REMARKS

ON THE

OPEN-AIR CURE OR HYGIENIC TREATMENT OF CONSUMPTION.

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THERE is no doubt that the introduction of the so called "open-air" treatment of consumption into English practice has conferred, and probably will confer, great benefits on phthisical patients, and it is not improbable that, in spite of our changeable climate, it will be given a fair trial, especially as English people as a rule have no insuperable objection to fresh air.

For a long series of years it has been advocated by many, including myself,¹ and with certain modifications is capable of being applied to even severe and highly-pyrexial cases. Its general principles are:

1. As much exposure to fresh air as possible.
2. An abundant dietary, limited only by the assimilative powers of the patient.
3. Freedom from all excitement, with repose of mind as well as of body.
4. Exercise regulated to the strength and requirements of the patient.
5. Careful medical supervision of every detail of the invalid's daily life.

A recent winter visit to several of the German sanatoria enabled me to judge of how far these principles are put into practice at the various establishments.

There are two systems in vogue in Germany:

1. The Dettweiler system, a modification of Brehmer's original one carried out at Goerbersdorf, but not insisting on the same amount of exercise, the patients passing most of their day in the well-known *Liegehallen* or shelters, where they are always under the full influence of the air. Falkenstein, Hohenhonnef, Dr. Turban's Sanatorium at Davos, St. Blasien, and others are carried out on these lines. In most of them there is a certain amount of social intercourse, and some attention is paid to the wants of the mind as well as to those of the body.

2. The Nordrach system, or that practised by Dr. Otto Walther at Nordrach, and recently described by Dr. Mander Smyth and others in these pages. It is claimed for Dr. Walther that he follows more in the original steps of Brehmer, and prescribes a large amount of exercise, chiefly walking. He does not approve of *Liegehallen*, which he christens "Quarrelling Halls," and maintains that if the patient is lying down, his or her own bedroom is the best place, and that all possible excitement should be avoided by complete solitude being enforced during the hours passed there.

EXPOSURE TO FRESH AIR.

In the large sanatoria this is carried out fairly well as far as the *Liegehallen* are concerned, where seven to nine hours daily are spent during the winter, and even more in summer; but the windows of the sitting-rooms and dining-rooms and even of the bedrooms are not always open as professed, partly because of stormy weather and partly from the unconquerable objection of Germans, who form the bulk of the patients, to fresh air in rooms, however well they endure it in the *Liegehalle*.

Of the *Liegehallen*, some of the best arranged are at Hohenhonnef, being roomy, of good height and depth, and placed for the most part out of all chance of draught or exposure to wind. There are different kinds for winter and summer, according to the amount of sunshine or shade required, and the extensive and beautiful grounds of Dr. Meissen's establishment lend themselves to good sites for these shelters on the wooded hills or in secluded dales.

The rotatory shelters of Falkenstein are very convenient, as always securing protection whichever way the wind blows. English patients take readily to these shelters, and are to be seen at Bournemouth lying out in all kinds of weather by

day, and in some cases sleeping also out of doors, in preference to inside houses.

It is sometimes urged that climate is of secondary importance in the treatment of consumption, and that, provided the proper principles of open-air treatment are carried out, any climate, and especially our own, will answer all purposes. But this is not so, for surely the great objects of the open-air treatment—namely, exposure of the patient to light and sunshine—can be best enforced where these elements abound, and not in a region where for months they are scarce.

It must be quite obvious to everybody that the climate, for instance, of Egypt offers more advantages for open-air life than that of Great Britain. If there is anything in Drs. Ransome and Delépine's researches on the influence of sunlight and air on the tubercle bacillus, it is to the effect that sunny climates are inimical to the parasite. It is generally found that the completeness with which medical directions are executed depends on the facility and ease of their execution, and it is far more probable that complete exposure to the atmosphere will be effected more cheerfully where nothing but pleasure and comfort is derived from it than where it is only carried out with the aid of persevering effort, but with more or less discomfort.

For years I have had this system carried out on the Riviera with great benefit, and in mountain stations it augments the great good to be reaped from the altitude. Nevertheless, it is a great blessing that the open-air treatment can be practised efficiently in this country also, as its advantages can be gained by all classes of the community, from the highest to the lowest.

AN ABUNDANT DIETARY.

There is very little doubt that large—and in many cases compulsory or induced—feeding is beneficial, but the question arises whether this would be possible without continued exposure to fresh air, though some physicians maintain that similar feeding can be practised in any hospital ward. Those who have witnessed the heaped-up plates of meat and vegetables disappear, as it were by command, at Nordrach, down the gullets of patients who would hardly be expected to swallow half the amount, and who do not apparently suffer from dyspepsia therefrom, cannot help feeling that the digestive powers of consumptive patients are not so weak after all, and the assimilation of such quantities of food is proved by the enormous gains of weight. At the Brompton Hospital the gain of weight is very large, but gains of 3st. or 4st. are not common. Dr. Walther reports that he has known a gain of 100lbs. in one patient.

The practice as regards meals varies at different sanatoria. Some provide five meals a day, that is to say they supply two intermediate meals, one between breakfast and early dinner, and the other between dinner and supper; but others, like Nordrach, have three meals only, and discourage all intermediate feeding. The food is generally excellent, the meat tender and well cooked, with plenty of vegetables, the bread good, and the milk—of which three to six glasses seem to be taken every day—is supplied from cows kept in the establishment or in well-inspected dairies. The tendency is towards a plainly-cooked English dietary rather than a richly-sauced German one.

FREEDOM FROM EXCITEMENT AND COMPLETE REPOSE OF MIND.

Most of the German sanatoria lay great stress on the importance of this, and forbid the various forms of amusement so common in health stations, especially in those in the High Alps. Naturally in pyrexial cases and in cases of advanced tuberculosis, and where there is great bodily and mental exhaustion, complete repose, and even detention in bed, is desirable. But there is a large class, perhaps the majority of consumptives, who are given to brood over their malady, and to whom distraction in the form of mild excitement and amusement is most beneficial. If their bodily condition allow of it, social intercourse, music, and even games do good by diverting their minds from their own symptoms, and teaching them to take an interest in their surroundings. The only objectionable part is the custom of patients at sanatoria and in hotels of discussing their symptoms; but this ought to be strictly forbidden, and only the doctor and nurse should receive such confidences. The system of solitary confinement

to the bedroom, except at meals and during walks, does not seem to be desirable in any but severe cases, and tends to over-reading and excessive subjective and melancholy reflexion. It seems to me that in winter evenings the interval between dinner, or supper, and bedtime can be profitably spent in listening to music, in playing games, or taking part in conversation on the topics of the day.

EXERCISE REGULATED ACCORDING TO THE PATIENT'S STRENGTH.

This, to my mind, was the most important part of Brehmer's original system, and has been on the whole well carried out at the high altitude stations. No sanatorium deserves the name which is not provided with a series of well-graded paths—on the side of a hill is best—with abundant resting places, and the amount of walking taken daily by consumptives ought to be regulated by the medical attendant as definitely as the doses of medicine he prescribes. By degrees even weakly patients gain heart and lung power, and by increasing the use of their muscles are able to walk five and ten miles at a stretch. One of Dr. Walther's patients told me that whereas during a winter at Cannes he never could go beyond the hotel garden, he now walked five, and sometimes ten, miles at Nordrach. We must not forget, however, that the Schatz Alp at Davos has long been a first-rate pulmonary gymnasium for consumptives. The authorities of the German sanatoria do not appear to recognise other forms of outdoor exercise than walking, and here-in they commit a grievous error, especially with English patients, for though walking is an admirable exercise it is somewhat fatiguing and monotonous, and it is often advisable in the case of consumptives to bring into action a variety of muscles such as those employed in skating, riding, cycling, and in sundry games such as lawn tennis and golf.

Our Teutonic friends are not so keen after games as we are, and often I have watched them at Davos pursuing their daily grinds in a disconsolate, half-hearted manner, and sometimes gravitating to the *café*, while the British consumptive at St. Moritz and Davos is stretching his legs on the rink or trudging after the ball in golf, or making up a set at lawn tennis. It may be objected that such sports exhaust the phthisical patient, and that there is a risk of hæmorrhage or pyrexia. To which I could reply that they are, of course, only to be allowed by medical order in appropriate cases, and physicians such as Dr. Holland of St. Moritz, Dr. Ruedi of Arosa, and Drs. Hugard and Buol of Davos, are accustomed to fix well-defined limits; but in the large class of early cases, where the lesions are limited and unaccompanied by pyrexia and hæmorrhage, I have witnessed their good results in hundreds of patients, whose muscles have developed, whose thoraces have expanded, and in whom the healthy portions of the lungs have hypertrophied under their judicious use; their burnt-brown complexions presenting a strong contrast to those of some of the patients I saw this winter at the German sanatoria. Therefore while in severe cases open air with recumbent attitude ought to be the rule; where the tuberculous lesions are quiescent, and the constitutional forces are good, exercises of various kinds are highly desirable, and produce a healthy tone of body and mind.

SUPERVISION OF EVERY DETAIL OF THE PATIENT'S DAILY LIFE.

This is undoubtedly one of the secrets of Dr. Walther's

success at Nordrach, for that physician includes in his duties much that here would be relegated to nurses, and his presence at all the meals—at which he helps the patients himself, and insists on their finishing their rations—is certainly conducive to the execution of his orders.

Dr. Walther is a man of great determination, but he is also very painstaking and considerate. While he is firmly convinced of the imperative necessity of a patient's carrying out certain measures, he does his best to adapt these to individual infirmities. The question of the necessity of this frequent supervision in all cases depends on the patient. While to some acute or severe cases it is of great advantage, we must all know plenty of early or even chronic ones to whom visits three times a day from the doctor are quite superfluous, and who, if instructions be clearly given, do not require to be seen as often as once a day.

Some think at the present time that the only satisfactory way to treat consumptives is in a sanatorium or hospital, and that the correct treatment of tuberculosis is incompatible with life in hotels, pensions, or private families. Undoubtedly there are many and great advantages in sanatoria, but I can testify that excellent results can also be attained in hotels and pensions, and in family life. Such success, however, depends largely on the character and perseverance of the medical attendant, and the extent to which his orders are carried out. Anyone who remembers the *régime* of Dr. Ruedi carried out formerly at Davos, and the thorough manner in which

every patient was kept in hand, with the universal dread of his displeasure if any order was disobeyed, will see at once the effective treatment of consumption is possible even when the patients are scattered about among hotels and pensions. But the doctor must lay down strict rules, and be stern and uncompromising in enforcing them.

A WORKING-CLASS SANATORIUM.

In conclusion, I will say a few

words about an admirable sanatorium for consumptives in Westphalia, which, by the advice of Dr. Meisser, I lately visited, and which might well serve as a model for some of the sanatoria about to be built in this country.

It is the Volksheilstaette Helbrun, about five kilometres from Luedensheid, a small town in Westphalia, and is an institution founded for the benefit of the working classes by the neighbouring Commune of Altena (Altena Communalkreis), the money being advanced by one of the large German industrial insurance societies (Alters und Invaliditaets-Versicherung) at 3 per cent., and $1\frac{1}{4}$ per cent. being set aside as a sinking fund. Dr. Winkhaus, who accompanied us from Luedensheid, told me that the sanatorium was opened last August, and is capable of containing 100 patients, but at present holds about 70, all men. It stands on the southern slope of a wooded hill, well protected from north and east, facing south, with a fine view over the Homer range of hills. To the south the land falls gradually towards a little stream and lakes. The grounds, which are wooded with fir, oak, and beech, extend over 43 hectares, and are laid out in walks for the patients, so that shade is always attainable, and the largest *Liegehalle*, holding 50 couches for patients, is situated in the grounds.

The building itself is of brick, five-storeyed, the basement being devoted to storerooms, baths, and machinery, the first storey to sitting rooms, and the second and third to wards, with attics for servants. The accompanying photograph gives

Helbrun Working Class Sanatorium.

a general idea of the sanatorium, with the *Liegehallen* and the medical director's house. The spacious dining hall and the kitchens occupy a second building in rear of the first, and connected by a covered bridge. The doctor's house adjoins.

The *Liegehallen* stretch out on either side of the main building, and in these the patients lie for at least seven hours a day, with the feet encased in felt boots, and covered, in cold weather, with as many as six blankets, so that they always keep warm. The building is heated by steam pipes, and ventilation is carried on partly by an extraction system, but chiefly by open windows, which are practically never closed. They open partly by louvres and partly by door casements. The sputum is received into various glass and china spittoons, some placed not on the floor or table, but suspended from the walls at a height (about 4 feet) convenient for expectoration. It is emptied into a special receptacle, which passes directly into the principal sewer.

The drainage, like that of Hohenhonnef, is into a series of siphon cesspools one above the other, and thence into the valley below; and the water supply comes from a stream above the sanatorium, and is excellent.

The wards are $4\frac{1}{2}$ metres in height and with ample cubic and floor space, and they contain from two to six patients each. The internal fittings of the sanatorium are somewhat rough, and there is a lack of the comforts visible at the Brompton Hospital.

The patients are douched every day after breakfast, and other baths and massage are employed. They walk out four times a day in all weathers, commencing with half an hour at a time, and afterwards extending their walks to two hours, but they change their clothes if wet, and the rest of their time is spent, when not at meals, in the *Liegehallen*.

The meals are five in number, at 7.30 A.M., 10, 12.30, 3.30, and 7 P.M., and the dietary, good and varied, embraces meat twice a day, much bread, leguminous food and vegetables, with two litres of milk at least. Some of the patients eat more than 1lb. of meat at a sitting. Large gains of weight are registered, in one case 79lbs.!

Dr. Stauffer, the highly intelligent medical director of the sanatorium, told me that only first stage or tubercularisation cases of one or both lungs are admitted, and that cavity cases are as a rule rejected, and sent back to their own homes, and this must be borne in mind when the statistics come to be published. The patients did not present anything startling in appearance; they seemed fairly well, but there was a great deal of coughing and expectoration. According to Dr. Stauffer the average stay is three months, and the payment per head per day is $3\frac{1}{2}$ marks, which is either paid by the patient himself or by the commune to which he belongs. For the small wards, holding one or two beds each, a higher rate—5 marks—is charged. The hospital, with the land surrounding it, cost about £20,000, a large sum in Germany, but which shows that our neighbours are in earnest in carrying out a good work, though they are rather late in commencing it, for, be it remembered, that in the matter of consumption hospitals, London had four of these institutions thirty years before Berlin had one.

REFERENCE.

¹ *Lancet*, November, 1894; *BRITISH MEDICAL JOURNAL*, May 21st, 1898.

A "NON-COMBATANT" IN ACTION.—According to the *Boston Medical and Surgical Journal*, Assistant-Surgeon John W. Bransford, of the United States Navy, was advanced three numbers by the last Congress for the heroism displayed by him in the naval battle of Santiago. Surgeon Bransford was attached to the converted yacht *Gloucester*, which destroyed the Spanish torpedo boat destroyers, and having no wounded to demand his care he took charge of one of the rapid-fire guns with marked effect, his conduct eliciting the official praise of his commanding officer. Dr. Bransford had served eighteen years as an assistant-surgeon in the navy, but had afterwards resigned and was in civil practice when the war broke out. He promptly offered his services, and was given a volunteer commission. A Bill to appoint him as assistant-surgeon in the navy and place him on the retired list passed the Senate, but failed to receive action by the House during the more pressing matters which occupied the latter part of its session.

THE ETIOLOGY AND PREVENTION OF TUBERCULOSIS.*

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THE study of a disease known to be bacterial in origin resolves itself into a study of the life-history and habits of its causal agent—a task by no means so easy as at first sight it appears to be, for this study includes many collateral questions; and preventive measures involve, if they are to prove effectual, precautions varying according as the organism is purely parasitic, able to live and flourish only upon the living animal body, or is a facultative saprophyte, alternating its life in the body by one upon dead organic material, thence to be reintroduced to the body for a part cycle of its existence. The normal resistance of the body to this or that infection varies, too, enormously; and the mode of growth of the bacillus in relation to the body determines whether the disease is an acute, highly communicable, but transient attack, as with the specific fevers, or a less acute, less rapidly spread, and more lingering affection, as with tubercle and leprosy. The tendency of tubercle to spore formation also apparently plays no unimportant part in determining its persistence.

Nor must we forget that associated causes, at first sight of secondary consequence, may play an enormously important part in determining the extension of a disease purely bacterial in origin. Overcrowding, deficient ventilation, lack of cleanliness, malnutrition, dampness of site and dwellings, unhygienic conditions of life at home and of work in the workshop; indeed "poverty" in general, as involving these factors in its connotation, assists indirectly, but none the less effectually, in promoting the survival and transmission of the disease, and especially of its pulmonary forms. In this form of disease, too, hereditary malformation of the breathing apparatus, with deficient lung expansion and consequent insufficient air change and oxygenation, promotes and encourages the implantation of disease. Similarly, tissue injury following certain of the specific fevers predisposes strongly to infection with tubercle.

A point not to be disregarded is the susceptibility of the lower animals to any particular form of infection. Thus in dealing with measles, with enteric fever, or with cholera the problem is simplified by the fact that animals are apparently not susceptible, at least under natural conditions, so that our preventive outlook embraces solely the considerations connected with the transmission from man to man; in the case of measles directly through aerial transmission, in the other cases mainly through specifically contaminated water, but still in direct continuation from the first case, usually after a longer or shorter saprophytic existence out of the body in contaminated soil.

In two diseases at least—small-pox and diphtheria—their existence in greatly attenuated form in certain animals, the cow and the horse, has, so far from introducing an element of danger, pointed to quite exceptional means of prophylaxis and of cure; but in certain other diseases—as, for example, plague and tuberculosis—we are confronted with a marked tendency in certain animals to suffer, in common with the human race, from identical epidemic or endemic manifestations of a particular disease.

No more significant index of the increased difficulty of prevention arising from this fact can be imagined than the oft-repeated and constant history of the epidemic invasion of rats which precedes or accompanies, and no doubt precipitates, a general invasion of plague—a relation so constant that the endemic persistence of this disease over certain parts of Asia appears to be causally connected with the geographical distribution of a particular sub-family of rats (the *Nesokia*).¹

Now, tuberculosis is not only one of the most widely-spread of human diseases, but there is probably no other disease which affects the domestic animals so widely, and amongst susceptible domestic animals cattle are most prone to the disease, not only the lungs and pleuræ but often the abdo-

* Read at a meeting of the Bath and Bristol Branch of the British Medical Association, January 25th, 1899.