

**On the therapeutic influence of the southern climatic sanatoria,  
particularly with reference to chronic tuberculosis of the lungs / by Dr.  
Rullmann.**

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ON  
SOUTHERN CLIMATIC SANATORIA,  
WITH REFERENCE TO  
CHRONIC TUBERCULOSIS.

THEORY OF CLASSICAL ANATOMY

BY J. H. B. J. VAN DER BEEK

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ON THE  
THERAPEUTIC INFLUENCE  
OF THE  
SOUTHERN CLIMATIC SANATORIA,  
PARTICULARLY WITH REFERENCE TO  
CHRONIC TUBERCULOSIS OF THE LUNGS.

BY  
DR. RULLMANN,  
OF WIESBADEN.

LONDON:  
JOHN CHURCHILL, NEW BURLINGTON-STREET.

1861.



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THE following paper was read in abstract at the Congress of Physicians of the Middle Rhine, at Frankfort, on the 13th of October, 1860; and originally appeared in the *Würzburger Medicinische Zeitschrift*, 1861, Band 2.

The Author is indebted for the present translation to WILLIAM DANIEL MOORE, M.D., T.C.D., of Dublin, Honorary Member of the Swedish and Norwegian Medical Society.



The following paper was read in abstract at the 7th Annual  
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Member of the Swedish and Norwegian Medical Society.

ON  
SOUTHERN CLIMATIC SANATORIA,  
WITH REFERENCE TO  
CHRONIC TUBERCULOSIS,  
&c. &c.

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It is an ancient medical practice to send chronic patients, and especially those affected with pulmonary disease, to seek for cure or amelioration in a southern climate, and it has also long been a public custom to travel for health's sake to the south; yet until lately this has been accomplished only by a few. But since Europe has been intersected in almost every direction by railways, since the iron road has surmounted the very Alps, since steamships traverse the Mediterranean Sea in regular postal routes, enabling patients without danger rapidly and easily to take an extensive journey towards the south, hundreds of invalids wander annually, on the approach of winter, from the northern regions of Europe, to look for recovery in a more southern climate. It is chiefly the coasts of the Mediterranean which are thus resorted to by patients. Gradually certain places have come into repute, which, on account of their favourable local and social circumstances, are regarded as the most suitable for invalid stations, and which are now designated as southern climatic sanatoria. Of these the following should be placed in the first rank: Malaga, Hyères, Nice, Venice, Pisa, Rome, Palermo, Cairo, Algiers, Madeira. These are the places at present most visited and recommended, and with which we are medically best acquainted. In the second series those may be enumerated whose importance as climatic



sanatoria is as yet but little known, has only recently been suggested, or is by many altogether doubted; such are : Cannes, Villafranca, Mentone, San Remo, Naples, Messina, Catania. The climatic sanatoria of the Alpine regions, as Meran, Gries, can no longer be considered in like manner as southern sanatoria.

Though a southern climate has long been esteemed and used in medicine as a remedy, and although the southern climatic sanatoria have for many decennial periods been visited by a great number of patients, the state of medical knowledge as to these localities is still very defective, and special indications for the several places can scarcely be laid down. If we compare the knowledge we have with respect to them with that which we possess as to our medicinal springs and baths, we shall find that we know incomparably more and much more certainly about the latter, although even with respect to them medical indications are still very vague and undefined. While we have accurate physical and chemical investigations of the waters of our bathing-places, we are unsupplied with the necessary accurate observations, continued through many years, of the meteorological conditions and other cosmical agents of our southern climatic sanatoria. With regard to baths, we find the results of much medical experience upon record. But we shall in vain seek in medical literature for frequent and accurate reports on the effects of a southern residence in various diseases. A well-founded scientific treatment of this subject has only most recently been commenced; and only quite lately have good monographs been published on some southern climatic sanatoria, as that of Mittermeier on Madeira (1855), that of Reil on Egypt (1859), that of Vivenot on Palermo (1860), that of Sigmund, &c. But much still remains to be done. These very writers complain loudly of the defective and uncertain climatology of these places and of the sparing medical material which still exists. Consequently, there prevails among medical men in general a great uncertainty in the appreciation and use of the southern sanatoria. Practitioners are often in doubt as to what disease is best adapted to a southern climate. On the one hand, too much is hoped for—on the other, too little is expected, from this change of climate. Indeed, the beneficial influence of a southern climate on the disease against which this has hitherto been most em-



ployed, namely, chronic pulmonary tuberculosis, has been altogether questioned. But, notwithstanding this uncertainty and diversity of opinion, resort to southern climatic sanatoria yearly increases; and a more accurate study thereof, and the establishment of definite indications, constantly become more important and more urgent. In the following pages I shall endeavour to fix the points of view on which the study of these localities must specially be based, and to propound the principles suitable for the estimation of the medical material at present accessible, and I should hope thereby to contribute something to the due appreciation of these sanatoria.

In my opinion it is advisable in the first instance to consider only those diseases in which a southern climate has hitherto been most recommended and employed remedially, and with respect to which, consequently, the largest amount of medical experience is on record. These are chronic bronchial catarrh and chronic pulmonary tuberculosis. Let us first inquire: is amelioration or cure to be expected in these two morbid conditions from a residence in the so-called southern climatic sanatoria; have we scientific grounds for such a belief; and does sufficient and reliable experience exist upon the subject? By such a limitation of the question, we shall sooner and more easily arrive at a sure and practical result. By endeavouring to investigate the several climatic agents and their physiological effects, we shall certainly obtain scientific points of support for the estimation of the influence of a climate on certain diseases; but these effects are as yet in general but little known; and even if they were generally known, we could not thence alone deduce the medical importance of the southern climatic sanatoria, because our knowledge of the climatic circumstances of these places is as yet very defective; besides, the physiological effects of given remedies admit of only a limited conclusion as to their therapeutic value: finally, we have here to do with a co-operation, the result of the sum of a group of very different cosmical and other influences. We are therefore compelled, in investigating these sanatoria, to invoke also the aid of empirical experience; indeed, as the matter at present stands, medical empiricism must still serve as the principal ground of our decision.

In the estimation of climatic sanatoria, especially with reference to their employment in chronic pulmonary diseases, three climatic



elements have at all times been taken into consideration, namely, the temperature, the degree of moisture, and the pressure of the atmosphere. Even if these do not constitute all the influences which affect a person labouring under pulmonary disease, who resorts to the south for the recovery of his health, and which have an important bearing upon his morbid condition, they possess the greatest importance in our inquiry. The general opinion is that a moist warm climate, with an uniform temperature, is the most suitable to patients labouring under chronic pulmonary disease, especially to such as are affected with tubercle. As to the importance of different atmospheric pressure, there is still certainly much diversity of opinion. Some will have their tubercular patients exposed to a slight atmospheric pressure, and they quote the high pressure of the southern climatic sanatoria to the prejudice of the latter. Others consider the climatic sanatoria on the shores of the Mediterranean Sea so suitable as a residence for such patients, precisely because the atmospheric pressure is there higher than in most regions of the northern inland parts of the Continent. Such generally propounded and exclusive propositions have at all times justly met with opposition, and have not much promoted our knowledge of the climatic sanatoria. It has, on the contrary, only impeded investigation as to the remedial efficacy of a climate, that people, leaning on some empirical observations and physiological hypotheses, have seized upon a single climatic element and considered this to be the only active or only important agent in the cure, supposing all other elements of climate and other local influences to be unessential, and unworthy of closer examination. I am of opinion that both physiological theory, and also and especially medical experience, are against the assumption of the exclusive importance and absolutely necessary existence of certain climatic factors in the cure of those diseases. Even if we must suppose that the greater warmth of the southern winter is always favourable to our patients, who for chronic affections of the lungs visit the southern sanatoria, I do not believe that a great uniformity of temperature, or a high degree of hygrometric moisture, is absolutely necessary: indeed, in many cases the latter is not even desirable, and just as little does a particular amount of atmospheric pressure appear to me to be an essential condition to recovery. I rather believe that



these meteorological elements may be present in different degrees and in various combinations, and yet—with the co-operation of various factors extrinsic to climate—may produce an equally favourable total effect.

All these climatic sanatoria possess in common a greater degree of warmth, and this is certainly to be regarded as an extremely important curative agent in chronic affections of the lung. That an elevated degree of atmospheric temperature exercises a beneficial influence on our pulmonary patients, and especially on those affected with pulmonary tubercle, is proved by the fact that these patients always feel better in our summer than in the cold seasons of the year—winter, the beginning of spring, and the end of autumn; as well as by the fact that individuals affected with chronic diseases of the lung, when transferred from the north to the south, recover and become comparatively well; while, on the other hand, those who migrate from the south to the north are very frequently and seriously visited with pulmonary diseases. Moreover, the warmth must not exceed a certain degree, if it is to work beneficially on our northern patients. In this respect I would call attention to the fact, that all southern climatic sanatoria, to the efficacy of which in chronic pulmonary diseases medical experience bears testimony, lie within the temperate zone. But the tropical zone, according to statistical investigations as to the disease and mortality of the French and English colonies, is extremely prejudicial to European immigrants who are predisposed to pulmonary tuberculosis, or may be in the early stage of that disease; and it is a well-ascertained fact that within the Tropics chronic tuberculosis of the lung very easily runs into acute and rapid pulmonary phthisis\*.

In Cayenne the French exiles die not merely of yellow fever, dysentery, and other southern diseases, but also in large numbers of pulmonary phthisis; and in Ceylon, Calcutta, and Madras, the same disease is said to find many victims among the English immigrants.

We cannot at all, or only under strict precautions, recommend to such patients a summer residence on the shores of the Mediterranean,

\* See J. Rochard, "De l'Influence de la Navigation, et des pays chauds sur la Marche de la Phthisie." Paris, 1856; "Gazette Hebdomadaire," 1856 and 1857.



even though remaining there during the winter may be highly advantageous to them. Indeed, we observe that these patients are worse even in our northern summer, when the latter is unusually hot; and it is, with reason, thought advisable to send such patients during the hot period of our summer to cool localities—to mountains, to the sea coast, or to sylvan districts. How far an elevation of temperature may in those cases be advantageous will, perhaps, be best measured by the temperature of an ordinary summer.

Much importance has been attached to uniformity of temperature, and it is certain that great and sudden changes of temperature act injuriously on those affected with pulmonary disease; but a moderate alternation has, for the most part, a beneficially exciting and strengthening influence on them, particularly on those who are of weakly constitution, while a great uniformity may produce a prejudicial relaxation. We observe this often in our summer. When an elevated temperature has prevailed during the day, a mild night and morning coolness has a peculiarly animating and refreshing effect, both on the healthy and on invalids. Alterations of temperature have no longer an injurious influence, when they occur with a certain constancy and regularity. Thus, for example, in the Egyptian winter the variations of temperature between early morning and noon are not inconsiderable, but as they occur to-day, they return on the following day in a similar manner<sup>a</sup>.

As to atmospheric moisture, a certain degree of it has by many been considered as an essential condition of the utility of a southern climatic sanatorium in chronic pulmonary affections. It is, in fact, not to be disputed that a moist warm atmosphere is very frequently of decided advantage in chronic diseases of the lungs, by reason of its loosening and generally composing effect; and southern climatic sanatoria with considerable atmospheric moisture, as, for example, Madeira, may exhibit numerous favourable results—indeed, it may be said that the southern climatic sanatoria hitherto most resorted to and esteemed lie on the seacoast, and must, therefore, present a certain moisture of the air. But, on the other hand, it is not to be

<sup>a</sup> See my Reports on the Climate of Egypt; "Deutsche Klinik," 1859, Monatsbl. 4; and "Archiv f. Phys. Heilkunde," 1859, iii. 389.



denied that in many instances a dry, moderately warm air, by its secretion-diminishing and general vivifying effects, and by promoting nutrition, may have a favourable influence on the course of those diseases; and there are medical observations on record, according to which a relatively dry warm climate has afforded special service as a remedial means. That in the adoption and estimation of the several southern climatic sanatoria the high degree of moisture is no longer in practice considered to be the principal point, is proved by the fact that of all the climatic sanatoria of the French coast physicians now give the preference to the drier Hyères; in like manner Algiers, which, in comparison to the other places on the shores of the Mediterranean, presents a very slight degree of atmospheric moisture, is preferred by many physicians to all the Italian and French climatic sanatoria. Moreover, the air of Egypt, of the suitability of which as a winter residence for patients labouring under chronic affections of the lungs we have the most positive proofs, is drier in winter than that of any other similar sanatorium; compare the meteorological observations of Coutellé, Destouches, Reyer, Uhle. Indeed, in Egypt patients are even recommended to make excursions to the desert, with its fine, moderately warm, but dry, air, and often to sojourn there; and it is in that country precisely the districts adjoining the desert, or easily accessible to its air, which are thought most suitable for permanent invalid residence. These are Cairo, to whose gates the desert extends, and the narrow valley of the Nile, above Cairo to Nubia, the so-called Upper Egypt, which is compressed between great desert plains\*. But the damp Delta, and the still damper sea coast, with Alexandria, are avoided by invalids. When we send patients affected with pulmonary tubercle in summer to high mountains, we can certainly not reckon upon much moisture

\* It is an error to suppose that the patients frequenting the Nile, in Upper Egypt, are, by constantly remaining on ship-board, always exposed to a damp atmosphere, and that thus the beneficial influence of the climate upon them is to be explained. The air in Upper Egypt is to be considered dry, not merely on the shores of the Nile, but also on the river itself. Uhle, who made all his hygrometric observations on board-ship, states that "the air on the Nile between 24° and 22° of Northern latitude is one of the driest of those as yet examined." See Uhle, "Der Winter in Oberägypten."



in the atmosphere, and yet many such invalids are very well there. I would also observe that in countries whose climate is notoriously to be classed among the dry, pulmonary tuberculosis rarely occurs, as in Egypt and in the steppes of Kirghiz<sup>a</sup>. All these statements suffice to show that of the several climatic elements which may influence the development and course of chronic pulmonary tuberculosis, dry air is not to be regarded as an absolutely unfavourable agent; but that, on the contrary, it may in many cases have a positively favourable effect.

The influence of the various degrees of moisture is, indeed, for the most part, exercised upon the lungs and the system at large. Thereupon there exist no accurate physiological experiments. But they possess, moreover, an indirect influence, inasmuch as the moisture modifies the temperature and its effect upon the organism. Thus it may be taken as a rule that the moister the climate is, the more uniform will be the temperature; but it is at the same time to be observed that the moister the air, so much the more will the cold be felt, particularly when the air is in motion, and so much the more penetrating will be the variations of temperature; while, when the air is dry, neither the cold nor the variations of temperature, which in this case are certainly more considerable, are similarly felt. By the humidity of the air I mean the amount of watery vapour appreciable by hygrometric measurements; and it is, therefore, to be distinguished from showers and rain, which may likewise have an important influence upon disease. Thus the rarity and short duration of rain is to be considered as a favourable element, as the patient is thereby afforded the opportunity of frequently enjoying the open air, and taking suitable exercise. It is also to be observed that the humidity of the air, that is the amount of watery vapour contained in it, does not directly coincide with the frequency of rain. It is indeed true that with a dry climate a greater rarity of rain is connected; and also that, where rain frequently falls, a greater amount of moisture can be demonstrated in the air; but frequency

<sup>a</sup> Compare the writings of Pruner, Griesinger, and Reyer on the Diseases of Egypt, and Dr. Neftel's "Beobachtungen aus den Kirgisen-Steppen. Würzburger Med. Zeitschrift," 1860.



of rain is not necessarily connected with a moist climate. Thus, for example, Venice has in winter, according to hygrometric measurements, the dampest air of all known southern climatic sanatoria, and still less rain falls there in the winter months than in any other Italian or French climatic sanatorium (except Nice), and less than in Madeira.

As to the influence of high and low atmospheric pressure upon the development and course of pulmonary tuberculosis, directly opposite opinions have been advanced. On the one hand it has been asserted that a high atmospheric pressure acts most favourably on the course of this disease, and on the other it has been stated that a low pressure is to be regarded as a favourable element in the treatment. In support of each opinion, physiological reasons and empirical proofs have been brought forward. On the one side it has been advanced that all southern climatic sanatoria, of which we possess favourable experience, lie on the flat sea coast, and are consequently exposed to a high degree of atmospheric pressure; that the physiological effects of even strongly compressed air, as in the occupation of diving and in the works connected with the building of new bridges, are in general well borne; that the physiological changes produced by high atmospheric pressure, as retardation of the respiration and circulation, driving back the blood from the peripheric parts, development of the so-called venosity, can act only advantageously on the course of those diseases; and that, finally, direct experiments have established the favourable influence of compressed air upon chronic pulmonary diseases, and especially upon chronic tuberculosis of the lungs\*. On the other hand, it is stated that experience shows that many patients labouring under pulmonary tubercle are very well in high situations, and therefore under diminished atmospheric pressure, and that they have been frequently sent with advantage to lofty mountains (Righi, Gais); that, moreover, the physiological effects of diminished atmospheric pressure, as increase of appetite, improve-

\* On the therapeutic employment of compressed air in the so-called baths of compressed air of Pravaz, Milliet, Devay, see "Canstatt's Jahresbericht," 1854, ii. 225, and "Gazette Hebdomadaire," 1859, 783. Further, an essay on the Influence of Altered Atmospheric Pressure upon the Human Organism, by Vivenot, "Virchow's Archiv," xix., 492.



ment of digestion and of blood-formation, acceleration of the circulation, and promotion of the metamorphosis of tissue<sup>a</sup>, must be advantageous to patients with weakened constitutions; and, lastly, it is alleged that pulmonary tuberculosis diminishes in frequency with the elevation above the level of the sea<sup>b</sup>. But even if these physiological and empirical statements which have been brought forward on either side in support of the different views of the writers are in themselves correct, they can by no means prove the general and exclusive validity of any of these opinions. It is much more probable that, in these pulmonary diseases, there exist different conditions and stages, as well as diversities in the local affection and in the general health, according to which at one time a diminished, at another an augmented, atmospheric pressure will be advantageous. What the extent of this advantage is, or how great is the physiological influence of the varied atmospheric pressure, as it occurs at the ordinary elevations and depressions of the surface of the earth, is not to be decided by our present experience; but it is certain that in many cases the climatic influence, as well as agents extrinsic to climate, act so powerfully upon the organism, that the atmospheric pressure is not to be considered, its influence being masked or counteracted. Lastly, it may be mentioned that the effect of atmospheric pressure, even if it is considerable, does not depend solely on the absolute elevation, but also—apart from the morbid condition—on individuality and habit, as the action of the same atmospheric

<sup>a</sup> Dr. Brehmer, who is a zealous advocate of the opinion that lessened atmospheric pressure is the most important agent in the cure of pulmonary tuberculosis, includes, among its physiological effects, diminution of the determination of blood to the lungs, and he appeals in support of this view to experiments by Volkmann and Poiseuille? "*Baln. Zeitung*," viii. 289.

<sup>b</sup> [Dr. Mübry, for example, in his work on Climate, "*Klimatologische Untersuchungen*," &c., Leipzig und Heidelberg, 1858, attaches the greatest importance to the amount of atmospheric pressure to which phthisical patients are subjected. He states that "the occurrence of phthisis diminishes with the atmospheric pressure in vertical elevations;" and he suggests that sanatoria almost insuring an immunity from phthisis, "might be found on the eastern side of the Andes, in Mexico, or in the Sierra of the Andes of South America." See *British and Foreign Medico-Chirurgical Review*, vol. xxiii., p. 62, where I have contributed an analysis of his work.—TRANSLATOR.



pressure must be different, accordingly as the patients have previously lived under another more or less different pressure<sup>a</sup>.

For a climatic sanatorium, the purity of the air is also of great importance, and must certainly be reckoned among the favourable curative agents in pulmonary diseases. The air must be free from foreign organic and inorganic admixtures, especially from products of decomposition derived from the animal and vegetable kingdoms, from so-called miasmata, as well as also from irritating hard particles of dust. Now, we find the air particularly pure when it is frequently moved, when it blows over large, unbuilt upon, and not overgrown, surfaces, as well as in its higher layers, on which account a peculiarly pure air is possessed by those southern climatic sanatoria which are situated on isolated islands, as Funchal, in Madeira—on the sea coast, as the sanatoria on the shores of the Mediterranean Sea—or in the neighbourhood of the desert, as Cairo<sup>b</sup>.

In a climatic sanatorium the winds come next under consideration, in so far as, from their origin and direction, as well as the intensity and frequency of their occurrence, they affect the temperature, the degree of moisture, and the purity of the air; and, under the influence of the winds, the action of these climatic factors

<sup>a</sup> The physiological phenomena usually ascribed to changes of atmospheric pressure, may as well be attributed to other atmospheric changes present at the same time,—alterations in temperature, moisture, and current of air. Richerand says:—"Were it conceivable that—the temperature, the current of air, and the degree of hygrometric moisture remaining the same—there should be such a change in the atmospheric pressure as corresponds to the daily and yearly variations in the barometer, the effect of the latter upon the human system would be, not to say none, at all events so slight, that neither would it be subjectively felt even by the most sensitive persons, nor, *a fortiori*, would it be objectively demonstrable.—See Vivenot's Essay in "Virchow's Archiv" already referred to.

<sup>b</sup> It is incorrect to suppose that the air of the desert or its vicinity must necessarily be full of dust. The air of the desert, surrounding the valley of the Nile, is almost always extremely pure and clear. The sand of the desert is raised only by violent storms, almost exclusively by the storms from the south, which occur periodically in May. The dust met with at other times in Egypt is derived from unpaved clayey roads and places in the towns, the roads, and causeways at the Nile. In the plain and on the river itself, as well as in the adjoining desert, there is never, or only extremely rarely, any dust.



on the system varies. Thus a moist and cool temperature acts much more intensely when the air is in motion than when it is at rest; on the other hand, winds moderate the effects of elevated and dry warmth. But strong winds may, in themselves, be important to those labouring under pulmonary complaints, as they mechanically impede and disturb the respiratory movements. In some places the winds require special attention, as their influence is so prominent as to give to a locality its climatic character, and thus to decide the suitability of such a sanatorium. Thus the *maestral*, a dreaded north-north-west wind, in the south of France, extends its effects to Nice, and renders almost the whole of the French litoral, except a few points protected by mountains, an unsuitable residence for pulmonary patients, especially those affected with tubercle, who are in an advanced stage of the disease. And those hot winds blowing from the interior of Africa, the *Chamsin* of Egypt, the *Samum* of Algiers, the *Sirocco* of Italy, which are particularly felt in the north of Africa, are said to determine patients, at the time of their occurrence, in April and May, to leave the south.

A climatic agent still remains to be mentioned, to which little value is usually attached, but the importance of which, to invalids, should not be underrated—that is, the clearness of the sky. “The degree of habitual clearness and brightness of the heavens,” says Humboldt (*Cosmos*), “is important, not merely for the increased warming of the ground, the organic development of plants, and the ripening of fruits, but also for the sensations and entire disposition of man.” When we consider that a cloudy day depresses a healthy man, while, on the contrary, a clear sky excites and enlivens his spirits, how much more is this not the case with an invalid; and how important, in this instance, is the reflexion thereof upon the bodily condition. But an invalid who leaves his home on account of his health, and lives in a strange neighbourhood and under unusual circumstances, has a very peculiar need of such external stimulus. A blue sky and bright sunshine give an additional charm to nature, and excite the beholder to more attentive contemplation; but the contemplation of nature occupies, calms, and rejoices the patient. His thoughts are withdrawn from his own sufferings; he is animated to the enjoyment of the open air, and to



bodily exercise. In this respect we must regard the greater clearness of the sky, which is peculiar to southern regions, as in itself a circumstance favourable to the cure of those diseases.

There are still other climatic influences to be considered, which, indeed, are not usually of equal importance, but which, under certain circumstances, may have a very important bearing on the course of diseases. Such influences spring from the altered local and social conditions in which the patient is placed, from his altered occupation and mode of life. It is, therefore, important to be aware of, and to take into account, the particulars of residence, food, water, convenience, social pleasures, the opportunity of active and passive exercise, such as walking, riding, driving, &c.; also the mental enjoyment offered by the locality. Thence we derive, not merely direct influences on the physical condition, but also equally important influences on the intellectual life of the patient. If it be true that lasting mental emotions and excessive intellectual labour may have an unfavourable influence on the development and course of the diseases mentioned, the removal of such injurious agents may also have a favourable effect. How many of those patients, who have visited such southern climatic sanatoria, have been indebted for their improvement and comparative cure, perhaps, chiefly to the circumstance that, by the journey and change of scene, they have been withdrawn from injurious mental influences or excessive intellectual exertions. However, the new circumstances do not always act favourably. If many patients are agreeably stimulated and occupied thereby, others become dispirited and depressed. It is, indeed, in general, a great advantage when the patient finds in his sanatorium entertainment and diversion—and whether this is the case depends on personal inclination, on the degree of education, on the professional occupations and other individual circumstances of the patient; but it is also possible that this entertainment and diversion may be injurious. For example, Rome is recommended as a climatic sanatorium, partly on account of its treasures of art, which may afford to the invalid agreeable intellectual occupation and diversion; but it must not be forgotten that patients may easily forsake the proper object of their visit, and make the study of the treasures of art the first point. In that case this occupation



leads only to an injurious excitement; and the churches and halls, in which these treasures are located, are then to the patient nothing but frigid retreats, wherein he exposes himself to cold. In like manner, the patient is agreeably and suitably occupied in Egypt in considering the glorious antiquities on the banks of the Nile, if he does not in the study subject himself to undue exertion—but how easily does not zeal grow with contemplation! he drives, rides, goes from place to place, and so gives no rest to either mind or body. Nevertheless, the great utility in general of such intellectual influences is not to be denied. The agreeable intellectual impressions, the recreation and amusement of the mind, the light and desirable mental occupation connected with the journey, the novel residence, and the new life, may, in many cases, act even more powerfully on the patient and the course of his disease than the climate itself, and may compensate for, and render harmless, some injurious influences of the latter.

It would, of course, be very desirable, in the examination of the influence of southern climates on diseases, to have at our command a large mass of empirical information. When we review the records of medical experience with respect to the result of a residence in the so-called southern climatic sanatoria, we certainly find such in reference to chronic bronchial catarrh and chronic pulmonary tuberculosis. But these records proceed from very different sources, and are in part very vague and inexact. Here, too, therefore, careful criticism is required; and we must first ascertain what records are in general available, and how far they justify us in coming to a conclusion as to the therapeutic importance of a southern climate.

The value of observations as to the curative effect of a southern climate in chronic bronchial catarrh and chronic pulmonary tuberculosis has hitherto not been highly estimated, because these two diseases are so frequently confounded, the differential diagnosis is so seldom accurately established, and, in fact, in many stages of these diseases, and especially in those in which a curative effect might most reasonably be expected, it is not to be made with certainty. With respect to the cases on record of cured tuberculosis of the lung, we very frequently hear a doubt expressed, whether the disease was really pulmonary tubercle. But if we take into account only



the instances where the differential diagnosis was established beyond all doubt, and include only the cases of pulmonary tuberculosis where ulcerative destruction of the tissue of the lung was objectively demonstrated, or the signs of general phthisis were distinctly manifest, not only would the whole mass of evidence become very scanty, but this would comprehend only those cases, where, from the advanced stage of the disease, a cure was scarcely to be expected, and where any journey and change of place must be a matter of serious consideration. I do not look upon the possibility of confounding the two diseases as of so much consequence in its bearing upon the subject under consideration, and I believe that even those cases where the differential diagnosis is not fully established, nevertheless supply an available material, because the treatment of both affections is in so many respects the same. We have, in the treatment of chronic tuberculosis, often no other object than the accompanying bronchial catarrh; and if we have been able to allay, relieve, or prevent this, we have done much. Therefore most remedies employed in chronic bronchial catarrh are likewise recommended in chronic pulmonary tuberculosis; and we might infer that when a patient labouring under chronic bronchial catarrh is well in a given climate, this climate will also be favourable to a patient affected with pulmonary tuberculosis. In my opinion, the improvement of the general state is much more important in reference to the availability of observations, than the placing of the diagnosis beyond a doubt; and a local diagnosis is certainly sufficient to enable us with probability to infer the presence of pulmonary tuberculosis, or of a mere simple catarrh.

It would further be desirable that we had at command a certain number of cases to supply us, to some extent, with a guarantee that the "*post hoc*" coincides with the "*propter hoc*." I know very well that the greater number in themselves do not prove much, and a well-observed case is worth more than a hundred superficially recorded. But, nevertheless, a greater number of medical observations is here very much to be desired; for, when a patient leaves his home, to seek, in a strange land and in another climate, for restoration to health, he is liable to so many and various influences, other than climatic, which may contribute a favourable or unfavourable effect,



that it is often difficult to decide what share the climate has had in the result. Frequent observations are necessary to enable us to say that patients, under the several circumstances and accessory influences in a certain climate, have reaped decided benefit, and that the climate has been the principal means of procuring the same.

If we now ask whether numerous and reliable records exist as to the curative effect of a southern climate, we shall obtain no very satisfactory answer. Although hundreds of invalids yearly travel to the south in order to regain their health, we possess only few exact and reliable medical observations on the subject; on the other hand, a number of opinions have been formed, which have, however, been based upon an unscientific application of experience. Many patients travel to the south without having consulted a medical man. Medical men, also, have often neglected to establish the diagnosis and the necessity for change of climate, and have rather yielded to the patient's inclination or his longing for recovery. If such patients then return cured or worse, or die at the place of their resort, where they expected health, premature conclusions are very frequently drawn from such results to the general efficacy of a climate. How often do not patients undertake a long journey to the south in a condition in which any journey is a risk. Of this I witnessed a striking example. In the winter of 1856-57, an English invalid came to Egypt, who died of exhaustion in the railway train on his journey from Alexandria to Cairo, the place of his destination. A striking recovery, or an unfavourable result, if it acquire importance from the person to whom it occurs (it is sufficient to refer to the visit of the Empress of Russia to Nice, and of the French actress, Rachel, to Egypt), has often brought a climatic sanatorium into good or bad repute, while, perhaps, hundreds of other cases could have shown the unfounded nature of such credit or discredit, though, because they did not accidentally excite some general interest, they remained unknown or unattended to. Such unwarranted opinions have found acceptance both with the public and with physicians, but only very few certain medical observations have been made known.

With respect to the utility of the several empirical observations, it must also be considered how such a residence should be carried



out. On this point mistakes are often made with and without the fault of the patients. Many invalids travel to the south, but do not procure, or fail to attend to, the necessary instructions for their new life, live unsuitably with regard to food, clothing, dwelling; or adopt an unhealthy occupation. Many do not wish to have travelled to Italy or Egypt without having seen the far-famed historical memorials and art-treasures of these countries, and thus are led to use too great bodily exertion, and to travel from place to place, while their mind is kept in a state of constant agitation and excitement. In such patients the effect of a southern residence can scarcely be favourable, though it can prove nothing against the beneficial influence of the climate.

Of the injudicious use of a southern climate, the following case, furnished by my own experience, may serve as an example:—In Cairo I met with a North American, who came thither in January, 1858, labouring under pulmonary disease, and in a miserable condition. The first part of the winter he had spent in Italy, had travelled much about there, and in that short period had visited the principal cities of that country. In Cairo I lived with him in a villa close to the Nile, a league from the city properly so called. The journey to the city he very often made on an ass, which appeared to me to be a very great exertion for him; but he made still greater and more fatiguing tours. Although I never subjected this patient to a strict medical examination, and only occasionally had social intercourse with him, I was convinced, by the most striking signs, that he laboured under pulmonary phthisis, as, together with excessive general emaciation and weakness, he had a violent cough, copious viscid expectoration, often mixed with blood, and at the same time complained of feverish symptoms, sleeplessness, and dyspnœa. Besides the bodily exertions which he exacted from himself, I must mention the unsuitable diet he adopted; he drank strong wine, often brandy-and-water, ate fruit, &c. In the following April I met him again on the voyage from Alexandria to Malta; he complained then, with good reason, that his residence in the south had been of no use to him; he was in such a wretched state, that he had to be carried up and down the stairs in the steamer. In this in-



stance the unfavourable course of the disease is certainly to be ascribed only to the injudicious use of the climate, and not to the climate itself.

Another striking example I met with in a young Hungarian. This patient had been sent to Cairo on account of pulmonary disease, and had there spent a year and a half. During his residence in Cairo he had made frequent and long excursions on asses, horses, and camels, and had spent much time in shooting and hunting, his game being chiefly waterfowl and wild boars. He remained two winters, from 1856 to 1858, and, imprudently, the intervening summer also in Cairo; he then made, in April, a journey to Jerusalem, from Alexandria to Jaffa in the steamer, from Jaffa to Jerusalem on horseback, a journey which cannot be performed without bodily fatigue. In the month of May following, I met him at Naples, where he consulted me professionally. He was, of course, worse. On accurate examination, I found the objective signs of infiltration and cavernous formation in the lungs, and the best marked signs of general phthisis. Exhausting attacks of diarrhœa had, moreover, supervened. Dreading the injurious effects of a southern summer in such a state of debility, particularly in chronic diarrhœa, I recommended him immediately to leave Naples, and either to return home, or to take a summer residence in an Alpine region. But, in spite of my frequent and urgent admonitions, the patient remained the greater part of the summer in Naples, made excursions, visited galleries and similar sights, and ate and drank whatever he fancied. Meanwhile he became steadily weaker. Finally, towards the end of July, he determined to leave, and called upon me in such a state, that I felt obliged to endeavour to dissuade him from taking any journey. I recommended him to stay quietly in Sorrento, as being cooler, Capri, or some similar neighbouring locality. But he was now as little to be kept back as he was before to be moved to take his departure. A true mortal agony seemed to urge him on. He set out in the steamer for Genoa. In embarking he had to be carried on deck. When the steamer returned to Naples, I inquired of the officials what had become of the unfortunate patient. I was informed that when the vessel arrived at Genoa, he was found dead



in his berth. Neither can this case, on account of the absurd abuse of a southern residence, prove anything against the efficacy of the climate.

Though only few accurate and really useful reports of cases are to be found in medical literature, still we meet with some observations where the diagnosis, stage, and course of the disease, are scientifically given. And these observations are strongly in favour of the beneficial influence of a southern climate on chronic bronchial catarrh and chronic pulmonary tuberculosis. We find even cases described, where the subsequent post-mortem examination might prove its favourable curative influence. Besides, general opinions and statements from competent sources, as to the efficacy of the southern climatic sanatoria exist, which likewise depend on empirical experience, without the particular and detailed observations being directly given. In such cases it is, of course, necessary to inquire into the competence of the persons giving the opinions, and only to admit such of the latter as are really reliable.

Another mode has been adopted of scientifically determining the importance of a southern residence for patients affected with pulmonary tuberculosis. Thus it has been attempted to make the geographical distribution of tubercle of the lung, the rarer or more frequent occurrence of the latter in the climatic sanatoria, a measure of the influence of the climate in question upon this disease. It is certain that the statistics of disease and mortality in a country ought to furnish important data for the medical estimation of a climate. But the statements which exist as to the relative mortality of those places must be used with circumspection. The medical statistics published for these localities have been freely used and taken as the groundwork of investigation. But they are neither reliable, nor do they admit of extensive conclusions; for, if we look at the hitherto political, social, but especially the medical circumstances of those places under consideration, we can expect no accurate and certain statistical figures. Moreover, these statistics do not comprehend the entire population, but usually only a small fraction of it—the inmates of hospitals for the poor, and the part of the inhabitants who are in general exposed to the more unfavourable conditions of life. But if we should admit that reliable



and sufficient medical statistics existed, these would warrant only a conclusion as to the influence of the climatic conditions on the residents, who are exposed to them during the entire year. Now, when we send our patients to a southern climatic sanatorium, it is only for a sojourn during the winter season. The injurious effects of the southern summer do not reach them. Certainly, in modern times, when a southern residence has been extended over several winters, patients have been advised to remain in the south also during the summer, on account of the difficulty of getting home; but in that case the higher mountains of the countries in question, where the temperature is much cooler, have alone been considered adapted to the purpose.

Just as little do the statistical investigations instituted as to the occurrence and circumstances of chronic pulmonary tuberculosis in the French Navy\* prove anything against the climatic sanatoria. These investigations have shown that the proportion of those who die of that disease in the navy is to the other cases of death as 1 to 7.59, almost twice as unfavourable a result as in the land army, where this is as 1 to 13. Hence the practical rule has been deduced, to warn all young people who have a tendency to pulmonary tuberculosis, or who already present the incipient symptoms of the disease, against adopting the profession of a sailor. This conclusion may be justified. Considering that the stations of the French navy are, with very few exceptions, situated in a southern climate, it has been attempted to draw the further inference that a southern climate in general is injurious to those labouring under, or predisposed to, tuberculosis. But this inference is neither generally correct, nor does it prove anything against the so-called southern climatic sanatoria. For the sailor is exposed to many influences prejudicial to health, among which the many changes of weather, the limited space and crowded residence on shipboard, are to be enumerated. These and similar disadvantages press specially upon the calling of a seaman, but do not reach him who visits the south on account of his health. Moreover, the stations of the French navy lie in great part in the torrid zone, in the vicinity of the equator, in the East

\* J. Rochard, *op. cit.*



Indies, Africa, Senegal, the West Indies, South America, and in the Pacific Ocean; while the southern climatic sanatoria are in the temperate zone, on the shores of the Mediterranean Sea, in the neighbourhood of the latter, or in similar geographical situations. Finally, those investigations relate to the life of a sailor in a southern climate during the whole year, while a patient remains in a southern climatic sanatorium only during the winter.

While we must by no means infer that because pulmonary tuberculosis is of frequent occurrence among the inhabitants of a southern climatic sanatorium, the influence of the climate of the latter will necessarily be unfavourable to those patients who come thither from the north to spend a milder winter than they could enjoy at home; we may conclude, on the other hand, that the influence of the climate of those places where pulmonary tuberculosis is of rarer occurrence, will be beneficial to such invalids. Thus when, notwithstanding the unfavourable effects of the excessive heat of the southern summer, this disease is, in a certain locality, little met with, we must suppose that the conditions for the development of tubercle of the lung exist in absolutely less proportion, and that our patients must there meet with a climate so much the more favourable to them, as they are to spend in it only the mild winter. And there are, in fact, southern climatic sanatoria, where pulmonary tuberculosis is of rare occurrence. The places especially pointed out as such are Venice, Madeira, Algiers, and Cairo\*. Moreover, for most of these climatic sanatoria experience shows that even if, with respect to some localities, it cannot be proved that pulmonary tuberculosis is of rare occurrence, the disease has a very protracted course among the inhabitants. But the most important empirical evidence of the suitability of a residence in the southern climatic sanatoria for patients affected with tubercle of the lung is that already mentioned—namely, that people who migrate from a southern to a northern climate are very likely to be attacked

\* See, for Venice, Sigmund's "Südliche Klimat. Kurorte;" for Madeira, Mittermeier, *op. cit.*; for Algiers, Castalat, Bertherand, "Gaz. Hebdom." 1858, p. 230, Haspel, "Canstatt's Jahresbericht," 1853, ii., 156; for Cairo, the writings of Pruner, Griesinger, Reyer.



with pulmonary tuberculosis; while those who change from the north to a southern country rarely become tuberculous, and northerns so affected very frequently recover in the south. This is most strikingly seen in Egypt, where there is always a great confluence of northerns and southerners. The Arabs and Copts who have migrated from the southern parts of Egypt to Cairo, the Berbers of Nubia, and, above all, the Negroes of the south are, in Cairo, very frequently attacked with pulmonary tuberculosis; on the other hand, the Europeans who have migrated to Egypt are very rarely so affected; and those who have come from Europe to Egypt with a predisposition to the disease, or with well-marked symptoms of the same, are frequently improved or cured; indeed, it is said that Negroes, who have taken ill in Cairo, recover when they return to the south.

After these critical observations, I may be permitted to bring forward the positive results of the investigations as to the therapeutic importance of the southern climatic sanatoria, which appear to be best ascertained and best founded, and which, at the same time, present the greatest amount of practical interest.

Residence in the so-called southern climatic sanatoria may certainly be considered, in general, as a remedial measure in chronic bronchial catarrh and chronic pulmonary tuberculosis, for patients from the northern and central parts of Europe. On the other hand, it cannot be maintained that a southern climate is invariably, and under all circumstances, favourable to such patients. In the first place, tropical heat is often very destructive in its influence on the development and course of these diseases. Summer, too, in these sanatoria is, for the most part, injurious to the above-described patients. Only those localities can be considered as southern climatic sanatoria favourable to patients from our latitude, which are situated in the south of Europe, the north of Africa, or in similar geographical positions. These should, moreover, be used only as winter residences. According to our present climatological knowledge and medical experience, the following places are to be considered as the most favourable southern climatic sanatoria:—Malaga, Hyères, Nice, Venice, Pisa, Rome, Palermo, Cairo, Algiers, Madeira. After



these, because less known and less recognised as sanatoria, are to be named: Cannes, Villafranca, Mentone, San Remo, Naples, Messina, Catania.

The efficacy of a residence in the southern climatic sanatoria is to be ascribed specially to the greater warmth of the southern winter. By removing a patient labouring under pulmonary disease to one of those southern localities a double advantage is obtained—first, the negative, that the patient escapes the injurious influences of the northern winter, whereby his lungs and constitution are afforded an opportunity of recovering; secondly, the positive and direct, arising from the frequent enjoyment of a mild and pure atmosphere, and the power of taking bodily exercise, advantageous alike to the respiration and to the nutrition of the body.

Besides the greater warmth, other climatic elements also contribute to the cure, especially a certain regularity and limitation of the alternations of temperature, the purity and moderate movement of the air, as well as the rarity of rain. The amount of moisture in the atmosphere may likewise play an important part; but it cannot be truly asserted that a definite degree of atmospheric moisture is particularly favourable in all cases of these pulmonary diseases; it is rather to be assumed that, in some instances, a moister, in others a dry, climate is advantageous. What cases are better suited to one climate or the other, we have as yet no certain indications to show; but from what has been practically and theoretically established with respect to the several sanatoria, we may consider a moist, moderately warm climate to be, in general, a soothing and gentle expectorant in chronic bronchial catarrh and chronic pulmonary tuberculosis; and a dry, moderately warm climate to be secretion-limiting, tonic, gently exciting, and specially promotive of the general nutrition. The former would, therefore, be more suitable to cases of these diseases accompanied by a sensitive state of the bronchial mucous membrane, viscid expectoration, frequent and dry cough, and an easily excitable condition of the vascular and nervous systems; the latter to the torpid form of the disease, with abundant expectoration, and to patients in whom the principal indication is to strengthen the system at large.

The several climatic agents may be grouped in different ways,



may cooperate or counterbalance one another, and so, in various modes, contribute to the cure.

Besides the climatic, other influences are to be considered, deducible from change of locality, social relations, occupation, and the whole mental and bodily mode of life. These influences, it is true, possess only an individual importance; but they may, under some circumstances, play a very important part.

In conclusion, I shall collate the southern climatic sanatoria whose climates are best understood, according to their mean winter temperature and their winter conditions of moisture and rain, placing them so as to form ascending series.

N.B.—The following numbers are the results of mean calculations based upon observations continued, in the majority of instances, during many years, and are borrowed from the monographs upon these sanatoria already quoted—Mittermeier's upon Madeira, Reil's on Egypt, Sigmund's on the sanatoria of Northern Italy, and especially Vivenot's on Palermo, in which latter work the most numerous and most complete tables are to be found. The position in the series, when it is not justified by numbers, is based upon the explicit opinions of these and other competent authors (Bertherand on Algiers, Francis<sup>a</sup> on Malaga).

#### I. SERIES.

Exhibiting the mean temperature of the winter—that is, of the months of November, December, January, February, and March:—

Venice, (40°.59 F.).	Naples, (51°.53 F.).
Hyères, ———	Palermo, (54°.29 F.).
Florence, ———	Catania, (54°.83 F.).
Pisa, (45°.79 F.).	Cairo, (58°.64 F.).
Nice, (47°.12 F.).	Malaga, (59°. F.)
Rome, (48°.62 F.).	Algiers, (61°.06 F.).
Cannes, ———	Madeira, (61°.47 F.).
San Remo, ———	(Funchal)
Mentone, (50°.0 F.).	

<sup>a</sup> [A review of Dr. Francis's work on Change of Climate may be found in the sixteenth volume of the Dublin Quarterly Journal of Medical Science, August, 1853, page 147.—TRANSLATOR.]

In the case of Malaga and Algiers, the temperature is calculated for the winter, including October.

## II. SERIES.

Representing the mean atmospheric moisture in winter:—

1. Cairo.	6. Mentone.
2. Algiers.	7. San Remo.
3. Hyères.	8. Naples.
4. Nice.	9. Rome.
5. Cannes.	10. Pisa.
11. Madeira, 75.4 <sup>0</sup> / <sub>0</sub> . (Funchal).	} Mean for Nov., Dec., Jan., Feb., and March.
12. Palermo. 76.2 <sup>0</sup> / <sub>0</sub> .	
13. Venice, 80.4 <sup>0</sup> / <sub>0</sub> .	

## III. SERIES.

Showing the number of rainy days in winter—that is in November, December, January, February, and March:—

Cairo, 13.7.	See Series IV.	Madeira, 55.7.
Malaga, —		(Funchal).
Nice, 25.7.		Florence, 57.4.
Venice, 28.1.		Rome, 58.7.
Algiers, —		Pisa, —
Catania, 45.3.		Palermo, 65.7.

## IV. SERIES.

Arranged according to the amount of rain in winter—that is, in November, December, January, February, and March:—

Cairo, scarcely measurable.	Naples, 413.90 millimetres,
Venice, 229.99 millimetres.	Madeira, 548.44 „
Palermo, 364.06 „	(Funchal).
Rome, 407.94 „	Pisa, 548.90 „

THE END.









