was eating a light breakfast, and, having heard of the Dr. Dewey system, she was taking but two meals a day. Yet even with this

moderation she had very little appetite for her evening meal at the close of the day's work. She was advised to substitute a pint of milk and a crust of bread for her usual breakfast of tea and toast and eggs, to take a pint of milk at midday, and to use milk with her evening meal instead of tea. She took no medicine. In a few days she had a much better appetite for her dinner, and soon began to gain in strength, and at the end of two months her complexion was ruddy, and she felt her health and strength much improved.

This young woman was so impressed with the marked improvement from a treatment so eminently simple and easily followed, that she prevailed upon her sister—anemic, emaciated, and lacking vigor—to discontinue the use of tea and coffee, to open wide her bedroom window, to reduce bread and potato eating to a minimum, and to take three half-pints of milk per day.

VII.

Dr. M. L. Holbrook, in a valuable book entitled "The Hygienic Treatment of Consumption," * gives some instructive examples of the value of horseback riding and outdoor life. I am indebted to Dr. Holbrook for the following account of interesting cases:

Dr. Rush, in an essay on "The Cure of Pulmonary Consumption," published in the last part of the seventeenth century, says on this subject: "To the cases that have been mentioned I shall add only one more, which was communicated to me by the venerable Dr. Franklin, whose conversation at all times conveyed instruction, and not less in medicine than upon other subjects. In travelling, many years ago, through New England, the doctor overtook the post-rider, and after some inquiries into the history of his life, he informed him that he was bred a shoemaker; that his confinement and other circumstances had brought on a consumption, for which he was ordered by a physician to ride horseback. Finding this mode of exercise too expensive, he made interest, upon the death of an old post-rider, to succeed to his appointment, in which he perfectly recovered his health in two years. After

* Health Culture Co., Publishers, 503 Fifth Avenue, New York.

this he returned to his old trade, upon which his consumption returned. He again mounted his horse, and rode post in all seasons and all weathers between New York and the Connecticut River (about 140 miles), in which employment he continued upwards of thirty years in good health."

Mr. N. P. Willis, in a book entitled "Outdoor Papers at Idlewild," gives strong testimony to the value of horseback riding. Mr. Willis had been suffering from consumption, and had tried different resorts and climates at the recommendation of his physician without apparent benefit. Mr. Willis returned home, followed a regular course of habits, and began an active outdoor life. Mr. Willis says: "And to a minutely persevering change in these comparative trifles I owe, I believe, my restoration to health. There was not a day of the succeeding winter, however cold or wet, in which I did not ride eight or ten miles on horseback. With five or six men I was, for most of the remaining hours of the day, out of doors, laboring at the roads and clearing of my present home. The cottage of Idlewild was then unbuilt, and the neighboring farmhouse, where we boarded, was, of course, indifferently warmed; but by suffering no state of the thermometer to interrupt the morning cold bath and the previous friction with flesh-brushes, which makes the water as agreeable as in summer, I soon became comparatively independent of the temperature indoors, as my horse and axe made me in-

dependent of it when out of doors. With proper clothing to resist wet and cold, I found, to my surprise, that there was no such thing as disagreeable weather to be felt in the saddle; and, when a drive in a wagon or carriage would have intolerably irritated my cough, I could be all day in the woods with an axe, my lungs as quiet as a child's.

"I fear I cannot sufficiently convey to you my sense of the importance of a horse to an invalid. In my well-weighed opinion, ten miles a day in the saddle would cure more desperate cases, particularly of consumption, than all the changes of climate and all the medicines in the world. It is vigorous exercise without fatigue. The peculiar motion effectually prevents all irritation of cold air to the lungs on the wintriest day. The torpid liver and other internal organs are more shaken up and vivified by the trot of a mile than by a week of feeble walking. The horse (and you should own and love him) is company enough and not too much. Your spirits are irresistibly enlivened by the change of movement and the control of the animal. Your sense of strength and activity (in which lies half the self-confidence as to getting well, which the doctors think so important) is plus one horse, with the difference from walking. As to pulling upon the forces of the spine, and, consequently, those of the brain, it is recommended by the best English physicians as much the preferable exercise for men of intellectual pursuits. And last (I think not least) the

lungs of both body and soul are expanded by the daily consciousness of inhabiting a large space—by having an eagle's space rather than a snail's—by living a life that occupies ten miles square of the earth's surface, rather than that 'half mile' which you speak of as the extent of your daily walk. The cost is trifling. At the fall of the year, when horses are beginning, as they say at the livery stable, to 'eat their heads off,' you may buy the best you may want for forty dollars, and his feed costs thirty cents a day. As the horse and the doctor are seldom necessities of one and the same man, you may rather find it an economy—apothecary and all."

Mr. Willis also gives, in "Outdoor Papers," the following letter from a correspondent: "I am induced to tell my story. I have been on the invalid list for twenty-five years. In October, 1834, by the advice of my physician, I prepared to move to St. Augustine, Florida. All things were ready; my strength was not sufficient to leave for a few days. A friend had just been elected sheriff of the county; he offered me a situation where I could spend as much time as I chose on horseback. I accepted the offer. The first six months were spent in great agony, but I found my strength improving. It is now nineteen years since I commenced the horseback remedy for tubercular consumption. In that time I have travelled on horseback many thousands of miles. I have now my business so arranged that I am compelled to ride

sixteen miles each day. I allow no state of the weather to interfere with the rides, as I am always prepared with proper clothing to resist cold or wet. My health is now good; perhaps no man enjoys better health. My disease was and is tubercular consumption. I have no reason to think that the tubercles in my lungs will ever be dispersed, but I do know they can be kept in a quiescent state by healthy exercise in the open air. With this in view, I shall continue the use of the saddle in the open air whilst I have the strength to do it."

I am further indebted to Dr. Holbrook for the following letter regarding Dr. Hosmer and his daughter Harriet, the well-known sculptor. Dr. Hosmer had lost several children from consumption, and resolved to use a different method with regard to Harriet. "Dr. Hosmer took her into the fields, by the riverside, the seaside, and let her run wild among the hills; he horrified all the conservative, old, and middle-aged ladies in his neighborhood by inuring her to sun and storm, and teaching her to ride, drive, hunt, fish, row, skate, swim, and shoot. In all out-of-door exercises she became proficient, and by this wise treatment grew up strong and vigorous. She became remarkable for her power of endurance, her steadiness of nerve, and courage. She became one of the bravest of women, utterly fearless in danger."

An interesting and most instructive work is a small book entitled "A Hereditary Consumptive's Success-

ful Battle for Life," by J. M. Buckley, LL.D.* Dr. Buckley is a well-known divine, and editor of The Christian Advocate. In the preface of his book he writes: "The principles underlying it are that pure air is life and the want of it death; that deep breathing is essential to vigorous health; and that chronic disease—except when the result of accident—is caused by neglecting, and by trangressing, little by little for a long time, and can only be cured by attending, and by obeying, the laws of health for a long time."

Dr. Buckley came of a consumptive family. His father and uncle, who were both ministers, had both died of this disease. He had been under the care of physicians for affections of the lungs for some two years, and had had several hemorrhages. He received no encouragement from his physicians or from any source, until one day he took up a medical work and read the following words: "Medicine cures no chronic disease of the general system; it may mitigate, sometimes assist natural processes, give relief from pain, but Nature cures, and food, exercise, diet, light, with rest, and peace of mind, do the work." Walking up and down his study, meditating upon this problem, he took up another book which he had owned, but had not before read, entitled "Jarvis's Physiology," when his eye fell upon the following quotation:

"However small may be the person's strength, that must be the measure of the exertion. However low

* Published by Eaton & Mains, 150 Fifth Avenue, New York.

the power, that must be the starting point. Any other measurement, any other point of beginning, would be fatal to the hopes of gaining strength by the effort.

"A young man in Waltham, Mass., was very feeble, but not sick. He was advised by his physician to set out upon a journey on foot, but was cautioned not to walk at any time until exhausted. He began his journey in the morning, and with short exertions and frequent rest he walked three miles on the first day and was fatigued. The next morning, to his surprise, he felt more vigor and courage to go on, and started again. He walked on that day in the same manner, and accomplished four miles before night. He thus gained strength and energy day by day, adding little to little, and finally walked to Niagara Falls—more than five hundred miles. After viewing these to his satisfaction, he returned in a much shorter time than he went; but he did not return by a direct course. He visited the interesting places in the neighborhood of his homeward route, and at the end of his sixth week he reached home, having walked more than a thousand miles in forty-two days. On the last day he had walked forty miles, and was so little fatigued with the day's journey that in the evening he felt sufficient energy to visit his young friends in the neighborhood."

Concerning the various forms of outdoor exercise, Dr. Buckley says: "The best for the consumptive is

horseback riding. Begin with an animal that is a good walker and does not require special strength of the arms to manage it, and exchange it as soon as the experience and development are sufficient. Dr. Henry M. Storrs, now one of the most robust men in this country, when a victim of hemorrhages and all the symptoms of pulmonary disease, went to Kentucky, bought a horse, and rode it back to this part of the country and sold it. Dr. Cutler, rector of St. Ann's Protestant Episcopal Church for many years in Brooklyn, shook off half a dozen incipient attacks by riding on horseback from the South up and down the coast, from Texas to Maine. Horseback riding occasionally proves unfavorable by inducing some other maladies. Walking, however, is the most accessible. One of the greatest physicians justly says: 'I know of nothing in the whole round of physical exercise so good as habitual, regular, and vigorous walking. What horseback exercise is to a person actually suffering from incipient or advanced consumption, pedestrian exercise is to one who, having it not, is yet predisposed to it.' "

Dr. Buckley confirms his views on hygiene by publishing the following letter. Concerning its author, Dr. Buckley says: "Dr. Joseph Parrish was a physician of much distinction, and his father, for twice an average lifetime, was one of the most eminent physicians in this country." The following is the letter:

"BURLINGTON, N. J., *November* 29, 1890.

"My dear Dr. Buckley: Your editorial in this week's Advocate, entitled 'Consumption,' strikes me as very timely, and in connection with it I am inclined to give you a bit of personal and family history.

"You probably knew of the case of my father, the late Dr. Joseph Parrish, of Philadelphia. When a beginner in his profession he had incipient signs of pulmonary consumption; he lived sixty years, and in his last illness defined the region of his lungs which he desired should be examined after his death, and said that there would be found in that particular spot a distinct cicatrix, illustrative of a healed consumption lesion which had threatened him in early life. He took but little medicine, but practised for himself what he invariably advised to others in like conditions; namely, temperate, but substantial, generous living; fresh air, and plenty of it, and in the house, as well as out of it, a cheerful and hopeful spirit, looking forward always to recovery, with healthy and steady occupation added.

"As long ago as 1856 I was in feeble health. After two attacks of pleurisy in the few previous years, there were developed in my right lung what seemed to be a hereditary cough and other symptoms which are characteristic of consumption. I was obliged to abandon work, and was attended and prescribed for by two of the most eminent physicians of Philadelphia,

the late Professor G. B. Wood and Dr. Gerhard. They diagnosed the beginning of consumption, and sent me South. I went to a pine district in Alabama, and returned in the following May, not much improved. Then they sent me across the sea, with letters to the two most eminent men in their day for the treatment of pulmonary diseases, the late Dr. Stokes, of Dublin, and Dr. Walsh, of London. I saw them as soon as possible. One of them said: 'Your right lung is of but little, if any, use to you. If you return to America and follow your profession you can probably not survive more than a year.' The other said: 'Young man, you have a poor chance without great care. Enjoy yourself here and on the Continent as much as you can, and stay as long as you can. Keep all your functions in good working order as far as you can. Carry a little bottle of pure glycerine in your pocket, and every time you cough take out the cork and sip a little of it, just enough to lubricate your mouth and throat.'

"I do so. Crossed St. Bernard Pass, in Switzerland, in the month of December, and in eleven months returned improved in health and able to do a little guarded work. I am now in my seventy-second year of age and not yet dead. Work has been my specific, and the amount of it from then till now has had no mean limit.

"I thought you might be interested in these facts and experiences, which may serve to give sup-

port to what I take to be in a measure your own views.

"Faithfully yours,

"JOSEPH PARRISH."

Dr. Buckley was greatly benefited from the use of an inhaling tube, concerning which he says: "An inhaling tube should be procured, and its use at once begun. There are several sorts on the market; some made of glass that can be obtained for a few cents, which are as good as any other; some of silver, and some of rubber. I have no interest in any of them, direct or indirect, but the tube which I used, which has been entirely satisfactory, is known as the Howe Tube, from the late Dr. Howe, of whose recovery by means of it an account is elsewhere given. There is no mystery about the tube. Any one who can make a whistle can make the instrument. Let it be a hollow tube three or four inches long, with a hole at each end about an eighth of an inch in diameter; in the centre the diameter of the hollow should be about twice that width; bore a hole in the side about as large in circumference as the lead of a common pencil, one-third of the way from the end. A quarter of an inch beyond that hole, toward the end of the tube which is to be placed in the mouth, run a little bar across from side to side; between the crossbar and the end put anything of the shape of a tack, the head

of which will be sufficiently large to stop up the hole, but not large enough to more than half fill the tube in the centre, where the tube is larger than at the end; or put in a ball the shape of a pea, which will have the same effect. Now, when the person puts the proper end of the tube in his mouth and inhales, he draws the valve back as far as the crossbar; this allows the air to flow in easily; in exhaling he blows against the ball, or whatever he has for the purpose, which closes up the end of the tube, and the only place for the air to escape is the little hole in the side.

"It is very important that the tube be used correctly. The person who uses it should sit, stand, or lie in a position to give the lungs and abdominal muscles ample opportunity to work, and the atmosphere should be pure; the time should be about an hour before each meal.

"In drawing the air through the tube, do not attempt to fill the lungs to their utmost capacity, but moderately full; so in blowing out the air through the tube do not exhaust all the air. Be moderate. When the tube is first used, let it be two minutes each time. If tired, rest and then go on, so as to make two minutes' use of the tube. This is the rule for the very sick, weak person. The next day it may be increased to three minutes, and so on, increasing a minute each time, until thirty minutes are reached, making in all an hour and a half a day. Then decrease. When fifteen minutes at each exercise are taken, if the

symptoms are all favorable, it may be increased two minutes each time, instead of one; but when thirty minutes are reached, it may be decreased until it is only five minutes three times. After that rise again as before, and continue the use of the instrument thirty minutes three times a day until the last symptom of the disease is gone, which may require some years.

"Should there be much inflammation about the chest, accompanied with pain or any other disagreeable symptoms, discontinue the tube for a day or two while the physician reduces these symptoms. But as soon as they disappear let it be begun again. Should a hemorrhage occur, let the tube be laid aside for a day or two and medicinal means employed."

Dr. Buckley's account of the observations which led up to the invention of the breathing tube, and of Dr. Howe's connection with it, is interesting and instructive. I quote again from the "Successful Battle for Life": "When Dr. John M. Howe had been reduced to the lowest state, and sent by Dr. Valentine Mott on a sea voyage to Europe in a sailing vessel, he journeyed to the north of England and to Scotland, consulting prominent physicians, growing worse, then to the south, then to the climate of France, where he sank rapidly. Finally, as he was about starting for home, he happened to meet Dr. Ramadge, the inventor of the inhaling tube, at that time superintendent of a celebrated lung infirmary in London. After hav-

ing received the tube and directions, when about to sail for New York in October he consulted Dr. Ramadge concerning climate, and said: 'Ours is a dreadful climate; it snows and hails and blows. I shall have to shut myself in the house all winter.' 'By no means,' he replied; 'go out every day; choose the best time in the day, and go out every day.'

"As to taking cold, Dr. Ramadge was led to invent the tube by observing the effects upon certain patients who were exposed, took cold, had severe attacks of bronchial catarrh, and to his astonishment recovered from the pulmonary disease. This is the history: One winter, becoming discouraged with unsuccessful efforts in treating his patients, he advised them to leave the warm apartments in which they were during the inclement months of the year, being assured that if they continued with him they would sink on his hands, and they went their way, some of them to poor and even exposed habitations. Subsequently, much to his surprise, he found some of these persons in the enjoyment of good health, and by investigation he ascertained that their exposure had been their means of restoration. The bronchial catarrh, while it lasted, had reduced the size of the windpipe; this compelled deep breathing, and the deep breathing brought about the recovery. Before Dr. Ramadge invented the tube he used a steel spring to be worn on the neck so as to make pressure upon the trachea immediately above the sternum, and be worn

at intervals. The details are given in his large work. Finally he devised the tube."

There are two principal advantages in the tube exercise: more parts of the lungs come in contact with the fresh air, and, secondly, the exercise serves to develop the respiratory muscles. Both these advantages are partially obtained at Nordrach by the exercise of slow walking up a gentle ascent. Similar benefits are obtained by the exercise of walking up and down steps, elsewhere referred to, especially if the stairway be in the open. If Dr. Buckley and the hundreds of sufferers who have been benefited by his recommendation of the outdoor life and the breathing tube could have also had the benefit of the milk diet, a surer and more rapid recovery would have been experienced.

I have made the foregoing quotations from "The Battle for Life" and "The Hygienic Treatment" as they contain interesting and impressive testimony in favor of an outdoor life, clearly showing the supreme value of fresh air in the treatment for consumption. It is curious to note the varying opinions of the different writers. Mr. Willis had an impression that there was something psychic about the horse. The companionship that "was just enough and not too much," and the larger area brought under the observation of the rider, produced a mental effect upon the invalid which, in Mr. Willis's opinion, had much to do with his restoration. On the other hand, Dr. Buckley has

been especially impressed with the value of the breathing tube. I wish to emphasize that, first and foremost and beyond everything else, it is the fresh air, which we all ought to breathe day and night, and in sunshine and storm, and which is an indispensable requisite for the consumptive. The horseback riding, in addition to the outdoor air, gives valuable exercise to the muscles of the body, and conduces to that serenity of mind which is always an aid to the invalid. Exercising with the breathing tube, in accordance with the directions given, not only brings large quantities of fresh air to the lungs, but also develops the chest measurement and invigorates the respiratory muscles. These are valuable aids, and I reiterate that one cannot afford to forego any advantage in efforts for regaining one's health, and I wish to caution all patients of this class not to lay so much stress upon horseback riding or upon exercising with the breathing tube, that they may think that they can safely close their windows at night or forego an earnest watchfulness over their diet.

On the other hand, no one in consumption can afford to be satisfied with any portion of a valuable regimen and ignore the remainder. A consumptive who will rest as much in bed as his condition may demand, who will keep his window open night and day, who will be provided with such clothing that the air can penetrate thoroughly to the surface of his body, who will take a superabundance of nutrition, and insist

that a considerable portion of it be composed of unsterilized milk—such a patient, in such condition, except in the very last stages, can safely reckon on recovery. At the same time, if to the foregoing conditions needed exercise in the open air is added when the patient has reached that stage—and horseback riding, all things considered, is the best form of such exercise—this will be an additional safeguard. Added to this, I earnestly recommend my patients to use the breathing tube, and use it thoroughly.

CONTAGION OF CONSUMPTION.

Formerly consumption was not thought to be contagious, and the disease has been greatly spread owing to this lack of knowledge. It is not infectious, and is not communicated by the breath nor by contact, but only through the sputum. If the sputum be expectorated upon clothing, floor, or roadway, and be permitted to remain until the moisture is evaporated, the dry substance may be taken up by the air and phthisis communicated through the breath.

It is not difficult to insure against the possibility of thus spreading the disease in this manner. The best provision is for the patient to expectorate in a cup, and the cup emptied into a five per cent. solution of carbolic acid. Glass sputum cups with a movable bottom, convenient for cleaning, may be obtained, and should always be within reach of the patient. Another effectual prevention is to expectorate into paper napkins, and the napkins burned at once.

From a condition of thoughtlessness regarding the contagion of consumption, great numbers of people have now gone to the opposite extreme, and are fearful to trust themselves in the presence of a consump-

tive or in a home or sanatorium where consumptives reside. This is entirely uncalled for where the simple precautions recommended above are taken; and if a proper knowledge of this subject be disseminated, much needless solicitude will be allayed.

CHRONIC DISEASES.

The reader has seen the abundant evidence demonstrating the curability of consumption. It has been seen also that this transformation has been brought about by superabundant nutrition, fresh air, and rest. Even exercise, surely a valuable adjunct, seems not to be indispensable. The thought will naturally occur to many minds, "How efficacious will the same remedial agents become when applied in the treatment of other serious illness?" Similar results, in other serious ailments, will follow the adoption of the hygienic treatment.

All wasting diseases yield more readily to the milk diet than to any other regimen, and most forms of emaciation, unattended with cancerous or malignant growths, will yield as readily to the fresh air and milk diet as does consumption.

As to cancer itself, I have not had a large experience; I have had, however, some cases of open cancers where the odor was well-nigh unbearable to the attendants and the pain excruciating to the patient. By the adoption of the hygienic treatment the odor was overcome, the pain much subdued, the patient's

life prolonged, and death, when it came, peaceful and comparatively painless. Cases where the tumor is of recent origin and the open sore not yet formed have readily yielded to the hygienic treatment and have been permanently cured.

The Society for the Prevention of the Spread of Consumption, which has been recently formed in London, does not set so much store on the cure as on the prevention of consumption. With a similar thought, there is no room for doubt that an earnest and resolute adoption of the same hygienic regimen that proved so efficacious in the cure of consumption will prevent the formation of cancer.

For over thirty years Dr. Salisbury has had marked success in the treatment of both consumption and cancer on an exclusive diet of meat and hot water. The general efficacy of the milk-cure has for many years been well known to the profession. So far as I know, Dr. Reinle is the only physician who has as resolutely confined his patients to an exclusive diet of milk as Dr. Salisbury has done to an exclusive diet of meat and water, and with even a larger percentage of cures than has been achieved by Dr. Salisbury. What is the basis of these wonderful cures? I have elsewhere * shown good reasons for believing that bread, cereals, pulses, and potatoes are an injurious diet, and are inimical to the health and well-being of the human race. The patients fed on an exclusive diet of meat

* In "How Nature Cures."

and hot water are absolutely free from these injurious foods. If the diet given by Dr. Reinle be scrutinized, the same peculiarity appears—no bread, cereals, pulses, or potatoes. There are several reasons why the exclusive diet of milk has proved more efficacious than the Salisbury diet of meat and hot water. To begin with, Dr. Salisbury, while administering hot water with his meat diet, usually permits the use also of tea and coffee to a considerable extent. Dr. Reinle is so intent upon having his patients take a large amount of milk that there is no room left for any other liquid, and, in consequence, Dr. Reinle's patients are not permitted tea, coffee, or spirits.

There has recently been published in London a translation from the German of Dr. Lahmann's "Natural Hygiene," an epoch-making book.* Dr. Lahmann is at one with physiologists in asserting that the origin of all diseases arises from the state of the blood. That which is new in Dr. Lahmann's contribution is his explanation of how this abnormal condition of the blood is brought about. Dr. Craig, in his work on "Uric Acid," has called attention to the ravages caused by the presence of uric acid in the system. Uric acid arises primarily from an acidity of the blood. What makes the blood acid? Dr. Lahmann contends that this acidity is caused by a diet containing a superabundance of potash and a scarcity of soda and lime salts, and especially of soda.

* Published by Swan, Sonnenschein & Co., Paternoster Square.

The following table is taken from Wolff's "Analysis of Ashes":

	Total Ashes.	Potash, K_2O.	Soda, Na_2O.	Lime, CaO.	Magnesia, MgO.	Oxide of Iron, FeO_3.	Phosphoric Acid, P_2O_5.	Sulphuric Acid, SO_3.	Silicic Acid, SiO_2.	Chlorine, Cl.
Cow's milk	48.8	12.04	4.73	10.66	1.49	.26	13.88	.15	.02	6.97
Meat	40.6	16.76	1.47	1.15	1.30	.28	17.27	.63	.45	1.56
White flour	4.7	1.69	.04	.13	.39	—	2.45	—	—	—
Rye flour	19.7	7.57	.34	.20	1.57	.50	9.51	—	—	—
Potato	37.7	22.76	.99	.97	1.77	.45	6.53	2.45	.80	1.17
Pea	27.3	11.41	.26	1.36	2.17	.16	9.95	.95	.24	.42
Carrot	54.7	20.20	11.58	6.20	2.40	.55	7.00	3.53	1.30	2.51
Spinach	164.8	27.29	58.16	19.58	10.51	5.52	16.89	11.32	7.45	10.22
Cabbage-lettuce	180.3	67.85	13.60	26.47	11.76	9.39	16.57	6.78	14.68	13.79
Apple	14.4	5.14	3.76	.59	1.26	.20	1.96	.88	.62	—
Strawberry	34.0	7.16	9.68	4.83	—	2.00	4.70	1.07	4.10	.48

It will be seen by the above table that meat has a third more potash than cow's milk, while it has only about a quarter as much soda and a tenth as much lime. Potatoes have nearly double as much potash, and, approximately, only a fifth as much soda. The disproportion, judged by the relative ingredients of potash and soda, is quite as great in wheat, rye, and peas. On the other hand, carrots, lettuce, and apples are very rich in soda, and have not an over-proportion of potash, while spinach and strawberries are especially rich in soda and lime.

Dr. Lahmann chooses cow's milk as a basis of comparison with other foods. He cautions his patients to avoid, as much as possible, meat, bread, cereals, pulses,

and potatoes, and recommends milk-curds, rice, and green vegetables, with butter and fruits.

Some seventy years ago, Dr. Rowbotham, a skilful English physician practising in Stockport, published an essay in which he advises the avoidance of the same foods that Dr. Lahmann designates as unwholesome, and, like Dr. Lahmann, he advises his patients to rely largely on fruits. Some fifty years afterwards, Dr. DeLacy Evans popularized Dr. Rowbotham's theories in a book entitled "How to Prolong Life." It was Dr. Rowbotham's contention, echoed by DeLacy Evans, that butcher's meat, with bread, cereals, pulses, and potatoes, contain a disproportionate amount of earthy materials, and that the result of using a large proportion of this diet is to overload the system with earthy salts and to cause a deposit of earthy matters in the joints and tissues. This deposit of earthy matter not only causes stiffness of the joints, but, according to Dr. Rowbotham and DeLacy Evans, a deterioration of the arteries—from a thickening of the inner coat—a lessening of their capacity, a consequent overpressure upon the heart, and at the same time an inadequate circulation and a loss of nutrition, resulting in premature decay.

In "How Nature Cures," published in 1892, I stated that one of the primary causes of disease is a diet of bread, cereals, pulses, and potatoes. I based this conclusion on the great difficulty of digesting these foods and the consequent strain upon the vital force, result-

ing in a prostration of the nervous system and consequent premature decay.

Readers of "How to Prolong Life" and "How Nature Cures" will be interested to see that Dr. Lahmann interdicts the use of the same bread, cereals, pulses, and potatoes, although for an entirely different reason. I have seen no reason as yet to doubt the correctness of my condemnation of cereal and starchy foods. I believe it will be readily admitted by physicians and laymen alike that there has been a growing appreciation during the last ten years of the difficulty of starch digestion; and that bread is the staff of death rather than of life is not nearly so startling a proposition as when first announced by Rowbotham and DeLacy Evans, and repeated in "How Nature Cures."

It is not nearly so important to the promotion of health that we have the right theory as that we have the right diet. Dr. Rowbotham fed women during gestation upon a diet composed largely of fruits, and from which bread, cereals, pulses, and potatoes were excluded. These women had previously suffered very greatly in childbirth, and had previously lived largely on a bread and cereal diet. Dr. Rowbotham's theory was that the cereal foods yielded too much earthy matter and thereby caused the difficulty. He suggested a diet of fruits, because, first, he esteemed these foods largely free from earthy matters, and, secondly, because he thought that they favored the elimination of earthy matters from the system. No

sooner did he conceive of this theory than he put it to the test of experience. The women who had before suffered greatly in childbirth, when fed on a fruit diet, passed through parturition without pain. Manifestly the change from a cereal to a fruit diet had proven of very great benefit, and Dr. Rowbotham was justified in concluding that these facts demonstrated the correctness of his theory.

Dr. Lahmann puts forth the theory that bread and all cereal foods have too much potash and too little lime salts, and, as a result, the blood will necessarily be dysemic, and in gestation the health of the woman and child will necessarily suffer. Dr. Lahmann makes the same experiment before made by Dr. Rowbotham. He takes women to his sanatorium who had before lived on a cereal diet, and who had before been prostrated by the pains of parturition. Dr. Lahmann excludes the larger portion of the bread, cereals, and potatoes constituting the usual diet in Europe and America, and substitutes some fruits with milk-curds and a large amount of watery vegetables containing a relatively small amount of potash and a large amount of lime salts. The result of the experiment certainly justifies Dr. Lahmann in thinking that the correctness of his theory has been demonstrated. If Dr. Rowbotham had taken into consideration the fact that the deposition of earthy matters in the tissues is necessarily of slow growth and that one or two scores of years are required before the results of such deposi-

tions are made manifest, he would have seen that the few months that his patients were fed upon the fruit instead of upon the cereal diet were entirely insufficient to explain the reasons for the undoubted good results of his changed diet.

If Dr. Lahmann's theory, on the other hand, be the correct one, we can see why the improvement in his patient's health can be seen in a few months, or a few weeks, and sometimes in a few days. The blood is the life. It is made from our food. If the food be deficient in necessary elements, this deficiency must soon appear in the blood. According to Dr. Lahmann, uric acid accumulates in the tissues because of a want of soda and lime in the blood and lymph. The process of oxidation is rendered more difficult by the decreased alkalinity of the blood. There is not sufficient soda combined with the uric acid to form urates, and hence the uric acid remains in the system. Its presence creates an inflammation, and the patient cries out for water, which overtaxes the kidneys and induces a poor circulation. The watery blood results in a fluid or bloated condition of the tissues. The diluted blood is deficient in red corpuscles ; hence there is less absorption of the oxygen necessary for efficient digestion. The following paragraph is taken from page 173 of " Natural Hygiene ":

" Now, in pregnant women dysemia (hydremia) need not necessarily develop into corpulency, as the

necessary predisposition may be absent. For to allow the development of corpulency there must be a certain want of tone in the vessel walls, so that the blood pressure is not sufficiently regulated by them and the secretion of superfluous water by means of the kidneys and skin is to some extent hindered. If this lax condition of the vessel walls is not present, they remain lean; yet, strange to say, a fatty development of the fetus nearly always occurs even in these cases. For we can see that, firstly, it is impossible for the blood of the fetus to be normal when, as we know, it is derived from the dysemic blood of the mother; secondly, owing to the accumulation of carbonic acid in the blood of the mother, there is a still greater accumulation of carbonic acid in the blood of the fetus; thirdly, the blood of the fetus must suffer from a considerable lack of oxygen, as the mother (in civilized countries) usually lives in a vitiated atmosphere; finally, the hydremic condition of the mother's blood is passed on to the blood of the fetus by the process of osmosis, and thus all the conditions mentioned above, which favor hydremia, the formation of a bloated organism, and corpulency or fat dysemia, are present.

"Hence, many weakly women give birth to children weighing 4,500 grammes (10 lb.) and more; the walls of the abdomen and the uterus are overextended, and the strength of the muscles weakened, and this, combined with the disproportion which frequently exists

between the over-large fetus and the genital passage of the mother, leads to the difficulty in labor."

I think it will be considered by any physician or any one at all conversant with physiology that Dr. Lahmann's theory forms a reasonable solution and explanation of the benefits derived by the mother in excluding the cereal and adopting a fruit or watery-vegetable diet.

So far as I am able to see, the explanation given in "How Nature Cures" of the injuriousness of a bread and cereal diet remains unshaken. To render starchy foods more digestible for infants and invalids, the starch is converted into dextrine, a form of sugar—in other words, is predigested. Our advertising mediums are filled with glowing accounts of the benefits derived by aiding digestion of starchy foods by malt extracts. Digestion is a process requiring an expenditure of vital force. When we have a superabundant store of vital force we are in abounding health; when this force is largely exhausted we become invalids. If, then, a diet of bread, cereals, and pulses is replaced by one of fruits, milk-curds, watery vegetables, and a comparatively starchless diet, we can see that the strain of starch digestion is largely avoided, and we have an added reason why women during gestation are, as seen by Dr. Rowbotham and by Dr. Lahmann, benefited by a change from a cereal diet to one that is comparatively starchless.

If our buildings are to stand, it is necessary that we have firm foundations. If we are to develop a race free from illness and abounding in health, we must exercise care at the very beginning. This, Dr. Rowbotham and Dr. Lahmann have shown us how to do.

When the baby is born, how shall he be fed? Turning to Quain's "Dictionary of Medicine"—probably the ablest and most authoritative publication in the medical profession—we find an article by Reginald Southey, M.D., Physician to and Lecturer on Forensic Medicine and Hygiene at St. Bartholomew's Hospital. I quote from page 1148:

"The perils from without to infant life are mainly derived from cold, those from within result chiefly from improper or defective feeding and hyper-nervous impressionability. It is not easy to overfeed young infants. If proper food, that is their own mother's milk, be given them, they get rid of excess quickly enough by vomiting it, and the part not appropriated in growth or maintenance is stored up for future use as fat. The morbid tendencies of this age are toward the intestinal and mucous tracts. Catarrhal diarrhea and bronchitis, thrush and stomatitis, are epiphenomena of all febriculas and states of malnutrition. Delirium and convulsions attend all general disorders. Over-rapid dentition is associated often with tuberculization, retarded dentition with rickets. The more rapid the eruption of the teeth, the greater the

attendant disturbance; the more closely the evolution of the teeth follows its normal periods, the less conscious are infant and mother of their appearance."

To begin with, it would seem to me that it is very easy to overfeed young infants, and the almost universal habit of vomiting by infants is sufficient proof of it. Whenever an organism is furnished with enough food to enable it to make rapid growth, and to have its limbs and body well-rounded with fat, of what possible use is an added amount of food? It is true if the babe is vigorous and its nervous system sufficiently powerful, it will, as this author remarks, vomit the portions not needed; but is it not plain to every one that the nerve force required to vomit unneeded food is an unnecessary waste? In the event that the child has not inherited a robust organization and there is a weakness of the nervous system, is it not probable that there is often failure to vomit the superfluous portions of the milk? And this being granted, is it not plain that this milk must be gotten rid of by partial digestion and excretion, and that this again is an unnecessary strain upon the digestive system and upon the vital force?

As for the part not appropriated in growth or maintenance, which, Dr. Southey says, is stored up for future use as fat, it is the universal teaching of physiology that it is well for the human body to contain a given proportion of fat. This amount is said to be about

seven and one-half pounds for a person weighing 150 pounds. But what is the teaching of physiology concerning corpulency or obesity—that condition of the body where a greater amount of fat is stored up than is normal? This question is answered in Quain's "Dictionary" by W. H. Allchin, M.B., F.R.S.E., Physician to and Lecturer on Physiology and Pathology at the Westminster Hospital, and Physician to the Victoria Hospital for Children. He says, page 1015:

"Obesity is a term applied to a general state of disordered nutrition of the body. . . . How frequently are seen children, improperly fed on excess of starchy matter, very fat, whilst their general nutrition is much impaired! A fat child is far from necessarily being a healthy one. . . . The condition of obesity, like other general perversions of nutrition, such as tuberculosis and rickets, most distinctly presents other characteristics than the mere signs and symptoms above enumerated. There are certain tendencies and liabilities which the state engenders; and intercurrent maladies come to possess special features. Periodically, the fat man ails without perhaps any obvious cause, and such ailments must be regarded as the expression of malnutrition of the tissues, produced by the excess of fat. Among the more prominent of these affections is a proneness to catarrh of the respiratory and alimentary mucous membranes, and periodical colds and diarrheas are frequent. This is

in greater part due to the fact that the power of self-regulation of temperature which the body possesses is diminished by the thick layer of subcutaneous fat, which is a bad conductor of heat and interferes with compensatory radiation. At the same time the plethoric condition, the hyperemia, and the enfeebled circulation due to the weak heart, all tend to the same end—a liability to congestion of the ill-supported tissues, with the results of such congestion in excessive secretion and other derangements of function.

"The obese subject is quite as liable to the acute diseases as the thin man, and these maladies run in him a singularly unfavorable course. The diminished power of heat radiation increases the pyrexia, and the weak heart favors the establishment of the adynamic state. Such means for lowering the temperature as cold applications have but little effect through the thick fat. . . . The progress of obesity is essentially chronic, and rarely, if ever, tends to other than increase of this state. Extreme fatness in the very young, as said, usually subsides; but the obesity of advanced life never does, unless an exhaustive disease should co-exist, such as cancer or diabetes, and the latter by no means produces then the emaciation that it causes in young people. Obesity should, on the whole, be regarded as a grave matter, since very fat people rarely reach an advanced age; whilst a decrease of fat at middle age in a person hitherto stout should be regarded with suspicion."

It would seem plain that the accumulation of more fat than is natural is a grave matter, and that a child who thus becomes fat is in more or less danger. Note the sentence which follows this assertion regarding stored-up fat:

"The morbid tendencies of this age are toward the intestinal and mucous tracts. Catarrhal diarrhea and bronchitis, thrush and stomatitis, are epiphenomena of all febriculas and states of malnutrition."

Does it not occur to the reader that very likely these morbid tendencies to delirium and convulsions, which are so common in infants, are directly the result of overfeeding and improper feeding? There is further testimony on this point in the same work in an article on "Rickets," by Eustace Smith, M.D., Physician to H. M. the King of the Belgians, Physician to the London Hospital for Diseases of the Chest, and of the East London Hospital for Children. The following quotation is from page 1374:

"Rickety children at the breast should be at once weaned, and if under twelve months old should be fed principally upon milk guarded with liquor calcis saccharatus, in the proportion of fifteen drops to the bottleful. They may take, besides, broths, bread and butter, and occasionally the yolk of an egg slightly boiled or beaten up with milk. Instead of bread and butter, the milk may be thickened for some meals with

Chapman's wheat flour baked in an oven; but farinaceous foods should be given with great caution to these children on account of their tendency to acid digestion, which renders a starchy digestion particularly likely to disagree. Under twelve months of age the child can seldom bear more than one teaspoonful of a farinaceous powder twice in the day. After the first year strong beef gravy and flower of broccoli stewed may be added to the diet. At sixteen or eighteen months old a little mutton may be given, carefully pounded in a warm mortar. A mealy potato well boiled and mashed may be allowed, but the effect of all farinaceous food is to be carefully watched. The presence of flatulent pains is a sure sign that the proper quantity has been exceeded."

The following of a precedent is the chief rule of life. We feed our children, physicians and laymen alike, in such excessive quantities that the infants are obliged to vomit the excess, because our fathers and mothers did so before us. We eat bread, cereals, pulses, and potatoes for the same reason. But here we have the direct testimony of Dr. Smith that " farinaceous foods should be given with great caution to these children on account of their tendency to acid digestion, which renders a starchy diet particularly likely to disagree." Then one naturally asks: " Why should we give starchy foods at all? " It has not occurred to our physicians in authority to inquire why. They simply

administer farinaceous foods to children because they have always seen it done. After sixteen or eighteen months Dr. Smith allows a "mealy potato," notwithstanding all farinaceous food is to be "carefully watched."

Unfortunately, I am not able to refer to many examples of infants whose diet has been carefully regulated; but I can refer to a boy-baby who is a member of a London household. When he was one month old he was placed in a hammock in the garden, and has been kept nearly all of every day in the garden ever since—autumn, winter, spring, and summer. This account is written at the end of July, and the baby is eleven months old. England is proverbial for having a damp and rainy climate. When there was too much rain to put the baby in the hammock, he was placed in his baby carriage and protected from the rain by a mackintosh; he has often amused himself during the winter by playing with the raindrops. At night he has slept, at all seasons, in his cot in a room with a wide-open window. During most of the time for the past three months his legs, arms, and face have been bared to the weather, and he has the bronzed appearance of a peasant working bare-headed in the summer sun.

This baby weighed ten pounds at birth. For the first two months he had nothing but the breast four and five hours apart and four or five times in the twenty-four hours, nursing about twenty minutes

each time. There was no way of measuring the amount of food consumed. At the urgent advice of a friend, when the baby was two months old he was fed once a day with a half-pint of fluid composed of half water and half cow's milk, with a level teaspoonful of infant's food added and heated to the boiling point. The food was one of the many preparations for infants which is widely advertised. There was no need for any change, as the baby was growing finely, had plenty of fat, did not vomit his food, and had no trouble of any kind; but the friend thought that the mother's milk was not sufficient. The baby was plump when he was born, and had remained so up to the beginning of the artificial feeding. Soon after commencing the one feed a day of the milk and water and infant's food he was noticed to vomit, and in three weeks this was discontinued, as the baby was becoming less plump. For the next four or five months he had nothing but the breast, except once a day a half-pint bottle of sterilized milk and water, equal parts, with a teaspoonful of sugar. At the end of seven months he refused the breast, and for the following month was fed four or five times in the twenty-four hours with a half-pint of fluid, consisting at first of half sterilized milk and half water, with a dessertspoonful of sugar. When nine months old, although of an excellent complexion, he had the appearance of being perhaps a little too lean. His bowels were somewhat constipated, and he depended upon opening medicine.

I advised that he be given ordinary milk, not sterilized, and heated only to the temperature of new milk, and that from four to six smallish prunes be added per day. Urination seemed rather excessive, and he was given the same amount of milk as heretofore with a smaller proportion of water. He has been taking during these two months from a pint and a quarter to a pint and a half of milk with about half a pint of water in the twenty-four hours, with two and one-third or three ounces of brown cane-sugar. He is in excellent health in every way; as he has gained two pounds in two months and is getting perhaps a little too fat, the sugar has been reduced one-half. He has gained nearly eleven pounds in his eleven months, now weighing twenty and three-quarter pounds. He usually spends fourteen hours a day in the garden, either in his hammock or sitting on the floor of his tent; is taken out at six or seven in the morning, and is put to bed at eight, nine, or ten in the evening. He is fed four times during the day, and sometimes has an extra bottle early in the morning. His height is twenty-nine inches. His amiability and freedom from crying is the wonder of the household. During waking hours he is incessantly active, and shouts and sings for hours at a time. His wrists and ankles are small and the bones firm. He has incisor and molar teeth, most of which have appeared without any warning. For some weeks the weather has been excessively hot for London, and the hot weather and the dentition

have not interfered with his uniform good health and good nature. Dr. Reginald Southey, in the article above quoted from page 1148 of Quain's "Dictionary," recommends during the first month, for an average-sized infant, three ounces of breast milk at each nursing and nine times in the twenty-four hours, or twenty-seven ounces of milk per day. Our hygienic baby during the tenth month has had from twenty to twenty-four ounces daily. He has had, in addition, a few prunes and two or three ounces of sugar. Dr. Southey recommends for the second month thirty-one or thirty-two ounces for twenty-four hours; at three months he gives thirty-five ounces per day, and at four months he gives thirty-seven or thirty-eight ounces, which amount is continued to the end of the ninth month.

The laws of physiology are no respecters of persons, and are equally insistent in infancy as in childhood and middle life. Dr. Allchin, in the article quoted above, tells us that excess of food is the first determining cause, and that children fed on an excess of starchy matter are fat, with the general nutrition much impaired. A fat child is far from being a healthy one. Since Dr. Allchin and Dr. Southey are in direct conflict, one of them must be wrong; and since obesity induced by overfeeding or other deteriorating causes is now well recognized as a disease in adult life and even in childhood, are we not safe in concluding that Dr. Southey is wrong in following the universal cus-

tom in recommending the feeding of excessive quantities in infancy? And that he is also wrong in his assertion that the resultant fat is stored up for future use? We learn by Dr. Allchin that the fat man's ailments are the legitimate expression of malnutrition, and that there is a resultant proneness to catarrh of the respiratory and alimentary mucous membranes, and that periodical colds and diarrheas are frequent. Since it is the universal custom to overfeed infants, until their fat "is stored up for future use," we are safe in concluding that the "catarrhal diarrhea and bronchitis, thrush and stomatitis," mentioned by Dr. Southey as incident to infancy, are the direct result of improper food and of excessive feeding. I have dwelt at some length on this topic because the importance of the subject demands a thorough consideration. As remarked at the outset, if we are to overcome chronic diseases, we must remove the cause, and the proper treatment of infancy is to begin at the beginning. The demands of habit and custom are imperious and are not readily disobeyed. Naturally shaped feet for women are supposed to be hideous in China; and in England and America a waist malformed by corsets figures as our ideal of art and beauty in our fashion plates. The widespread preference for a fat baby is the result of a similar widespread custom and mistaken view. The modern woman of fashion with her waist distorted by tight lacing is not aware that her many difficulties are influenced and often caused by this

tight lacing. Similarly, our present-day mothers who are very proud of their fat babies are not aware that this very fatness is a preparation for fever, summer complaint, croup, diphtheria, bronchitis, diarrhea, and other serious, and often fatal, disorders and ailments of infants, which carry off half of them on or before the age of five years. Most of us have learned to feel like apologizing for a pale, emaciated, and sickly baby. Some day the mothers will feel equally apologetic for the fat baby with its accompanying pallor and anemia.

There is no space in this volume for a lengthy discussion of the treatment and diet of infants. While almost every mother is fed upon an abnormal and unwholesome diet she will either not have any milk for her babe or will be liable to have milk of a very poor quality. In such a condition the sooner the baby is weaned the better. On the other hand, the milk from a healthy mother will be found to abound in all the elements needed for the babe, and ought to be its exclusive diet for a full year. In the absence of such wholesome mother's milk good cow's milk is practically the best substitute, and with the addition of a little water, sugar, and some fruit, is all the food the infant requires. This will be found to be totally adequate food during the years of infancy and childhood, with the addition of fresh fruits when obtainable, and stewed fruits when fresh ones are not procurable. As soon as teeth are developed I would

recommend the addition of some nuts to the dietary, and when these cannot be procured a small amount of bread well baked—preferably twice baked.

Dr. Lahmann has had unusual success in rearing his infants. There is shown in his book a photograph of himself holding a child four months old, standing upright, and its two feet held in the doctor's one hand. The baby is perfectly erect and standing about at arm's length from his father's head. Dr. Lahmann begins feeding his babies by adding to the milk once a day some cooked, watery vegetables after the first three months. I quote the following:

"Finally I must mention that to remove chance indigestion, or to prevent such disturbances as occur during the teething period, there is nothing better than a simple Priessnitz stomach compress."

The hygienic baby, whose history has just been given, as before explained, has no eructations and no vomiting, and up to the present time no disturbances during the teething period. In speaking of his baby, a year and a half old, Dr. Lahmann says: "On such days when he has not eaten enough at noon, on account of tooth troubles and the like, he receives a plate of mixed vegetables as at noon." I would like to see Dr. Lahmann administer a diet as hereinbefore recommended, composed almost wholly of milk, with the addition of a little water, sugar, and fruit. I

would expect children so fed would then have no eructations, no vomiting, and no teething trouble.

How shall we determine how much to feed the baby? See to it that the child is fed enough to keep it well covered with flesh and at the same time to give it no more fat than an ordinary healthy child has in vigorous exercise between the ages of five and fifteen years. When there is any suggestion of emaciation, add a little to the amount of food. When there is the appearance of a little too much flesh, decrease the amount of food.

We have ascertained that an exclusive diet of milk is abundantly adequate to restore consumptives and those suffering with serious chronic diseases to a state of vigorous health. Since the same milk is confessedly the most important element in an infant's diet, why should any one fear its adequacy in childhood and youth? As the race progresses and learns to consume a larger and larger proportion of fruit in its dietary, milk will become less necessary after the period of infancy. At the present time wholesome cow's milk, reinforced by fruits as the child gets older, will be found to be a wholly satisfying and adequate diet.

A neighboring family has a babe ten or twelve months old. There is no garden attached to the house, and twice daily the maid puts the baby in its carriage and gives it an airing. It will be well to remember that London has been suffering with un-

usually hot weather for this climate for some weeks. Custom is one of the most unreasoning tyrants, and in deference to its demands the babe, for its appearance in the street, has been fully dressed in garments that would be adequate for November weather. It is another instance of Columbus and the egg. It would seem to be obvious that if the babe was placed in a south room, the windows and doors of the entire house thrown open, in a short time the atmosphere of the room would be substantially the same as the outdoor air. In the privacy of its own home the babe could be placed near an open window, could have the benefit of the morning sun and of the fresh air the entire day, and with its head and limbs uncovered, and with light clothing adapted to the weather, this babe, with very much less effort and attention, could have the most wholesome conditions, instead of sweltering a few hours in the open air and for the remaining portion of the day be deprived of the invigorating effect of a thoroughly ventilated apartment. I bear in mind that to accomplish this the mandates of custom must be disobeyed, the carpets and floors will be damaged by the sunshine, and much more dust will find its way into the house than where the windows are kept closed—and dust is not wholesome. All the same, the damage to the carpet and furniture and the difficulty of keeping the house tidy are as nothing when the health of the baby is at stake.

We have now laid the foundations for health by

showing how properly to feed and rear infants; there yet remains a most interesting and important problem. To those of us who have passed childhood and are already struggling with acute and chronic illness—in youth, in middle age, and in declining years—what is the best regimen and diet to bring about so desirable an end? When my attention was first called to the wonders accomplished by administering an exclusive diet of milk, I suspected that the results attained were accomplished as much by what the patients avoided in their diet as by what they received; and I regard the facts of the milk treatment as confirmation of the contention that bread, cereals, and pulses are a very unwholesome food. In my recent visit to Nordrach-upon-Mendip and to the St. Michael's Home at Axbridge I was struck with the fact that all the patients at both these sanatoria were required to take about a pint of milk with each of the three meals. As before remarked, when the wonders resulting from Dr. Reinle's treatment were first made known to me my former views were confirmed; but when I learned of the wonders accomplished at Nordrach on a diet which appeared to be composed largely of bread, cereals, meat, fish, poultry, fruits, sweets, and pastry, with milk, I was mystified, and unable at first to harmonize these facts with what appeared to be the plain conclusions to be derived from the cures effected by an exclusive diet of milk. Dr. Lahmann's theory forms a complete explanation of this puzzle. It shows

very conclusively that a normal, healthy organism is even able to eat considerable quantities of relatively unwholesome foods provided that the dietary nevertheless contains all the elements needed for the production of good blood; and he further shows that as soon as a dietary is deficient in elements essential for the formation of blood of normal composition disastrous results always follow, and usually speedily. Dr. Lahmann fortifies his views by quoting from a German scientist, J. Forster, Zeitschrift für Biologie, vol. 9, page 297. Forster fed three pigeons on starch, flour, and casein, these foods containing very few salts. The pigeons lived thirteen, twenty-five, and twenty-nine days respectively. He also fed two dogs on meat from which the food-salts had been removed by soaking, together with fat, sugar, and starch flour. The dogs were on the point of death after twenty-six and thirty-six days respectively. Dogs which are completely deprived of all food live from forty to sixty days. We have here the strange fact that animals can live longer without any food whatever than upon food deprived of some of its indispensable elements.

Dr. Lahmann compares the constituent elements in the food of the ordinary dietary in Europe or America with a dietary composed exclusively of cow's milk, and demonstrates that the amount of soda and lime in our usual dietary is far below that necessary to maintain a healthy existence; at the same time our usual food contains much too large a proportion of

potash, iron, and phosphoric acid. Anemia is shown to be the result of too large a quantity of carbonic acid in the blood. This accumulation results from an insufficient amount of soda, the production of carbonic acid being comparatively unhindered, while at the same time the excretion of carbonic acid is made difficult.

If our dietary contains all the needed elements for the formation of blood of normal composition, and at the same time includes some foods which contain undesirable elements, and which of themselves would prove inadequate, the vigor of the system arising from ample nourishment and from blood of normal composition is so great that the relatively unwholesome elements are excreted, and no immediate or considerable harm follows. And, bearing this in mind, we have an explanation of why Nordrach patients make satisfactory progress notwithstanding the ingestion of considerable quantities of bread and potatoes and other similar foods containing too much potash and too little soda and lime. These patients have three pints of milk per day; this milk furnishes the requisite amount of soda and lime to preserve the alkalinity and prevent the acidity of the blood, and this insures bodily vigor sufficient to enable patients to excrete the potash and other undesirable elements contained in the bread and potatoes.

In " How Nature Cures " I have advocated the exclusion of common salt from our dietary, not only on

the claim put forward by Rowbotham that this substance is a prolific means of the deposition of earthy matter in the tissues, but also because the digestion of salt leads to inflammation with its attendant evils. Dr. Lahmann shows that animal tissues are deprived of many of their needed elements by overconsumption of common salt; that these constituents must be excreted through the kidneys, and that with the constant action of this unnatural process of osmosis some of the tissues are rendered abnormally permeable.

How shall we get on with so small an amount of salt that it will not materially injure our bodies? The habit must be broken; when this is done the health-seeker will be surprised to find that much of his food which he formerly could not eat with any relish without his usual allowance, is distinctly more enjoyable when all salt is eliminated. With most Americans and with a great majority of the inhabitants of Great Britain butter must be salted to be relished. To Continental peoples and to most cosmopolitans the distinctive creamy taste of butter is destroyed if salted, and the butter, no matter how fresh and sweet, is ruined except for cooking purposes. Most Americans would object to salt in fresh cream; the habit of adding salt to cream has not been formed. As soon as the habit is broken, salt is as offensive in butter as in cream. It is the same with almonds and all fresh nuts. To add salt to these delicious foods is as offensive to the natural taste as it would be to salt

fresh, ripe strawberries or peaches; and yet salted almonds are provided at tables where fashion is esteemed, quite as a matter of course.

Green peas, string beans or French beans, young carrots, beets, spinach, lettuce, and, in general, those vegetables which Dr. Lahmann recommends—if steamed or cooked in but little water, and the juices eaten with the vegetable—are soon palatable without salt, even to those who have been long accustomed to highly salted foods. Fortunately, it is the potato that most needs salt to be made palatable, and potatoes ought to be banished from the table of the health-seeker.

Milk is an ideal food in many ways; it requires no salt even when eaten by those who are accustomed to large quantities in other foods, and, furthermore, the use of milk with other foods renders many kinds palatable that would otherwise demand much salt.

It is not so important that all salt be religiously avoided as that the quantity usually used be greatly lessened. One-quarter or even one-tenth of the quantity usually used will be much more easily accepted than total abstinence. Milk, the green vegetables mentioned above, and fruits contain all needed salts, and when these foods constitute one's dietary no salt is required or craved.

Dr. Lahmann finds a third cause of anemia in the habit of taking too much fluid with our diet. He shows that the natural foods—as milk, fruits, and

watery vegetables—contain about 85 per cent. water, and from measuring the excretions from an average-sized man in good health, it is shown that he ought to consume about 2,800 grammes, and that this is from 83 to 85 per cent. of the total amount of food needed. Now it is shown that by the present usual dietary, and from the amount of water, tea, coffee, beer, and wine usually consumed, that fully 2,000 grammes of water are taken in excess of the needs of the body. As a result there ensues a watery condition of the blood, the corpuscles deteriorate in quality and they have a lessened capability for work, and there is a rapid decay of red corpuscles in a too watery blood serum. In short, the abnormal condition of the blood, which is the foundation of all chronic diseases, arises from a too large proportion of water in our food, from the excessive use of common salt, and from the use of foods with too large a proportion of potash and too small an amount of soda and lime. Dr. Lahmann quotes from Professor Bunge the following statement:

"If, e.g., we fed on cereals and pulses, from one to two grammes of common salt would be sufficient for a day; if we fed on rice, a few decigrammes; instead of which most people consume from twenty to thirty grammes a day and often much more."

Dr. Lahmann also points out a fourth cause in the

use of tea, coffee, tobacco, and alcohol. The following quotation speaks for itself:

"Thus there is no doubt that we are worse fed than our ancestors, and owing to this the composition of our bodies and nerves must also be worse. And, further, we irritate our organism day after day with tobacco, alcohol, tea, and coffee, stimulants which should only be used on special occasions. In many cases the effect produced by the constant use of the stimulant is quite evident: nicotine poisoning owing to the use of tobacco, paralysis of the optic nerve owing to tobacco or alcohol, delirium tremens from over-drinking, gout and insomnia due to the tea or coffee habit."

Readers of "How Nature Cures" are aware of my plea for a vigorous old age; that the eminent naturalists Buffon and Flourens unite in claiming that the natural age of man is from 120 to 140 years; and that the so-called senile weakness that is supposed to be natural in the aged is in reality nothing more nor less than the results of a non-hygienic life. I quote from "Natural Hygiene," page 165:

"If we push this comparison with bone tissue further, we shall be led to change our present conception of senile weakness of intellect, a widely spread condition, which is now looked upon as due to natural causes and not as morbid in character. Where else

in the whole animal kingdom do we find a creature that becomes weak in intellect or childish in old age? This sad condition is confined to homo sapiens. And where in the animal kingdom can we find a creature suffering from osteoporosis (brittleness of the bones) in old age?"

Dr. Lahmann, from the standpoint of the importance of food-salts and especially the necessity of a sufficient amount of soda in the blood, discusses chronic rheumatism, gout, apoplexy, diabetes, infectious diseases, scrofula, tuberculosis, short sight, goitre, scurvy, inflammation of the kidneys, cancer, and nerve diseases. He traces the physiological and pathological changes that are concerned in developing these differing diseases from specific and identical causes, the chief of which is the use of food with a superabundance of potash and a deficiency of soda and lime. I hope every physician and hygienist who may be brought to read this hurried digest of Dr. Lahmann's teachings will be persuaded to procure and carefully peruse the book itself. Those of us who are familiar with the Nordrach and Reinle treatment of consumption are convinced that it is not only easy to accomplish the objects of the recent but well-known Anti-Tuberculous Association—namely, the prevention of the spread of consumption—but that this disease is also relatively easily curable. In the matter of cancer no such results are as yet obtained, but Dr.

Lahmann makes it very plain that cancer is undoubtedly avoidable.

As before said, nothing but a careful perusal of Dr. Lahmann's book will give an adequate appreciation of its revolutionary teachings when one becomes fully persuaded that they are based on sound physiologic principles. The following quotations, taken from pages 84 and 165, are of a nature so startling and so sweeping that it is hoped every health student who peruses them will resolve to carefully study the grounds on which these statements are based.

"As soon as it is really understood that we were never intended to live on flesh and cereals, the uric acid diathesis as a trouble of mankind will disappear. We must, of course, not forget to restrict the consumption of common salt and to use such vegetable foods as are rich in food-salts, and not those which are rich in albumen; for a diet consisting of bread, cereals, and potatoes will tend to produce gout just as much as a diet consisting of flesh, fish, and caviare."

"Our brain and nervous system will remain in a healthy condition and normal as regards vitality, if we can supply the elements necessary to the formation of the tissues by regularly consuming the right food . . . but we cannot possibly possess a normally fed and normally efficient nervous system if, during seven or eight months in the year, we live on substances which contain hardly any food-salts: meat,

bread, potatoes, cereals, and pulses, and only during the four or five summer months supply the deficiency of food-salts by living on vegetables and fruits; for the albumen and fat taken in winter cannot wait to combine with the mineral substances taken in summer to form normal nerve matter. Thus the brain and nerve matter are often inferior in quality, just as in rickets a cartilage-like bone material inferior in quality is formed owing to a lack of lime salts; and hence the frequency of brain and spinal-cord diseases."

It will be seen by the above that Dr. Lahmann lays especial emphasis upon the importance of making green vegetables and fruits the basis and chief portion of our food, and that meat, bread, potatoes, and pulses, when taken at all, must be used very sparingly; that these foods must be consumed in small quantities as additions to our food rather than as the food itself.

This is an invaluable regulation, and one which, if followed, would greatly mitigate, and often cure, chronic diseases. But I am surprised not to find in Dr. Lahmann's writings any suggestion that milk is a resource from which we may supply ourselves with the needed vegetable salts. On the contrary, he has prepared what he calls "vegetable milk." Those vegetables which are richest in soda and lime and which have least potash are thoroughly cooked in steam and the juices expressed. When all water has been evaporated from this vegetable liquor the resi-

due Dr. Lahmann calls food-salt. In the absence of green vegetables he recommends the addition of a portion of food-salts as large as a pea to a small portion of peas, beans, or cereals. One part food-salts to seven of distilled water makes vegetable milk. Dr. Lahmann has found that a mixture of this vegetable milk with cow's milk enables delicate infants and invalids to digest, assimilate, and thrive upon cow's milk who before apparently were unable to take it, or, if taking it, were not thriving. This seems reasonable, and I doubt not for infants and invalids Dr. Lahmann's food-salts and vegetable milk have value. But Dr. Reinle succeeds in getting the most delicate invalids to take an exclusive diet of milk with entire success. In my own practice I have found but one patient—the No. 3 mentioned on page 69—who did not succeed, and among more than a score of invalids who are now making milk a principal resource in diet there are several who had before supposed that milk made them "bilious," and that it was impossible for them to take it. The process is simple. At the outset allow no other food. If the patient has no relish for the milk, or if it does not agree, abstain from all food for one day, taking nothing but water. A large majority of such patients will find themselves quite able to digest milk the second day. If not the second day, wait for the third; but I have yet to find one who failed the second day after fasting for one.

It is quite true, as affirmed in the preceding quota-

tion from Dr. Lahmann, that we cannot keep ourselves in a normal and healthy condition if during seven or eight months of the year we live principally on meat, bread, potatoes, cereals, and pulses, and only during the four or five summer months add a considerable proportion of watery or non-starch vegetables and fruits. It is curious that Dr. Lahmann seems not to have thought of milk as a source from which to obtain the necessary food-salts, and yet he cites milk as the only complete food, containing just enough soda and lime and not too much potash, and the ideal food with which all others are compared. When Dr. Lahmann is unable to obtain the proper vegetables and fruits in abundance—which he insists should constitute our principal food—why not make milk the basis of diet and add to it a minimum of bread, meat, and rice or cereals? And the vegetarian, and also those who are distrustful of beef and mutton as being a prime source of uric acid, will find a milk diet with the addition of a small portion of bread—preferably twice baked—or rice a very satisfying and nourishing food, and the vegetarian will find on this diet that he does not have the pallor and anemic appearance usually found with those who eschew meat and who get their chief nourishment from bread, potatoes, cereals, and macaroni.

The use of milk as food is no new experiment; a milk diet has long been the exclusive food given by many specialists, and for more than a score of years

has been growing in favor with our best physicians in Europe and America. That which was new to me and to most readers is the assertion that it contains the requisite amount of food-salts, and that without these salts all persons will sooner or later be out of health. With this new light one can readily understand the signal success of the milk treatment, and why the Nordrach diet invariably provides two or three pints of milk per day.

Thus the amelioration and approximate cure of chronic as well as the prevention of all diseases are surely accomplished by a simple regimen, readily understood and not difficult to follow. It is not my intention to give a list of chronic diseases and to treat each one specifically. I desire to make plain that health is natural and the inevitable result of normal development; that disease always arises from a transgression of hygienic law, and that pain is an expression of a friendly effort on the part of the vital forces to rid the system of disease. Every one knows that a tree, a stalk of corn, a blade of grass, or any vegetable growth is sure to be in vigorous health if we give it warmth, nourishment, moisture, and sunshine. If we find our grass-plot brown or sickly, we know at once that there is some failure of nutrition, and we know, if our plant is freed from attack of insects, and if needed nourishment is supplied, that soon our plant will gladden us with an abundant vigor.

The scientist knows, in a general way, that the laws

of life are very similar, whether expressed in the vegetable or animal kingdom. The farmer is aware, if his horse or his cow is attacked with illness, that there is a failure of nutrition, and while he may for the once administer an aperient, he directs his attention to food, drink, light, air, and exercise. But when a human being is taken ill our scientist forgets that it is the same problem as with the animal or vegetable growth. He relies upon some medicine or injection or surgical operation. If I could persuade the doctor to treat his patient on the same lines that he treats his horse my object would be accomplished.

PERCENTAGE COMPOSITION OF THE FOODS.* PERCENTAGE COMPOSITION OF THE FOOD-SALTS.†

	Water.	Albumen.	Fat.	Carbo-hydrates.	Food-salts.	Potash.	Soda.	Lime.	Magnesia.	Oxide of Iron.	Phosphoric Acid.	Sulphuric Acid.	Silicic Acid.	Chlorine.
a **Cow's Milk** } the normal	87.42	3.41	3.65	4.81	.72	24.67	9.70	22.05	3.05	.55	28.45	.30	.04	14.28
Human Milk } food-mixt.	87.02	2.36	3.94	6.23	.45	33.79	9.12	16.69	2.16	.22	22.66	.95	.02	18.38
b **Vegetables and Lettuce.**														
Savoy	87.09	3.31	.71	6.02	1.64	27.50	10.16	21.38	3.59	1.73	14.75	8.20	4.78	7.91
Cabbage	89.97	1.89	.20	4.87	1.23	36.86	9.46	17.63	4.00	.69	8.99	13.91	.87	8.51
Spinach	88.47	2.49	.58	4.44	2.09	16.56	35.23	11.88	6.38	3.35	10.25	6 87	4.52	6.20
Cauliflower	90.89	2.48	.34	4.55	.83	44.36	5 89	5 58	3.66	1.02	20.22	13.01	3.76	3.44
Stinging-nettle { vegetable and salad	82.44	5.50	.67	7.13	2.30	32.04	2.39	28.24	7.16	4.77	7 84	8.35	4.03	6.66
Dandelion { weeds. }	85.54	2.81	.69	7.45	1.90	38.86	10.44	19.96	8.38	.86	7.84	2.24	7.01	2.65
Asparagus	93.75	1.79	.25	2.63	.54	24.04	17.08	10.85	4.32	3.38	18.57	6.18	10.09	5.93
Cucumber	95 60	1.02	.09	2.28	.39	41.16	10.04	7.30	4.15	1.40	20.00	6 92	8.03	6.59
Lettuce	93.41	2.09	.41	2.73	.79	46 01	9.43	6.05	2.17	—	8.52	3.89	20.23	4.75
Cabbage-lettuce	94.33	1.41	.31	2.19	1.03	37.63	7.54	14.68	6.19	5 21	9.19	3.76	8.14	7.65
Summer endive	92.50	1.26	.54	3.55	.98	25.30	35.30	11.86	4.33	1 26	10.90	3.87	2.99	4.19
Leek (porret)	87.62	2.83	.29	6.53	1.24	30.72	14.15	10.37	2.92	7.61	16.69	7.35	7.36	3.11
Onion	85.99	1.68	.10	10.82	.71	34.03	2.48	22.87	4.65	2.27	17.35	5.68	8.50	2.41
Mushrooms	89.12	2.61	.28	6.11	.70	50.89	1.65	1.01	3.37	1.62	33.71	3.94	.98	.88

c **Bulbous and Root Vegetables.**														
Radish	93.34	1.23	.15	3.79	.74	32.00	21.15	14.94	3.10	2.84	10.86	6.47	.91	9.15
Horse-radish	86.92	1.92	.11	7.43	1.07	21.98	3.75	8.78	3.53	1.16	41.12	7.71	8.17	4.90
Celery (the stalk)	84.09	1.48	.39	11.80	.84	43.19	—	13.11	5.82	1.41	12.83	5.58	3.85	15.87
Potato	75.48	1.95	.15	20.72	.95	60.06	2.96	2.64	4.93	1.10	16.86	6.52	2.04	3.46
Topinambour	79.59	1.98	.13	15.66	1.17	47.74	10.16	3.28	2.93	3.73	14.00	4.91	10.03	3.87
French turnip	89.90	3.52	.14	11.34	1.28	46.93	5.65	11.33	3.68	.61	14.51	9.62	1.06	6.59
Carrot	87.05	1.04	.21	9.40	.90	36.92	21.17	11.34	4.38	1.01	12.79	6.45	2.38	4.59
Cabbage-turnip	85.89	4.87	.21	8.18	1.17	35.31	6.54	10.97	6.84	3.03	21.90	8.85	2.48	4.95
d **Cereals and Pulses.**														
Winter wheat	13.65	12.35	1.75	67.91	1.81	31.16	2.07	3.25	12.06	1.28	47.22	.39	1.96	.32
" rye	15.06	11.52	1.79	67.81	1.81	32.10	1.47	2.94	11.22	1.24	47.74	1.28	1.37	.48
" barley	13.77	11.14	2.16	64.93	2.69	16.33	4.14	.74	12.53	1.72	32.82	2.98	28.74	—
Oats	12.37	10.41	5.23	57.78	3.02	17.90	1.66	3.60	7.13	1.18	25.64	1.78	39.18	.94
Maize	13.12	9.85	4.62	68.51	1.51	29.78	1.10	2.17	15.52	.76	45.61	.78	2.09	.91
Rice	13.11	7.85	.88	76.52	1.01	25.04	4.21	3.73	11.08	1.43	53.76	.50	2.59	.13
Millet	11.66	9.25	3.50	65.95	1.67	11.39	1.30	.63	9.63	1.08	21.92	.24	52.97	.49
Pea	14.99	22.85	1.79	52.36	2.58	43.10	.98	4.81	7.99	.83	35.90	3.42	.91	1.59
Lentil	12.35	25.70	1.89	53.46	3.04	34.76	13.50	6.34	2.47	2.00	36.30	—	—	4.63
Bean	14.76	24.27	1 61	49.01	2.26	41.48	1.06	4 99	7.15	.46	38.68	3.39	.65	1.78
e **Nuts, etc.**														
Walnut	4.68	16.37	62.86	7.89	2.03	31.11	2.25	8.59	13.03	1.32	43.70	—	—	—
Cocoanut (fresh)	46.64	5.49	35.93	8.06	.97	43.88	8.39	4.63	9.44	—	16.99	5.09	.50	13.42
Cocoa-bean	3.63	11.99	49.32	26.43	3.48	55.89	2.26	5.44	11.06	.03	38.61	3.43	1.51	.85

* From J. König, " Chemie der menschlichen Nahrungs- und Genussmittel." Berlin, 1882.

† From E. Wolff, " Aschenanalysen von landwirtschaftlichen Produkten." Berlin, 1871 and 1880.

PERCENTAGE COMPOSITION OF THE FOODS. PERCENTAGE COMPOSITION OF THE FOOD-SALTS.

	Water.	Albumen.	Fat.	Carbo-hydrates.	Food-salts.	Potash.	Soda.	Lime.	Magnesia.	Oxide of Iron.	Phosphoric Acid.	Sulphuric Acid.	Silicic Acid.	Chlorine.
f **Fruits.**														
Apple	84.79	.36	—	12.04	.49	35.68	26.09	4.08	8.75	1.40	13.69	6.09	4.32	—
Pear	83.02	.36	—	11.80	.31	54.69	8.52	7.98	5.22	1.04	15.20	5.69	1.49	—
Cherry	79.82	.67	—	12.00	.73	51.85	2.19	7.47	5.46	1.98	15.97	5.09	9.04	1.35
Grape	78.17	.59	—	16.32	.53	56.20	1.42	10.77	4.21	.37	15.58	5.62	2.75	1.52
Plum	84.86	.40	—	8.24	.66	59.21	.54	10.04	5.46	3.20	15.10	3.83	2.36	—
Strawberry	87.66	.54	.45	7.29	.81	21.07	28.48	14.21	—	5.89	13.82	3.15	12.05	1.69
Gooseberry	85.74	.47	—	8.43	.42	38.65	9.92	12.20	5.85	4.56	19.68	5.89	2.58	.75
g **Animal Products.**														
Flesh of animal	72 00	20.00	5.00	.40	1.10	41.27 *	3.63	2.82	3.21	.70	42.54	1.56	1.11	3.85
						37.04 †	10.14	2.42	3.23	.44	41.20	.98	.69	4.66
" " fowl	76.22	19.72	1.42	1.27	1.37	30.90	18.70	3.25	4.15	—	36.40	—	—	8.05
" " sea-fish	80.97	17.07	.34	—	1.64	21.80	14.90	15.20	3.90	—	34.50	—	—	11.40
Ox's blood	80.82	18.12	.18	.03	.85	7.61	44.99	1.08	.60	9.38	5.25	3.05	.84	34.38
Pig's blood	?	?	?	?	?	23.29	29.43	1.30	1.40	8.86	12.15	1 03	—	28.52
Egg	73.67	12.55	12.11	.55	1.12	17 37	22.87	10.91	1.14	.39	37.62	.32	.31	8.98
The white of the egg	85.75	12.67	.25	.74	.59	31.41	31.57	2.78	2.79	.57	4.41	2.12	1.06	28.82
The yolk of the egg	50 82	16.24	31.75	.12	1.09	9.29	5.87	13.04	2.13	1.65	65.46	—	.86	1.85
Holstein cheese (without common salt)	?	?	?	?	?	13.26	1.40	35.43	2.38	.80	38.37	.17	—	7.44
Gruyère cheese (with common salt)	33.61	32.42	29.67	—	4.78	2.46	(33.01)	17.82	.81	.17	20.45	—	.08	(33.61)

* Bloodless flesh, as usually eaten. † Flesh containing blood.

The foregoing tables are taken from "Natural Hygiene," page 230. The tables quoted on pages 144-146 give the percentage composition of food-salts contained in the ashes of a given amount of the dry substance of various foods after water has been eliminated. In these tables there are given the analysis and proportion of the various constituents contained in each of the foods mentioned.

Dr. Lahmann explains that the great bulk of foods in ordinary use are deficient in soda and lime, and contain excessive quantities of potash and phosphoric acid, and that these foods are a prolific source of disease. If this position is accepted as correct, a study of this table is very instructive. Spinach is the richest in soda and has a fair proportion of lime, and, at the same time, but a relatively small amount of potash and phosphoric acid. Asparagus, by this table, is most valuable, and carrot, barring a rather full amount of potash, is equally so. On the other hand, the potato is excessively loaded with potash, has considerably more than the average of phosphoric acid, and is especially deficient in soda and lime. Celery has a large proportion of potash, but is deficient in lime. Among the fruits the apple, strawberry, and gooseberry lead in desirable elements. Both the plum and the grape have a large quantity of potash and are deficient in lime. In general, all vegetables excepting potatoes, and all fruits and nuts are valuable foods. Cereals and potatoes, on the other hand, present a very un-

favorable showing. Barley has a fair proportion of soda, and oats of lime; wheat, rye, and Indian corn or maize are very deficient in soda and lime, with a large amount of phosphoric acid. Rice alone among cereals has a considerable portion of both soda and lime, and the lentil, alone among pulses, is rich in these elements.

What is designated as the flesh of animals in this table, I understand to mean butcher's meat. This, as usually eaten, has a small percentage of soda and lime and a large amount of potash and phosphoric acid. On the other hand, poultry is rich in soda and lime, and has not so much potash. Sea-fish, likewise, has a relatively small amount of potash and is rich in both soda and lime. Eggs are also rich in soda and lime, but have too much phosphoric acid.

It is interesting to note that butcher's meat, condemned by this table, is the food which has recently been pointed out by Dr. Haig and others as a prolific source of uric acid, and that poultry and fish, known to be much more favorable so far as uric acid is concerned, are both excellent foods judged by the figures of this table. Rice, among cereals, is known to be the most easily digested and the most favorable for invalids. The figures of this table clearly show that bread, cereals, pulses, and potatoes are unwholesome foods.

Fortunately for vegetarians, milk is allowed. Food physiologists have long recognized that milk contains

all the needed elements for sustaining animal life. In recent years it has been growing more and more in favor with physicians of all schools as the best food for invalids, and now it is taken by Dr. Lahmann as the ideal food, in that it possesses the right amount of food-salts, and it is the one to which all the other foods are compared. If vegetarians will use not less than three pints of milk per day, they will be spared the necessity of using the large amounts of bread, cereals, pulses, and potatoes which unfortunately constitute at present their chief nourishment. By avoiding cereals, pulses, and potatoes they are freed from the danger of too much potash and phosphoric acid, and because of the nitrogen contained in the milk they will be perfectly nourished with the addition of fruits and watery vegetables. By the adoption of this diet, vegetarians will be freed from the pallor which is, at present, so often a characteristic, and will find it a very satisfactory and wholesome regimen.

TABLE OF NORMAL WEIGHTS.

According to a record of averages compiled by insurance companies, taken from observation of over three thousand persons, the normal or natural weights for given heights are in accordance with the following table, which includes the weight of ordinary clothing. The last column, the one marked "Average," is approximately the normal or natural weight for the heights given.

Height.	Min. Weight.	Max. Weight.	Average.
5	98	132	115
5.1	102	138	120
5.2	106	144	125
5.3	111	150	130
5.4	115	155	135
5.5	119	161	140
5.6	121	165	143
5.7	123	167	145
5.8	126	170	148
5.9	131	179	155
5.10	136	184	160
5.11	138	190	165
6.	141	196	170
6.1	144	202	175
6.2	153	207	180
6.3	157	213	185

CLOTHING AND EXERCISE.

It is not the purpose of this work to undertake full directions regarding exercise, bathing, clothes, and other important divisions of a hygienic regimen. Especial stress is laid upon the importance of diet. At the same time, while a change in food will bring surprising results to the ailing, the question of clothing must not be overlooked. Exercise is also of great importance, and is a subject which needs the space of an entire book for its adequate treatment. It will only be touched upon here.

No directions are given in this volume regarding baths and bathing. It is my object to lay especial stress upon those hygienic measures which are least understood. Bathing and exercise are much discussed, and a general knowledge of their place in a hygienic regimen is well understood. However, if the course recommended herein regarding diet and clothing be followed, there will be much less need of bathing than otherwise.

The belief that fresh air is an important agent in the establishment and maintenance of health is not new, but hundreds of physicians and thousands of laymen have gained a new conception during the past

twelve months of the necessity of removing windows from their casements and of making the atmosphere of the consumptive patient's room the same as outdoor air, if the best conditions for recovery are to be secured. It has long been known that it is very harmful to encase the body in air-tight clothing. I have seen a statement that at a public festival in Rome a boy's body was gilded to give more artistic effect to a procession, and that death ensued from the closure of the pores of the skin. The effect of the usual clothing in civilization is about midway between that which would follow, on the one hand, by encasing the body and limbs in waterproof coats and boots, and, on the other, by giving to the skin such an access of air as may be obtained by the adoption of clothing properly constructed. German hygienists, always foremost in natural health methods, have for some years insisted upon the adoption of linen undergarments, and have recommended the use of such clothing as will permit a free passage of air to the surface of the body. In London a company has been formed for the manufacture and sale of what they term " cellular " clothing. This clothing may be made of linen, cotton, silk, or wool. The parties introducing the cellular clothing recommend cotton, as it is inexpensive, wears well, and does not shrink in washing. The distinctive feature of desirable clothing is its porosity. In examining cloth with a view to this requisite, if it is placed over the mouth and if one can breathe through it with

great readiness, one may be assured that it is porous. The larger share of our clothing is too tightly woven to permit of the easy transmission of air through it.

Recently in New York an agitation has been made in favor of linen underclothing instead of the woollen or Jaeger, which has heretofore been most popular. Woollen cloth, as long as it is dry, will protect the body against cold better than cloth made from any other material. However, wool, while slow to absorb moisture, is also slow to give it off, and after it has been worn for some hours it has absorbed perspiration, and thereafter the body is clothed in damp garments. Linen is the best material for underwear; it absorbs moisture much more readily than wool, but it also more readily gives it off, and if the outside garments are in the least porous, the heat of the body soon expels all moisture from the linen, and the body is thus encased in dry, instead of damp, garments. Cotton is a compromise between wool and linen. It absorbs moisture much more readily than wool, and also is more readily dried by the heat of the body. Knitted cotton underclothing, such as is largely used in America, termed Balbriggan, while not so excellent as the cellular clothing, still possesses many of its essential advantages.

Linen is not desirable for men's drawers, as when it is made sufficiently open-meshed, and at the same time fitting the limbs closely, it is soon worn out.

Moreover, there is not nearly so much perspiration from the limbs as from the trunk, and the only superiority of the linen over cotton is its greater readiness to absorb and give off moisture. Linen is much more expensive, more readily damaged in the laundry, and must be of greater weight to give equal strength and warmth. In the tropics and in hot weather it is greatly preferable, as it is much cooler. In cool weather, when both warmth and porosity are needed, cotton has some elements of advantage over linen, as it is lighter, warmer, less expensive, and more durable. A linen net makes the best undergarment for the trunk. Those who are unable to procure this will find a cotton net a very good substitute.

But it is not enough that the body be encased in porous and dry underclothing. The ordinary gentlemen's fine shirt is so closely woven that it is next to impossible to breathe through it. It is readily seen that however desirable the porous underclothing may be, if the body is encased in an outside shirt that is substantially impervious, the greater portion of the advantages of the porous underclothing is lost. I use and recommend not only underclothing of linen or cotton as porous as I can get it, but insist also upon having porous garments throughout. In this way fresh air is continually passing to the skin, and the dampness and emanations from the body are continually passing off.

A manufacturer of underwear advertises a garment

that is made double—practically two suits, one inside of the other. This advertiser explains that on account of the air-space between the two folds of the porous cloth his garment is warmer than any single garment of equal weight. This is quite true, but it is not necessary that the garment be double when all that is required is to procure two thin porous garments and wear one inside of the other. It is because of the dead air-space that a sheep's fleece or cotton wool is warm. A given weight of wool or cotton woven into a closely meshed garment is not a tithe as warm as when loosely woven; garments so woven contain many air-spaces.

It is not enough that the body be clothed in porous materials; the best results are obtained only when the patient's bed is also provided with equally porous clothing. Sheets may be of linen or cotton; if they are properly woven a lighted candle is easily extinguished by blowing through the fabric.

Bed blankets must also be woven with open mesh and as porous as possible. No counterpane or other bedspread is permissible, except such as are equally porous. Some kinds of quilts, known as comforters in the United States, answer the above requirements. The fabric between which the cotton wadding or batting is stitched is so loosely woven, and the cotton wool is so open, that the flame of a match or candle may be easily extinguished by blowing through it. This quilt cannot be washed, and for this reason is

not so desirable as a woollen blanket. At the same time it affords a better protection against cold for the same weight of clothing than can be obtained by woollen blankets; and it has the merit of being inexpensive.

A thin, loosely woven cotton coverlet or bedspread is sold for about half a dollar; it is pure white, very porous, loosely meshed, usually two yards square, and weighs about two and one-half pounds. This is intended for bedspreads; and competition between manufacturers has induced them to make a very light and porous cloth in order that it may be sold at a low price. There is no thought in the mind of the merchant or the purchaser that this cloth is all the more valuable for being light and porous. This spread is designed only as a bed covering to make the bed and room appear tidy; but it is also a valuable cloth and garment. A cellular sheet is sold in London at from four to eight times the price of this spread, and, except in the matter of appearance, is no more valuable. I recommend this to be used as a sheet, and two of them —on the principle of the double undergarment above referred to—are much warmer than a woollen blanket of the same weight. This bedspread also makes valuable underclothing, night dresses, and men's shirts.

Low shoes are much better than high ones because of the added ease of ventilation, and if some device or ventilator is placed on the instep permitting the free ventilation of the foot, all the better.

Both physicians and patients in the sanatorium at Nordrach-upon-Mendip refuse to wear hats, and after a patient has been there two or three months his face becomes thoroughly bronzed. This exposure of the skin to the air and weather insures an active circulation of the blood to the parts exposed. Where the usual clothing in civilization is worn and the surface of the body is continually bathed in its own moisture and emanations, circulation is discouraged, and there is absent nearly all resisting power when the body is exposed to sudden draughts or changes in temperature. On the other hand, when one has become accustomed to sleeping in a room so thoroughly ventilated that the air in it is indistinguishable from outdoor air, and when one's body has been clothed for some months, night and day, with clothing so porous that there is a constant interchange between the outside air and the emanations from the body, the circulation of the blood to the skin is so stimulated, and the vigor thus engendered so great, that catching cold, that dreaded bête noir of many, is well-nigh impossible.

Providing one's self with porous clothing, woven from the best material, does not answer all the requirements. It is necessary also that one should not wear too much clothing and thereby lessen the vigor of the skin and weaken the entire nervous system. Horsemen understand that their animals must be "put in condition" before they are enabled to endure

a strain or any hard work. A day's work may ruin a horse that has been idle in the pasture and has become "soft," which would not harm the same horse after it had been properly prepared for the work. Most residents of cities, and all engaged in sedentary pursuits almost without exception, wear too much and too warm clothing, and keep their dwellings and business houses much too warm. This is especially the case in America. The result is an enervated skin, and the victim is liable to catch cold from the least draught or exposure. While the English do not keep their rooms nearly so warm as Americans, they are quite as much given to wearing too much clothing, and are even in greater fear of a draught.

All that is necessary to be free from all danger of taking cold is to adopt such clothing and such habits that one's body is "put in condition"—made vigorous by air and exercise. To get the air, porous clothing, and not too much of it, is the first requisite, and if the living rooms are kept at a moderate temperature, and a moderate amount of porous clothing is worn, one is stimulated to exercise.

The usual habit of warming one's self by a fire—an open grate, a stove, a steam or water radiator, or a register from a furnace—is unphysiological and unwholesome. When one comes in from a ride in cold air or feels cold from any other exposure, one is warmed more quickly and more effectively by slowly walking up and down a flight of stairs than by sitting

down by a fire. The only serious difficulty in this is the fact that it is unusual, and attracts attention and remarks. It is very easy to follow custom and very difficult to go counter to it, but it is not nearly so difficult or so disagreeable as it is to lose one's health and vigor.

My attention was called to this means of exercising by Dr. William Hammond, a well-known physician, and at one time Surgeon-General of the United States Army, who recommends it as a most effective exercise, and one which is always at hand. The time and the amount needed will vary with the individual. To raise one's self to a height of one hundred feet in ten minutes is moderate exercise; to compass the same distance in five minutes is much harder work and represents more exercise. One who is accustomed to a room or a temperature of 70 degrees or 72 degrees is at once uncomfortable in a room of 62 degrees or 65 degrees. Such a one will be surprised at the change of condition which will be wrought and how comfortable the lower temperature will seem after elevating one's self 100, 200, or 500 feet.

The lady sits in her drawing or dining room and is uncomfortable unless the temperature is 70 degrees or above, or unless the body is encased in heavy woollen garments. Her maid-servants, who perform the work of the household, are usually dressed in thin clothing, and are uncomfortable unless the window is opened. If the lady will find some physical exercise

—and if nothing else is at hand let it be a walk during the morning of 200, 500, or 1,000 feet on the stairway —she will find her blood circulating and herself comfortable in a room at a lower temperature and with the window opened enough to give good ventilation.

In crossing the Atlantic recently I found the decks too crowded for a comfortable constitutional; I took two or three miles less walk, and substituted walking up and down steps 1,000 to 1,500 feet on an outdoor stairway. A physician on board, noticing the unusual exercise, remarked to me that I must have a good heart, and with a gesture that said plainly that in his opinion I was running some risk. I replied that in my opinion I was doing just the right thing to develop a good heart. It is all one problem. The horse to be made able to endure a heavy day's work must be developed by daily exercise. The strain upon the heart by the stairway exercise develops and increases its power and endurance. If one is to prepare one's self to endure exposure to a draught or a sudden change of temperature, one must give the skin some exercise—give it plenty of air, which will stimulate the circulation. Furthermore, it is not nearly so hygienic at all times to have such heavy overcoats or wraps upon going out that one does not feel the cold as it is occasionally to expose one's self by a ride in an open carriage or cold omnibus or street car with little or no wraps. If left to inclination, most people prefer to ride rather than walk; at the same time we all know

that it is more healthful to walk two, four, or eight miles per day than to ride. It is for a similar reason that it is better to expose one's self without wraps in an open carriage or street car for fifteen, thirty, or sixty minutes each day than all the time to keep one's self so wrapped as not to feel the cold; but this is a law not usually understood.

One's body and muscles are strengthened by the daily walk, and in due time one feels it distinctly a hardship to be deprived of good exercise. Just so one's body is developed and hardened and strengthened by a daily exposure to cold air—and, as before said, quite without extra coats or wraps. When one is thus fitted there is no danger of taking cold; one may feel cold temporarily, but there will be no after effect. The invalid is not advised at first to take long walks. When convalescence has set in we advise a very gentle exercise to commence with. So in habituating one's body to an exposure, to a ride in the open, and in a cold wind without wraps. If one has encased one's body for years in heavy and non-porous clothing until one's skin is flabby and weak, it is as unwise to take a long ride in a cold wind without wraps as for a convalescing invalid to take a long walk. Let a similar rule be followed. Let one gradually accustom one's self to the wearing of less clothing and to the exposure to cold.

The London omnibus driver, who sits in the open from twelve to fifteen hours per day, is very wise to

encase himself in a heavy overcoat and a large, heavy rug or blanket which completely wraps his feet, legs, and body to the waist. This driver's exposure is extreme, and care is required to prevent a too great strain upon the system. Likewise, while a two, five, or ten-mile daily walk is very wholesome for a sedentary office worker in fair vigor, a daily walk of twenty-five or forty miles would be too long; it would cause a harmful strain. The 'bus driver needs his extra wraps; the gentleman or office clerk will do well to take his hour's winter ride without top coat or extra wrap.

There is another method much better than entirely doing away with the use of an overcoat. In American homes and business offices the temperature is usually kept at summer temperature during the winter. If the gentlemen who are finding benefit from discarding their overcoats will provide themselves with porous undergarments, and with a waistcoat and undercoat without lining and also porous—just such clothing, in fact, as they are accustomed to wear in summer—they will soon find themselves far more comfortable than when wearing the usual heavy winter suits. A very light, very porous, and unlined coat, as the alpaca used in summer and in offices, is equally desirable in the winter. Being thus very lightly clad, a light overcoat is advisable in passing from one's residence to the heated street car or train and from the train to place of business. But a relatively short space of time is

consumed morning and evening in going to and from one's place of business. By the system here recommended, the man will find himself entirely comfortable at his home and office, and will soon much enjoy his liberation from the oppression of too much clothing. The free circulation secured by this thin clothing frees the body from being bathed in the moisture of perspiration. The gentlemen discarding their overcoats but wearing the usual winter clothing are much too warm in their homes and offices, and the skin is enervated by moisture and lack of fresh air. No doubt such persons are considerably benefited by laying aside the overcoat. The exposure to cold in the morning and evening journeys stimulates and enervates the skin, and one is much less liable to catch cold than when wearing the same heavy clothes and adding the usual overcoat. Most men will recognize that there comes a delightful sense of relief in the spring-time when the weather has moderated to such an extent that winter clothing may be discarded. In the system herein recommended one wears summer clothing during the winter-time, and the freedom and lightness that come with it are experienced the year through.

All hygienists must learn that the best health can only be secured where every safeguard is insisted upon; where we live in the open as much as possible and insist that our rooms while we inhabit them shall be filled with outdoor air continually replenished.

This is best accomplished when there is a current of air—the "draught" of the superstitious—continuously passing into and out from the room, and when we encase our bodies, not only in underclothing which is as open as a sieve, but where all the clothing worn admits through it a free passage of air.

Our store of vitality is so great and nature is so bountiful in her gift of vital force, and we usually begin life with such an abounding store of vitality, that we often continue in apparent health for years, notwithstanding we use unwholesome foods and drink, sleep in air-tight boxes, and exhaust our vital force with overstrain and dissipation. Nevertheless, law is inexorable; the balance in bank is continually drawn upon, and in due time—it may be ten or twenty or forty years—our balance is overdrawn, and we have an "attack" of illness, and we pay the penalty of disobedience. When settlement day comes we ignore and are unaware of the real cause of our illness. We fancy that we have "caught cold," that we were attacked by a "draught," and that our chill and fever and pains, followed by rheumatism or a cough or pneumonia, have all come from the fatal draught. It is quite true that the overstrain or the heated room with the perspiration and the draught are the exciting cause; the real cause is the lifelong disobedience of hygienic law. Among these transgressions that are least suspected and most effective must be named the wearing of impervious clothing. Nearly every

one has an inkling that ventilation—for our lungs—is a wise and necessary provision, but almost every man and woman in civilization is ignorant of the fact that he or she is wearing clothing largely impervious to the passage of air, and that in consequence the moisture and emanations from the body are absorbed by the underclothing and held captive by the outer garments. The skin is thus enfeebled, has a poor blood circulation, and is poorly nourished; an exposure to a draught and a chill follow in due time, with the inevitable breakdown. Breathing vitiated air and wrapping our bodies in impervious garments have worked their full share of the havoc.

LIGHT.

The recent fame of the open-air treatment for consumption has emphasized the great advantages that accrue from leading an outdoor life. To most minds these advantages come from pure air and from the direct rays of the sun. There is also an element, aside from air and from direct sunshine, that is of great importance and that is also usually overlooked. This is light. Of the enervating and unwholesome customs in modern life, one prolific of evil is the almost universal custom of providing window shades and curtains which shut out a large portion of light. We not only drape the windows with two or more thicknesses of curtains, but we add a shade that fashion, in America, has elected must be kept drawn to the middle of the window. The result is a series of dark rooms which constitute the modern home.

Sunshine will fade hangings and carpets. The lines that are developed by advancing years, or more particularly by unwholesome methods of living, are softened and obscured by curtains, shades, and darkened rooms. These facts are no doubt at the foundation of this custom. A profound ignorance on the part of the women of most households as to the unwhole-

someness of darkened rooms has also contributed to it. Most women are aware that their plants must have light or they become pale and sickly. This necessity for light applies equally to themselves and their children.

It is a common remark that as soon as the man of the house enters his home he straightway throws up the window shades, opens the curtains, and lets some light into the room. This is not because he has meditated upon the hygienic importance of light rooms, but because, more accustomed to outdoor life and to natural conditions, he is made uncomfortable by the darkness.

The best possible condition for the consumptive or for any invalid is to get the stimulus of the outdoor air and sunshine. The next best thing is to get air and sunshine into our homes. We must remember that, entirely aside from the benefits derived from the direct rays of the sun, light is also a necessity for a wholesome life. A potato sprouting in a darkened cellar is seen to throw its tendrils in the direction of a window or any crevice admitting light. The stalks and leaves of such plants are colorless, and present a most unwholesome appearance. We all know that if the potato is allowed to grow in the open the paleness of the leaves gives way to a vigorous green. Women are familiar with the fact that paleness in a leaf betokens an unwholesome condition, but they give no thought to the unwholesome paleness of human life.

We are creatures of habit; we follow custom without thought and as a matter of course. Most women are very careful to keep the sun from their own and from the faces of their children. Light is as necessary to keep the human being in health as it is for a plant, and it is as impossible for a pale woman or infant to be in best health as it is for a pale plant.

Curtains and hangings also gather dust, and are unwholesome on that account, but it will be impossible to persuade any considerable number of housekeepers to do without these draperies. It will be a great advantage if housekeepers can be persuaded to so arrange their curtains that they can be drawn aside and left to drape the window frame instead of the window, and if they will let the shade be wholly drawn and expose the entire window instead of the usual custom of obscuring the upper half, this will be a great gain. If need be, the shades could be lowered a few inches, and thus signify that one refuses to follow the custom from some settled purpose.

Shade trees are very beautiful and very desirable if properly placed; but they ought not to be permitted near enough the dwelling to interfere with sunshine and light. The same is true of climbing vines. These give a most pleasant effect to a landscape, but they ought not, under any circumstances, to be allowed to encroach upon windows. It is scarcely possible to overstate the benefits that come from permitting the sunshine and light freely to enter the rooms,

or to overstate the unwholesomeness of trees and vines as well as shades which exclude the light.

Light furniture and especially light walls and ceilings considerably increase the amount of light in our dwelling houses. Whether kalsomining, paint, or paper be used, the lighter the better for purposes of health.

This applies with considerable force to the color of clothing. Fashion has decreed that our clothes must be sombre. This is especially true of men's clothing, and one cannot appear, without attracting unpleasant attention, in light-colored clothes excepting in a brief holiday season. The dark cloth absorbs the rays of light, and the surface of the body is kept in darkness. Light clothing—thin and very porous as elsewhere explained—not only permits air but light as well to reach the surface of the body.

Except in tropical climates no dwelling house is complete without a sun-room. A large veranda, preferably open on the east, south, and west, is a luxury in summer-time and a health-promoter as well. If a portion of such veranda is enclosed by glass for the autumn, winter, and spring, the time is doubled during which the veranda is made attractive and comfortable. The temperature in this glass-room during sunshiny weather is from 25 to 35 degrees warmer than outdoor air. There is much of the time in temperate climates when the temperature ranges from 30 to 40 degrees, and at all such times with full sunshine

the glass-room has a more delightful warmth than is obtainable by artificial fires. Of course, when it is necessary to keep the door closed, one is deprived of the outdoor air. But at such times one can sit in the sunshine and be invigorated by its rays even better than in warm weather, as the heat of summer is usually quite enough without the direct rays of the sun. Even when the outdoor temperature ranges near to zero and there is bright sunshine, the invalid will be benefited by sitting in this room and protected preferably with light-colored clothing and wraps. Here there are no carpets, rugs, or curtains to gather dust, and no shades to obscure the light. If this glass-room be provided and occupied, it will be an aid to the invalid in regaining health, and it will help to insure the vigorous from becoming ill.

COOKING.

Since the needs of our bodies demand a due proportion of fruits and watery vegetables, it becomes a matter of great importance that we learn how properly to prepare these foods for the table. Fruits, fortunately, are largely eaten without cooking, and when so eaten we are assured, if the fruits are thoroughly ripened, that we are getting all the desirable elements which they contain. Moreover, when fruits are cooked they are usually served in their own juices. There are not many cooks who will stew prunes, raisins, or any of the abundant dried fruits in considerable quantities of water and pour away this liquid when the fruit is supposed to be sufficiently cooked. Unfortunately, this is precisely what is done in the preparation of vegetables. Tomatoes have many resemblances to fruits, and this vegetable is not usually wasted by the addition of water in cooking and then draining this water off and throwing it away. But spinach, cabbage, turnips, carrots, parsnips, beets, and like vegetables are usually boiled in water until thoroughly cooked. When this is accomplished the larger proportion of food-salts—that portion of these foods which is of supreme value—is dissolved into the

surrounding water, and when this is poured off these salts are entirely wasted.

A good method of cooking spinach is to place it in a covered stewing-pan—after it has been well washed and all dirt and grit removed—over a slow fire at the beginning. The juices of that portion of the leaves next to the fire are soon expelled, when the vessel can be placed over a hotter fire, and soon there will be enough accumulation of the juices of the vegetable to withstand a hot fire. This vegetable needs to be thus stewed in its own juices until it is reduced to a soft and compact mass and the water is sufficiently evaporated. Add a liberal quantity of fresh butter while the vegetable is hot, and it is ready to serve. Cabbage may be treated in the same way after it has first been shaved into thin slices. It may be seasoned with butter or with cream or milk while cooking. These vegetables, as also turnips, carrots, parsnips, and the like, are equally wholesome when placed in a steamer and kept over boiling water until thoroughly cooked, care being taken that none of the juices are wasted, and that these juices are served with the vegetable. It will be found that when these vegetables so cooked are seasoned with a liberal supply of fresh butter they are palatable and satisfying without the addition of common salt. One who has been accustomed to using large quantities of salt will notice its absence from even these tasty vegetables for a time, but he will very soon find that he gets a distinctly better relish

with these vegetables unsalted. Potatoes, containing as they do a superabundance of potash with scarcely any soda or lime, are distinctly flat and tasteless without salt. Matured peas and beans are also very rich in potash and very deficient in soda and lime, and are also insipid without the use of salt. On the other hand, very young green peas and very young beans in the pod (known variously as kidney beans, French beans, and string beans) when seasoned in their own juices with fresh butter are entirely palatable without salt. The reason for this is, no doubt, because these immature products are rich in sugar and food-salts; the sugar is converted into starch by the process of ripening.

The albumen of meat, poultry, fish, etc., is a valuable element in our dietary. When these foods are heated to the boiling point the albumen is rapidly solidified and is thereafter insoluble. If a large piece of meat is immersed in rapidly boiling water for a few minutes, the albumen in the surface of the meat becomes hardened. This can then be placed in an oven or over a slow fire with the addition of a few spoonfuls of water only, and if the joint then be slowly cooked, the inner portion will be found to be juicy and appetizing. This is because the albumen of the inner portion has not been destroyed by too high a temperature. After the meat has been immersed in the boiling water for a few minutes, it is equally well prepared by being placed in a steamer and left until the entire

portion is thoroughly cooked, when it can be served with its juices. If a joint is placed in a very hot oven at the outset the hardening of the albumen takes place, and if the oven is then allowed to cool down considerably, the remainder of the joint will be cooked at a low temperature, and will be found to be tender, juicy, and far more wholesome than where the albumen is hardened by a high temperature.

A beefsteak or mutton chop is wholesome when prepared in a similar manner. A frying-pan is to be placed over a hot fire, quite free from any butter or water. When it is thoroughly hot add your steak and allow it to remain until the surface is seared over; when this is done, turn the steak over and sear the opposite surface. Then cover the meat and place the frying-pan where the meat will simmer, and allow it to remain until the meat is cooked to the centre, when it will be found to be juicy and tender compared with a steak that has been wholly cooked by a high temperature.

A striking illustration of the advantages of slow cooking is seen where eggs are properly boiled. Place the eggs in a china or earthenware bowl or basin that has been previously heated, and for one egg add a quart of boiling water—for each additional egg a pint of water or more—care being taken to see that the water is really boiling. Cover the eggs, and allow them to stand eight, ten, or twelve minutes, depending on how hard they are to be cooked. In this way

the yolks of the eggs will be cooked enough, while the white remains a soft custard. These eggs are best seasoned when broken into a warm cup with a liberal amount of fresh butter added while they are still hot, and like milk, and those vegetables containing a large portion of food-salts, no addition of common salt is needed.

While too much cooking is distinctly damaging to meat, the reverse is true when we come to bread and cereals. One great advantage in baked bread or boiled oatmeal as compared with raw flour or grain is the fact that the starch capsule is broken, and the digestive juices are thus allowed to come in contact with the starch. A still further advantage is obtained in what the Germans call Zweiback, or twice-baked bread. Bread as ordinarily baked may be cut into slices and placed in a slow oven until the slices have become slightly yellowed to the centre. If the oven is too hot the surface becomes too brown, and the nutrition is damaged. This process insures the conversion of the starch of the bread into dextrine, a form of sugar. The starch of bread, eaten as ordinarily baked, is converted within the system into dextrine and ultimately into glucose or fruit sugar, when it becomes soluble and assimilable, and ordinary bread, when twice baked as above, becomes a predigested food. Bread so prepared is much more easily digested, causes distinctly less strain upon the vital powers, and is much less unwholesome. At the same time, no improve-

ment is made in the nutritive material of the bread itself. It is still deficient in soda and lime, and still overloaded with phosphates. Common toast is thus seen to be a decided improvement upon ordinary bread, and we now understand why for generations it has been chosen for invalids. A portion of the comparatively indigestible starch of the bread has been converted into sugar. At the same time, bread, as ordinarily toasted, is only improved for a portion of the surface, the interior of the slice not having undergone much change.

An invalid, an acquaintance of the author, who for many years suffered from dyspepsia and indigestion, found that ordinary bread, which he could use but sparingly and with considerable digestive difficulty, became relatively wholesome when it was baked five to six hours instead of the usual hour or an hour and a half. The starch of the outside of a loaf of such bread is wholly converted into dextrine. The starch of the inner portion of such a loaf, although not so distinctly changed in color, is still largely converted into dextrine by long cooking, and the entire loaf may be said to be predigested bread. The diet of my friend has for years consisted chiefly of this dextrinized bread, with milk three times a day, sometimes an egg, and a little fruit. He has greatly improved his health. The conversion of the starch into dextrine lessens the strain of digestion, and the milk furnishes the food-salts necessary to keep his blood in normal condition.

ACUTE ATTACKS OF ILLNESS.

Sufferers from chronic diseases usually have crippled digestive powers, and much the larger share of acute attacks of illness are caused by a stoppage of the digestive functions.

During the past summer an ex-governor of the State of New York, and a man occupying a dominant place in enterprises centring in Wall Street, left the city for a few days' rest and recreation. He joined his friends in a fishing yacht, and passed some hours in the sun and heat engaged in his favorite pastime. Returning to his hotel tired and hungry, he regaled himself with liberal helpings of ham sandwiches.

As Dr. Biggs said in his paper read at the New York State Medical Association, "Hygiene is a subject that is not studied and not taught in this country. . . . The natural result is that the medical profession, as a class, is very deficient in a proper knowledge of the subject, or of any appreciation of its importance; . . . and the laity knows still less than the medical profession." If the governor had been acquainted with the most rudimentary requirements of hygiene in the matter of diet, he would have taken a very light instead of a large portion upon his return to his hotel.

He also would have known that ham is difficult of digestion, except to those possessing vigorous powers, and that ordinary bread is not nearly so digestible as toast or thoroughly baked biscuits. If the governor, equipped with this knowledge, had taken a light repast of easily digested foods, there is every probability that there would have been no attack and no illness.

But after the mischief is done, after large quantities of indigestible food have been thrust into a tired stomach, and there is resultant stoppage or paralysis of digestion, what has hygiene to offer? Had a stomach pump been at hand, and the stomach fully emptied of its contents, there would have been a probability of recovery. The stomach pump requires a physician for its manipulation, and a physician also who has made a special study of hygiene. There is, fortunately, a simpler method, and one that is more efficient. Hot fomentations should have been immediately placed at the seat of pain; and there were undoubtedly violent paroxysms of severe pain. The most efficient treatment required in such cases is that the patient be persuaded to take half a pint of very hot water every two or three or five minutes, until ten or twenty or thirty have been taken in rapid succession, or until the contents of the stomach have been ejected. In milder attacks of indigestion there are often severe pains which will be wholly overcome by five or ten or more half-pints of very hot water,

and without the patient vomiting. When the pain is quelled and a vigorous perspiration is obtained, it may not be necessary to continue the administration of the hot water to the point of vomiting. But in severe cases like the one under discussion no amount of hot water will quell the pain until vomiting is induced. After the patient has taken five or ten half-pints he will insist that he cannot take more; that his stomach is full, and that it is impossible. The attendant must not pay the slightest attention to this assertion. A perseverance in taking this water within the time stipulated is sure to result in emesis in thirty or sixty or ninety minutes, and two or four or six quarts of water—and more if necessary—are sure to provoke thorough vomiting. By this time the circulation has absorbed a considerable portion of the hot water. The patient is likely to have broken out in a profuse perspiration, and, if the pains have subsided, all the patient then requires is rest. However, if, after a thorough emesis, the pains continue, fomentations must be again applied and half-pints of very hot water again administered in rapid succession, until a second profound vomiting, or until all pains have ceased.

This seems like a very simple matter, and so it is. It is in fact so simple that if this course had been followed in the illness of the ex-governor, and he had fully recovered in a few hours, neither he nor his attendants would have been likely to have any suspicion that a great crisis had been averted.

That which usually happens in similar cases is very different. A physician is hurriedly summoned; not one physician in a thousand has any knowledge of the value of hot-water emetic in such an attack; the patient is writhing in agony, and a hypodermic injection of opium is resorted to. The drug quells the pain, but it at the same time paralyzes the nervous system. Instead of an assistance to nature it is such a handicap that in many instances death necessarily ensues.

The method of emptying the contents of the stomach by the administration of large quantities of hot water has very considerable advantages over the merely mechanical emptying of the stomach by a pump. The heat of itself is a great stimulus to the vital organs; the continual absorption of the water into the circulation overcomes all tendency toward congestion; and the perspiration that follows the ingestion of hot water guarantees great activity to the pores. There is considerable tendency also to cause a movement of the bowels, and it is readily seen that a method that guarantees against congestion and stimulates the entire excretory system gives the best possible conditions for the recovery of the patient. Added to this the fact that a perseverance in taking large quantities of hot water will soon cause a complete emptying of the stomach, we can understand the signal benefits that follow this system when vigorously carried out.

Consumptive and emaciated patients need a super-

abundance of food and do not need fasting. There are, however, many chronic invalids who have a surplus of fat, but who are suffering from serious ailments. In such cases the first demand of hygiene is that all food shall be taken from the patient, and that an absolute fast of one or two or three days be enforced. The effect of such fasting upon the obese invalid is often as miraculous in its effects as the administration of a superabundance of food is upon the consumptive and the emaciated.

In attacks of illness extreme solicitude on the part of the patient or his friends is often a serious hindrance to recovery. The head of every family ought to be provided with a blood thermometer. It is not necessary to be a physician or a scientist or a scholar to be able to ascertain the temperature of one who has been attacked with illness. As long as the pulsation does not exceed 120 to the minute, and as long as the temperature is not raised beyond 102 degrees or 103 degrees, there is no occasion for solicitude if the simple dictates of hygiene are followed; and great numbers of people would be spared undue solicitude by this simple method of taking the patient's pulsation and temperature.

POPULAR HYGIENE.

The following quotations are taken from an article in the Los Angeles Sunday Times, for November 19, 1899, under the caption "Suggestions for Acquiring and Preserving Health":

"In short, while we find that surgery and hygiene are getting to be more and more exact sciences, on the other hand the intelligent investigator is forced to the conclusion that, as far as therapeutics is concerned, or the administration of drug remedies, fashions in medicines change about as frequently as do fashions in bonnetism, and that the medical world is about as badly mixed up on this subject as it was in the middle ages, with the big improvement that so many intelligent physicians nowadays set little store upon drugs and give much attention to hygiene. In fact, it may be said that the entire trend of modern medicine is toward a plainer realization of the healing power of nature. . . .

"If Mr. Hobart had followed the quiet life which he led at Paterson, it is the belief of the physicians that he would be a well man to-day. He is suffering, as many popular and eminent men have done, for social success

in Washington. No Vice-President of the United States, for a generation, has been as popular as Mr. Hobart. No man in Washington has been in such constant demand as a guest at the elaborate twelve-course dinners, which are there the custom of the rich. Mr. Hobart said at the end of the last session of Congress—a session which lasted from the first Monday in December until the 4th of March, only ninety days—that he had attended eighty-nine dinners in succession. While he was always temperate in the use of wines, he was as fond of good things to eat as he was of good fellowship and good society; and the mortal illness which has overtaken him is another proof of the fact, so often stated by physicians, that no man, no matter how vigorous, can long survive if he allows himself to eat twelve-course dinners every night. Mr. Hobart's strong constitution was equal to any amount of work, but not to the epicurean life of Washington. The eighty-nine twelve-course dinners, of which he spoke as an incident in his life, were really his death-warrant."

The disregard of the laws of hygiene was not only manifested in Mr. Hobart's mode of life, but in his last illness as well. About a fortnight before his death the public was informed through the newspapers that Mr. Hobart had made a surprising rally, and all his symptoms were much improved. A few days after the public was again informed that Mr. Hobart was

improving, and that his physicians were greatly pleased because of his ability to take three meals per day of solid food! It was not surprising a week later to read of his death.

This instance of a non-hygienic life and the resulting death are not as exceptional as first appears. Only a relatively small number eat twelve-course dinners; but life-shortening errors in diet and regimen are universal. When the inevitable breakdown comes death is attributed to the incidental, and the primal cause is not understood and is wholly ignored.

A CONCRETE EXAMPLE.

As I was writing the closing pages of this book I had the good fortune to attend an afternoon lecture at the Brooklyn Institute, given by a young man of perhaps thirty-five or forty years of age. The subject was upon Goethe and his works, and the audience was treated to a most scholarly and philosophical analysis, and, incidentally, we were instructed and entertained by a brilliant criticism upon and comparison between some of the world's great poets.

This young man was emaciated, anemic, and poorly nourished, clearly showing that his digestion was weak and not performing its normal functions. I could see that in the usual course of events, if he escapes consumption, he is yet destined to have his life and usefulness abridged, as was Carlyle's and as has been Herbert Spencer's by the same cause.

When I meditate upon his brilliant powers and great usefulness—his work cannot fairly be called anything less than a beneficence—I often find myself in deep regret that I am powerless to prevent this needless suffering and premature ending of a brilliant and useful career. I am the more rebellious when considering the utter uselessness of it all, and how easily

such men could be put upon the road to health, vigor, and long life. They ought to have an abundance of pure air night and day; to be provided with both inner and outer porous garments; to abstain from tea, coffee, tobacco, and spirits; as a habit to refrain from potatoes and starchy vegetables, cereals, and pulses; to use a plentiful supply of watery vegetables with a minimum of salt and an abundance of butter; to permit themselves a limited amount of bread, preferably twice baked, and to take not less than two quarts per day of whole milk, unsterilized and rich in cream. They ought to continue this amount of milk until they entirely overcome all emaciation, and thereafter to take such an amount of food as would keep their bodies at normal weight and gradually overcome dyspepsia. All these regulations ought to be followed for the reason that health is the greatest material blessing, and no stone should be left unturned that might contribute to the best possible vigor of body and mind.

But all these changes would involve the breaking of many habits—a very difficult thing, and one not often accomplished. Bearing in mind this difficulty, I would expect to make only a small change at a time. I would recommend the average, overworked, emaciated student to begin with a change in his diet only, and that would be simply to take not less than three pints of rich, unsterilized milk per day, one at each of his usual meals. This single change would revolu-

tionize the state of his health. It would probably overcome his emaciation; he would be adequately nourished; he would soon be able to perform the work without strain that now he often finds onerous; being so well nourished on the milk, he would gradually and of his own accord considerably decrease the amount of bread, meat, and cereals he is now probably taking; the large amount of water in the milk would soon lessen the amount of other fluids taken at meals; the milk would furnish the requisite alkaline salts to prevent the present abnormal composition of his blood, and would therefore insure him against any considerable deposition of uric acid and its attendant evils.

Why is it that earnest, enlightened, and able men and women cannot be persuaded to try so simple an experiment and one fraught with such desirable results?

1. The first obstacle is the unscientific method by which many of our ablest minds approach the solution of new problems. In the inductive method we first observe and scrutinize facts, and then deduce a general law from these observations. In the deductive method our conclusions are arrived at and deduced from the contemplation of (supposed) general laws. Take the question which I have above proposed—as to whether so simple a change in diet as the one proposed can be relied upon to bring about so beneficent a return to health. If the proposition be made to the average scholar to try for himself the efficacy of the

milk diet, and if his habit of mind is like the large majority of his class, he would, from his general knowledge of physiology, deduce the conclusion that it is quite impossible for so simple a measure to bring about such revolutionary results, and therefore absurd to expect such results or to waste any thought or effort upon its investigation. He would adopt the deductive and not the inductive method. If, however, this gentleman should prove to be the one in a thousand he would first satisfy himself as to the verity or falsity of the alleged facts. He would put himself into communication with those who have made similar experiments. Having verified the correctness of these facts, and following the true scientific method, he would conclude that the laws of physiology are no respecters of persons; that what has been done for others, in similar conditions to his own, would likely be repeated in his own case, and he would conclude to make the experiment.

2. We are living in an age of experts. Developments of science are so manifold that a scholar is barely able to keep abreast of the times in his own specialty, and he feels obliged to depend upon other experts to furnish him opinions in other departments of science. He concludes it is the business of his family physician to be posted upon all questions relating to healing; and if by any chance the scholar of whom I have been speaking should have his attention called to the wonders which are said to be accom-

plished by the milk-cure and open-air system, he would call on his physician to decide this question. This authority usually settles the matter adversely to any innovation. To be sure, there are open-minded physicians like the medical director of St. Michael's Home, and, fortunately, the open-air treatment is becoming very popular, and milk is gradually winning its way to recognition in the profession as the one food furnishing most nourishment with least digestive strain. All the same, health-seekers usually will do much better if they will make such investigations for themselves. Harvey's theory of the circulation of the blood is now the bedrock of physiology and therapeutics, and Harvey has left on record the statement that he did not find one physician over forty years of age who was able to see the truth of his theory. Dr. Harvey came to London fresh from his Italian university with his medical degree and with his great discovery. He at once began making dissections and vivisections to demonstrate the correctness of his theory, and invited his fellow-physicians to witness these demonstrations. Instead of attending, they deduced from their supposed knowledge of general laws that Dr. Harvey's facts were impossible, and these gentlemen of science—among them the foremost of their day—assumed the same attitude toward Dr. Harvey's discovery that this gentleman's physician—unless he, too, should prove to be the exceptional one in a thousand—would assume toward the advantages

which are likely to come to the emaciated, the anemic, and the dyspeptic from the adoption of a large portion of milk as a permanent factor in diet.

As evidence that I am justified in the foregoing conclusion I must ask the reader to read the extract from Dr. Herman Biggs, which will be found opposite the title-page of this book, and to bear in mind that Dr. Biggs is not a lay enthusiast running a tilt at the medical profession, but a regular physician in good standing and addressing his fellow-members of the New York Medical Association.

Dr. Biggs read his paper in the afternoon session. In the morning of the same day, Dr. I. D. Crothers, of Hartford, Connecticut, read a paper on "Morphinism Among Physicians." The New York Sun, in commenting upon Dr. Crothers's essay, said:

"The paper which excited the most interest was Dr. Crothers's essay upon 'Morphinism Among Physicians,' in which he declared that the use of morphine is a growing evil in the medical profession, and cited percentages calculated to move the lay mind to uneasiness and distrust in the matter of calling in . . . the doctor."

It is not so much to the purpose that a percentage of physicians are victims to the morphine and cocaine habit, and for this reason disqualified to give expert advice on a treatment by hygiene. It is the fact that the medical profession as a whole is unaware of the

deteriorating and destroying effects of these and similar poisons, even if used in "moderation so called," to quote from a report of Dr. Crothers's essay. I suspect from that expression that Dr. Crothers is aware that such poisons—morphine, cocaine, and alcohol, to which may be added tea, coffee, and tobacco—cannot be habitually used, however moderately, without injury. The medical profession, as a rule, has not given this subject any thought or study. As Dr. Biggs says: "The medical profession as a class is very deficient in a proper knowledge of the subject (hygiene), or of any appreciation of its importance." It is for this reason that any one going to his physician for an expert opinion regarding the value of any treatment in hygiene is almost sure to be misled.

It should, however, be stated that this failure on the part of the medical profession is not because the average physician lacks intelligence or earnestness. No other profession can produce so large a proportion of its members who will so freely serve the poor and needy at so great a self-sacrifice; but the medical profession is chiefly engaged in studying disease, not health—symptoms and remedies rather than hygiene and regimen.

A large majority of men and women who have arrived at early middle life—especially in cities and and among those engaged in sedentary pursuits—show to the health expert unmistakable symptoms of premature decay or premonitory symptoms of break-

ing down. One may be emaciated and another in equally frail condition may be taking on too much fat; both these conditions arise from a weakened digestion and assimilation, and from an abnormal composition of the blood. Before becoming aware of the importance of milk in diet, I was of opinion that the emaciated condition was the more difficult to overcome. A diet of meat and starchless vegetables in rightly chosen amounts will reduce obesity and still leave the patient sufficiently nourished; whereas, without the use of milk, I have had much greater difficulty in putting flesh on the emaciated than in reducing obesity. The milk diet works a transformation; emaciated persons soon put on the needed flesh and are at the same time greatly improved in health and vigor. All obese persons must use milk with great caution, and some of them cannot safely take more than one-half pint to one pint a day. Inveterate cases must be confined to restricted quantities of meat and starchless vegetables.

My chief aim is to call attention to the fact that most adults are in frail condition from errors in diet, and at the same time they have no suspicion that their vigor is being undermined. They are apt to consider themselves in fair health and to attribute their recurring difficulties to overwork or other causes than a bad diet. One person in such condition is likely to think that his or her brain is too large or too active for the body—this delusion is of frequent occurrence

—and another is of opinion that his or her condition is peculiar and idiosyncratic, and another has some other delusion. There can scarcely be found one who is aware when one has "caught a cold" that the real source is not the damp day or wet feet or other exposure to which the attack is usually attributed, but that the true cause is to be found in the excessive quantities and wrong kinds of foods and drinks which clog the liver, kidneys, bowels, and skin, and overstrain the nervous system.

The average man and woman is sure to account for attacks of illness on the hypothesis of overwork or exposure to the weather, or to heredity, or to any but the real cause; and even when our best educated and most thoughtful men and women find themselves attacked with influenza or la grippe, they rarely recognize the fact, well known to physiologists, that if such persons were in a normal and vigorous condition their vital forces would repel germs that in other conditions cause serious and even fatal attacks of illness. If by any chance such a scholar or invalid as above referred to should be prevailed upon to adopt the night-and-day-open window, wear porous clothing, and not too much of it, and to add three or four pints daily of unsterilized milk to his dietary, he would, after a year or two of this regimen, be in no danger from la grippe or typhoid fever or similar attacks caused by poison germs.

CONCLUSION.

The reader who has scanned carefully the foregoing pages is in possession of the secrets of health. He perceives that outdoor, free, and uncontaminated air is indispensable if normal vigor is to be gained and maintained. The Black Hole of Calcutta represents zero in ventilation, and with such conditions the historic slaughter was inevitable. The opposite pole is seen where patients in sanatoria conducted on Nordrach lines sleep in rooms where the windows have been removed from the casements and the inmates breathe the outdoor air. The Black Hole represents midnight darkness, and the recently made popular open-air treatment represents the midday sun. Between these extremes there are numerous gradations. It is sure death at one end and full life at the other. As we approach the Black Hole, as we more and more close our bedrooms to the "night air," and close our day rooms against a "draught," we more and more encourage consumption, we insure an insufficient oxidation of our food and lay the foundations of dyspepsia in abnormal blood, and thus easily drift into the various forms of acute and chronic diseases.

Next we have learned that nourishment is first and

foremost; if possible, even more indispensable than fresh air. We have learned that with consumptives and all emaciated patients a superabundance of food is requisite; we have learned that with very delicate and critical patients an exclusive diet of new milk, not sterilized, and warmed to the temperature of the blood, gives the very best results; and that the sanatoria on Nordrach lines have found it necessary to insist on a pint of milk at each of the three meals. We have learned from Dr. Lahmann why milk is so necessary—that it contains the requisite food-salts necessary to keep the blood in normal condition and composition, and Dr. Reinle has shown us empirically that milk is not only the most complete single food, but that it is also the most easily digested and assimilated.

We have learned that absolute rest is a prime factor in this new and beneficent treatment; that rest economizes and stores up vitality, which enables the invalid to digest and assimilate a large amount of food and to gain weight and strength in a marvellous manner. We have learned that as soon as we have reduced temperature and gained some strength, a gradually increasing exercise—preferably in the open air—is a further prime factor in regaining health.

And what do all these facts teach us? Simply that obedience to the laws of hygiene and physiology is all that is necessary for the restoration and maintenance of health. The use of medicine is year by year decreasing. The Mother Superior of the St. Michael's

Home at Axbridge, when showing me through her admirably managed sanatorium, took me into the dispensing room and pointed out the rows upon rows of shelves filled with bottles and medicine. She remarked that under the old system, when they coddled their patients and kept them in warm rooms on a spare diet, that there were usually five different medicines prescribed to each patient and administered daily; now no medicines are given.

The medical profession is opening its eyes to the prospect that incomparably better results are obtainable upon the Nordrach open-air system absolutely without medicines of any kind than have ever been accomplished by the most careful administration of remedies. Physicians and laymen have need to learn that a similar treatment, by exclusively hygienic means, holds equally good with nearly all diseases, acute or chronic.

It is gratifying also to note the progress made in medical ethics as well as in medical science. Heretofore it has been held that a physician must confine his contributions to strictly medical journals, and that these essays must be written in technical language—that a physician contributing an essay on medical topics to a popular journal and written in popular language is guilty of "infamous conduct." The difficulty of riding two horses is proverbial; and now that the foremost physicians have united under the distinguished chairmanship of the Prince of Wales in the

formation of a society whose avowed object is "the circulation of pamphlets and leaflets *setting forth in plain language* (the italics are mine) the results of scientific investigation . . . the co-operation with other societies having for their object the promotion of public health, and the co-operation of the public press," it is easily seen that the profession cannot longer consistently oppose "the co-operation of the public press," and the "setting forth in plain language the results of scientific investigation" of other diseases. To be sure, at the present time a member of the London College of Physicians is forbidden to organize a sanatorium for the treatment of acute or chronic diseases, and is even forbidden to hold stock in such an enterprise. Perhaps the original impulse for this prohibition may have been the fear that with physicians fortunate and forehanded enough to be able to equip a sanatorium with better facilities for the cure of a disease than can be had in a private practice, there is a danger of such sanatoria monopolizing much too large a share of general practice and of leaving much too small a share to those physicians not so fortunately circumstanced. But we can confidently look forward to seeing all this changed in due time. I am hoping that all those gentlemen—among whom are some of the foremost lights in the medical profession—engaged in trying to induce the Government to equip sanatoria for consumptive patients drawn from the poorer classes, and who are especially interested in

such sanatoria as being the centres of a propaganda that shall teach the laws of health to the people, will be able to see that the object of this book is but to extend and further the treatment and results which those gentlemen have so much at heart, and that they will readily recognize that every household where the consumptive patient is restored to normal vigor, by following the course of treatment herein set forth, will also become a centre of a propaganda for popularizing and extending a knowledge of the laws of health.

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