Works Consulted.

Traité de Clinatologie Médicale.

Dr. H. Lombard

Pulmonary Consumption. J. H. Bennett.

Rocky Mountain Health Resorts. Dr. Denison.


British Medical Journal. Various Authors.

Influence of Climate in Pulmonary Consumption.

C. J. Williams.
Map of the World
Showing the relative distribution of phthisis
Affected parts: children
The almost world-wide distribution of Rheumatic fever and the large proportion of the total number of deaths caused thereby in nearly every country, a few favoured districts and islands alone being exempted, whilst in very many countries it stands in the first place as a cause of death, make it a disease of special interest to trace. This interest is increased since we find by clinical experience that under care and treatment and in favourable cases, it is certainly a curable disease, though forty years ago it was not except in isolated cases considered so. There can be no doubt either that climate has a most marked influence for good or ill upon its progress. The merits of various places or so-called Health-resorts both in the Old World and in
the new which have a beneficent influence on the disease have been much discussed of late years. Places too which were quite out of the reach of the vast majority of some once to do patients a generation or two ago, are now easily reached through the greater facilities of modern travel, thus greatly extending the choice of such resorts.

I do not intend to enter upon the pathological anatomy of the disease nor discuss the onsets of the two great theories now held by equally eminent authorities. All I wish to choose upon however, is that conception in whatever form it may present itself is primarily a constitutional disease, due to mal-nourishment and defective nutrition, thus inducing a lowered vitality. This constitutional condition causing the defective nutrition and predisposing the development of the disease may be inherited or acquired - but that it is a Spontaneous incurable disease is frequently
proved in the Post Mortem Room, where old puckered cicatrices and sometimes Cretaceous images are found. In the lungs of patients who have never been treated for that disease and who themselves have not known of its existence, it having probably been put down to bronchitis, and yet those who have finally died from some other malady, its previous existence now being demonstrated by the unmistakable traces it has left behind it in the lungs. This spontaneous cure having probably taken place through the patient remaining from town to country life or from unfavourable hygienic surroundings. More more healthy. These cases are most frequently met with amongst the poor, perhaps partly on account of their more frequent examinations after death, but also undoubtedly because the richer classes always enjoy more or less favourable surroundings, and also because they are more likely to come under medical supervision.
Phthisis therefore being essentially a disease of debility should not be treated by low diet, confinement in bed, and iron bleeding as usual. The contrary, a strengthening line of treatment should be adopted. Professor Pennell of this university was the first to establish its treatment on this principle and on that of food hygienic measures. These consisting in good nourishing food, limited in quantity only by the capabilities of the digestive powers of the patient; a regular amount of exercise less active and more passive according to the strength of the patient and the stage through which the disease has advanced; living in the open air as much as possible; absence from worry and care, but with sufficient mental and social employment to engage the mind; and living in light, airy, cool and well-ventilated rooms. The evil
Epic influence of living in close and interconnecting rooms has been proved lately in the Highlands and other parts by the greater frequency of consumption amongst the peasants than formerly was the case. Though living in what might certainly be called more hovels, through the chimneys in the walls of which the rain penetrated, but through which the pure air also found its way, yet this condition was less pernicious than when they have been replaced by modern cottages, which their inhabitants, their dream of ventilating or whose windows are not made to open on economical grounds. Thus they become simply poisoned by their own exhalations. Carbonic acid for instance being one of the most deadly poisons known when in a sufficiently concentrated form. Thus can be no doubt that this is a direct cause of the most frequent cases of consumption amongst that class of society. The same cause is at work.
<table>
<thead>
<tr>
<th></th>
<th>Days of Rain</th>
<th>Rainfall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>1</td>
<td>0.08</td>
</tr>
<tr>
<td>Feb</td>
<td>5</td>
<td>2.70</td>
</tr>
<tr>
<td>Mar</td>
<td>3</td>
<td>0.20</td>
</tr>
<tr>
<td>Apr</td>
<td>6</td>
<td>2.40 in</td>
</tr>
<tr>
<td>May</td>
<td>3</td>
<td>1.65</td>
</tr>
</tbody>
</table>
in the manufacturing districts of our country
where the employees are confined for long hours
in close and ill-ventilated rooms.

Finally, climate plays an important part in
the cure of the disease and it does so by
enabling the foregoing hygienic measures
to be more thoroughly and effectively carried
out. Thus during the winter months how
many more hours may be spent in the open
air at San Remo, or Theniers with their three
or four partial days of rainfall during each
of their winter months instead of about 240
or so in our own country with a rainfall of
perhaps 7. inches or more as was the case
in this neighbourhood during last November
(7.25 in.) and December (7.52) * It is to
this element in the treatment of Phthisis
namely, the influence of climate upon it
which I wish to draw attention.

It will be instructive before passing to the
physiological influences of different
climates and to the merits of various
health resorts which are considered presum-
ably favourable for the arrest and cure
of those who are attacked by this disease.

Examine the general distribution of the
measles over the face of the world and to
gather therefore some lessons as to the
influence climate has upon the development,
greater or lesser frequency of the disease.

Geographical Distribution of Phthisis.

Phthisis is so widespread over the face of the

lobe, showing itself, though with varied degree

of frequency in almost all climates and
places, that it is only a few favoured
spots that are entirely free of where so
rare that they may practically be said

free. In Europe these districts

seem limited to four.

1. Iceland.

In this island it is very rare, only -
patients in 1859 admitted to hospital being affected by it.

The Faroe Islands are almost entirely free also, and natives there contracted the disease in other countries frequently regain health on returning to their native islands.

III. In Eastern Russia, on the dry plains inhabited by nomadic tribes etc., about

IV. This rare in Lapland, and in Northern Russia north of 70° lat N.

America.

I. The far north descending down to about 52 deg. (instead of 70° as in Europe), and the greater part of Greenland (except the most southern part) are exempt.

II. The southermost parts of Patagonia, i.e. South of 40° deg lat S.

III. The high plains and pampas of Mexico, Central America, Bolivia & Peru are almost free. The Indians inhabiting these high plains are much less affected than those of the coast.
Section II
Asia

1. The immunity of the northern districts extends as far south in Siberia, as 60°.

II. Phtisis is also probably rare in the great interior plateaus and on the high altitudes of the Himalayas, as likewise its very rare in Persia, round the Caspian Sea, and in Arabia except just round the Coast line.

Africa

1. Phtisis is only occasionally met with on the high plains of Abyssinia, in the Upper Egypt. It is rare amongst the nomadic tribes of Arabs that inhabit Morocco, Algeria, and the northern part of Africa generally.

II. In the interior and amongst the Caffs, Jules and Baccetto, Phtisis is rare except amongst those who have not left their native country and whose civilization and spirits have not reached hermits.

III. Division of countries affected, in a moderate degree by Phtisis, i.e. where the death rate from Phtisis is under 15 per cent. of total mortality.
<table>
<thead>
<tr>
<th>Elevation (feet)</th>
<th>Occupation</th>
<th>Rate (per cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/ 2,000 - 1,600</td>
<td>Industrial Mixed</td>
<td>10.2</td>
</tr>
<tr>
<td></td>
<td>Agricultural</td>
<td>7.6</td>
</tr>
<tr>
<td>2/ 1,600 - 2,300</td>
<td>Industrial Mixed</td>
<td>10.2</td>
</tr>
<tr>
<td></td>
<td>Agricultural</td>
<td>5.9</td>
</tr>
<tr>
<td>3/ 2,300 - 3,000</td>
<td>Industrial Mixed</td>
<td>4.7</td>
</tr>
<tr>
<td></td>
<td>Agricultural</td>
<td>9.16</td>
</tr>
<tr>
<td>4/ 3,000 - 3,400</td>
<td>Industrial Mixed</td>
<td>6.5</td>
</tr>
<tr>
<td></td>
<td>Agricultural</td>
<td>3.5</td>
</tr>
<tr>
<td>5/ 3,400 - 4,400</td>
<td>Industrial Mixed</td>
<td>9.8</td>
</tr>
<tr>
<td></td>
<td>Agricultural</td>
<td>7.5</td>
</tr>
<tr>
<td>6/ 4,400 - 5,000</td>
<td>Mixed</td>
<td>7.7</td>
</tr>
<tr>
<td>7/ Above 5,000 ft</td>
<td>Agricultural</td>
<td>4.0</td>
</tr>
</tbody>
</table>
the death rate is not high. 8g. Rome 114 listen
1 Madrid 115 whilst in Malaga the only 54 persons
This latter is a well known health resort for phlebic patients.

Tr. It is infrequent in the Hebrides, extreme north
Scotland, north of Norway (70) and in
Finland (84)

13. America

Tr. United States

The Southern States of the Union are comparatively
free and much more so than the Northern. Thus
Florida '58, Texas '63. This comparative immunity
is due probably to three causes.

1. The Mildness Climate

2. The presence of Malaria - the same reason why
Ireland the part of Holland, where Malaria chiefly
exists is also found where a small death rate
from Phthisis (p. 21)

3. From the comparative immunity of the coloured
race - at least where Sports are not drank & where
they are still living is a native & savage state,
amongst whom the RAY RACE.
C. Africa.

I. Egypt. This is here less common than in Europe and becomes more and more rare as we go up to upper Egypt. It is rare at Alexandria 26, but is four times more prevalent at Cairo viz. 101. It may be noticed that malaria is present at the former place. It is more common amongst the Hebrews, Abyssinians and Sudanese negroes than amongst the European colonists.

II. Algiers. The death rate from phthisis is very low being only 0.2 per 1000. The Europeans furnished the greatest number of patients, then the half-casts and then the Arabs. Those least affected - yet their children frequently succumb to tubercular meningitis.

III. It is uncommon in Morocco. Some time in the death rate being 6 amongst the effective troops against 4 in Algeria and 13 in France.

IV. Lake Tangan, is fairly free. The death rate amongst the English soldiers being 3.16 against 3.19 in the Mediterranean States. This gradually diminishes as we go towards the interior.

It is however very frequent amongst the
V. Madseial Mauritius Island.

These are both very poor, it being only meant with in the former amongst the very indigent of poor, and the average rate at the latter is only 1.86 amongst the effective troops.

(D) Asia

1. Phthisis is rare in British Burma.

2. It is uncommon in the interiors of India on the altitudes of the Ghauts and Himalayas where sanatoriums are occasionally situated, such as Khandala in the former and Dainji Tal in the latter. At Khandala the Government have erected large barracks for invalid European troops affected by phthisis and malaria. It has a dry, clear atmosphere and is situated at a height of 2200ft on the Ghauts. When I visited it last year no rain had fallen for nine months and everything was much parched up.

III. Importations of China & Japan are comparatively free e.g. Hankow which is situated upon the Yangtze River where the death rate
<table>
<thead>
<tr>
<th>Country</th>
<th>Number of effective troops per 1000 attacked</th>
<th>Death rate from consumption per annum attacked</th>
<th>Death Rate per 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Zealand</td>
<td>60</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Cape Colony</td>
<td>98</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>133</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>148</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Great Britain</td>
<td>148</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>
from Phthisis amongst the Effective Troops is 6-8.

Hong Kong it is more common. The death rate amounting to 15 amongst the European native troops but only 4 amongst the native troops.

Japan is undoubtedly fresher than Europe - At

Yokohama the death rate is 5-8 amongst the Effective

(E) Australasia.

1. Australia.

Though not spared, Australia has a comparatively low death rate from Phthisis - Victoria 60-8, Melbourne 74. It is however rather more frequent in New South Wales - Sydney. The death rate amongst our Effective Troops for the Whole of the Australian Station is only 5 per 1000. (See Table.)

II. Tasmania.

The death rate from Phthisis is less than in Australia. Phthisis forming only 6-7 of the cases treated in the civil hospitals.

III. New Zealand.

The death rate is due less than in any part of Australasia. That is amongst the White Population.

It is however very common amongst the
The laxity of natures and is one of the chief causes of the nature, the population of the islands, which is rapidly decreasing. This is no doubt caused, as in so many instances, by their passing from a state of savage life to one of civilization. I have seen in a large native village where there was scarcely a child without a severe cough, though it was the height of summer.

Countries much affected by phthisis, constituting over 10 per cent of total deaths.

A. Europe.

T. Norway. Though the death rate from plague is as low as 70 per 1000 deaths in the north, the mean for the whole country is 129. Thus occupying the first place amongst the various causes of death. In the south the rate varies from 200 to 280 or over 1/3 of the total number of deaths.

T. Sweden. Here also equally bad. Stockholm has death rate from phthisis of 160. In the north 147. Central 125, and in the south 131.

T. The frequency of phthisis varies a good deal in Russia. The common in the Baltic provinces. St Petersburg 151 or nearly double...
That in Finland 84 (p. 24) this very common at Archangel though situated in the extreme north (192) - lat 66 N.
This large death rate from phthisis decreases as he proceed to the southern and especially the Eastern provinces.

IV. Belgium. The death rate from consumption is here high viz 190 and is worst in East Flanders where it reaches the high figure of 240 or nearly one fourth of total deaths.

V Denmark. Though not quite as common being about on a par with Great Britain.

Copenhagen 127.

VI. Great Britain
Though not quite as high as in Belgium & Scandinavia, nevertheless holds the first place as a cause of death. The rate is 121 for England and Scotland and 116 for Ireland. It is less common in the North of Scotland & also one of the outlying Islands - as the Hebrides, Orkney or Shetland.

VII. France. The death rate for the whole country is not very high being 112 per 1000. It has frequent on the Southern coasts than elsewhere.

VIII. Germany, Austria & Poland. It varies a
a good deal and is especially high in some of the large towns, though the mean rate is noted (110) St. Louis, Kansas City to 300. Boston 110. Frankfort 155. Budapest 184.

It is also common in Rumania, Bulgaria, and Greece. Athens 184.

B. America.

1. Canada. has a high death rate from Philh., 162, but is surpassed by Nova Scotia which has the very high rate of 241 or nearly a quarter of the whole number of deaths.

2. Northern States of the Union.

We have seen that the Southern States E. 9 Texas (5 p 21) are comparatively free, but the Northern ones are as much affected as Canada. The mean rate is 142. State of Maine has the enormous rate of 358.4. New Hampshire 222. New York State 167. (City 155.) Pennsylvania 142 (Philadelphia 133). This lower death rate in the cities from consumption is curious and the noted as cities in direct contrast to the large European towns, where invariably the large towns have the highest rate and consequently
above instead of below the mean for the whole country as seen here.

III. Consumption is very widespread along the shores of Mexico, Panama, Honduras to both amongst the Europeans and the natives—though the higher inland districts are comparatively free.

14. Brazil is much affected by phthisis in Janeiro 1866-69 (for years 1866-1869) the mulattoes and negroes formed 2/3 while the Europeans only 1/3. The rate of mortality for in the years 1855-1858 it was only 141.6. This increase is attributed to the mixing of races, the spreading of civilization and the influence of alcohol.

15. Phthisis is common on the low lying plains of La Plata to Montevideo 127 d also on the western Pacific Coasts of Chili and Bolivia. Where it is very widespread, rapid in its evolution and in its fatal termination.

Africa

1. Senegal. Phthisis is frequent here, and its progress rapid both amongst the Europeans and natives.
II. The rate in St. Helena is 105, and phthisis is common alike in Madagascar, as well as among the Hottentot population of the Cape, who have passed from a state of savagery to civilization.

Asia

India as a whole is not pronounced from phthisis, though parts as we have seen are comparatively free. In the hospitals of Calcutta, Europeans, Hindoos, Mahommedans & Jews, as well as half-caste, in whom the very fatal, are all met with. Amongst our effective troops Thibetans are found.


III. Northern China. Phthisis forms one of the principal causes of death, and is especially fatal amongst the crowded, in fact, of Pekin. It is very common in Polynesia and follows a very rapid course. In Samoa it forms a third of the total mortality.

From the foregoing examination of the distribution of phthisis over the face of the globe some inferences may be drawn as to the various influences at work, on the one
in favouring and on the other in preventing its occurrence.

I. The crowding of a large population together in a confined space causes the high rate of mortality in the towns in comparison with that of the sparser population of the country districts. This influence is predominant throughout Europe. Curiously, however, we find this not the case. The same degree in the United States, where for instance we found that the mortality from phthisis was less in the towns of New York and Philadelphia than in their respective states.

II. The passing from anomadic or savage life to a state of civilization is also a favouring cause in the development of phthisis. This is well shown amongst the Hottentots of the Cape and the Maoris of New Zealand.

III. Influence of Race

Race plays a certain part in the causation of phthisis, no doubt, but we cannot affirm that this is more common in any particular race taken as a whole. When we find it particularly fatal amongst the coloured races, they are generally in a state of transition from a
from a parasite to civilized life, which we have
mentioned above as a prolific cause of phthisis.
The Equinoces are almost entirely exempt, and the
degrees of the United States are less affected than
the White population. In Northern Africa the Arabs
don't suffer much unlike numbers as the Europeans
whilst the half-casts become more frequently affected
than any other.

IV. High Latitudes
These are found to exist, whether in the Northern or
Southern Hemisphere, in the region in the Old World
though we find that the latitude beyond which
the continent becomes free from the disease varies.
Thus we see, that for Europe, the latitude was west
of 70° on Asia, 60° North America 52° West for
South America. It's 42° S. Thus including the
greater part of Patagonia. This thus led to the
prolonged and intense cold of these regions
as a prophylaxis against tuberculosis.

V. High Altitudes
These districts, which have some features in
common with the foregoing, seem equally free
from the threaten of phthisis in whatever part
of the world they may be situated. E.g. The Alps.
in Europe, the Rocky Mountains of Sierra Nevada 43
of North America, the Andes of South America -
The Himalayas of Shanta of Asia -

VI. Dry inland plains and plateaux.

Many such districts are also free from cold and damp.
E.g. the Eastern plains of Russia, though the rest
of the country is much affected by it - the plains
of Arabia, in Arabia, though we have
been told that the coast line of Mexico is much
affected - Persia, Central Arabia are in
Asia; from which we may gather that dry
and somewhat rarefied air is favourable
for the prevention of phthisis.

VII. There are various other more isolated
places - chiefly situated in the temperate zones
and frequently on the sea coast, which possess a
combination of circumstances which seem
particularly suited as a prophylactic against
Syphilis - E.g. Madura - South coast of France -

VII. The presence of malaria acts as a pro-
phylactic - E.g. The marshy provinces of Sweden
in Holland. The rate is only 674, White that
for the whole country is 94. This is also seen
in the State of Florida, in Burmah etc.
With these facts before us we shall the more easily be able to classify the various places and parts of the world which are likely to prove available as health resorts, for our most perfect patients who are suffering from phthisis. It will then be necessary to study the physiologic influences of these various districts and climates on the human body, and to apply these, so as to enable us to decide in what cases and in what state of the disease, recourse must be made respecting from the most beneficial.
Division I. High altitudes.
  e.g. alps - Daros plat.
  Rocky mountains - Denver, Gunnison.
  Andes - Janja - Luito.
  Himalayas, Pyrenees, Jura - St. Sulpice.

Division II. Dry Inland Regions
  Egypt - Cairo - Luxor.
  Syria
  Persia, Central Arabia - Steppe of Central Australia, Russian Asia etc.

Division III. The Ocean.

Division IV. Temperate Regions with more or less moistures
  Class (a) Temperature moderate, moisture considerable
  e.g. Torquay.
  Bournemouth.
  Menton.
  Class (b) Temperature higher and much moisture
  e.g. Madeira, Azores
  Class (c) Temperature high and little moisture
  e.g. Athens - Mentone, San Remo - Cannon, Algiers.
  Manila
  Santa Barbara (California)
Health resorts are valuable, firstly because they admit and encourage the ordinary rules of a good hygienic life to be thoroughly carried out, and secondly because they provide favourable conditions - such as a good climate - for the treatment of the disease.

There is scarcely any department in medicine which has apparently better exemplified the unputative frequent brought against the prejudice of acting according to fashion than the hunting of phthisical patients to famous health resorts. Indeed, the enormous difference in climate between places, which persons suffering from consumption have been advised to visit, may be casual and non-professional, or appear irreconcilable, one having been sent to a high dry cold region while another is sent to a warm, moist and more or less relaxing or rather Pedative climate - or again a long sea voyage may be recommended - here the patient has to encounter many hardships (for an invalid) and many differences of temperature and climate.
Now this—in the treatment of a single disease—may at first sight appear inconceivable, and yet upon examination we find that it really is so. The point to remember here is that different stages of the disease occurring in different temperaments and constitutions require different treatment.

There can be no doubt that each of the four classes into which I have divided the health resorts, have in turn been the most popular in the professional mind. Thirty or forty years ago, for instance, it soon became known that madaces tended to send a consumptive patient in any stage of the disease to such a place as Davos Platz on the Engadine, with a mean winter temperature of 5°C. Indeed all were then sent to Baden-Baden, the Riviera, or more recently, Torquay and other mild coastal places on the south coast of Devon. Let us now examine each of these classes of health resorts.
<table>
<thead>
<tr>
<th>Altitude metres</th>
<th>Bar Pressure</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>760 mm</td>
<td>32°F</td>
</tr>
<tr>
<td>500</td>
<td>714</td>
<td>29.8°</td>
</tr>
<tr>
<td>1000</td>
<td>670.5</td>
<td>28.079°</td>
</tr>
<tr>
<td>2000</td>
<td>591</td>
<td>26.369°</td>
</tr>
<tr>
<td>4000</td>
<td>460</td>
<td>23.242°</td>
</tr>
<tr>
<td>7402</td>
<td>300</td>
<td>18.090°</td>
</tr>
</tbody>
</table>

(= 24,000 ft (4,000 m))

(Prof. H.G. Lombard)
Division I  High Altitudes
(a) Cold Dry Atmosphere
(b) Hot Dry

Physiological Action of Altitude

With reference to the influence of altitude on the human economy, we have to keep in mind two important points:

1. The diminution of oxygen in the air.
2. The diminution of atmospheric pressure.

I. This diminution of oxygen in a given volume of air is very marked as high altitudes are reached, as may be seen from the following table drawn up by Dr. H. E. Lombard, where it is shown that the oxygen per litre is reduced from 30 centigrams to 7.60 m.m. (Bar) at 0°C. i.e. on the sea level, to 3.86 centigrams at the height of 1000 metres i.e. with a barometric pressure of 670 m.m. and 2.34 at the same height with a temperature of 37°C (99°F).

Now, this may not seem so large a quantity, seeing that the oxygen in expired air amounts to 16 per cent having thus lost only about five percent at the lungs - but if we compare the effect caused by the diminution (or excess) of oxygen in the air on the body, and the quantity which passes through
The lungs of an adult in the twenty-four hours, he cannot but conclude that the above diminution in the quantity of oxygen must have a decided effect on the body. The haemoglobin of the blood, passing through the capillaries of the lungs, takes up as much oxygen as it can, and is chemically (but slowly) combined with it in such a manner that desoxygenation is again easily effected, and without disintegration or decomposition of the haemoglobin. Being thus saturated and here with oxygen under the existing conditions of the atmosphere, if additional pressure of oxygen is imposed, no more can combine with the haemoglobin, but nevertheless a small quantity is simply absorbed by the blood.

M. Pame Bert has shown the injurious influence of a super-oxygenated condition of the blood, produced by placing animals in cases containing air compressed to two or more atmospheres, which terminates in their death. This fatal issue is caused by the diminution of the accretion of the tissues of the body, and their entirely stripped at a pressure of 20 atmospheres, the animals dying of asphyxiation, just as when oxygen is deficient. Plants are similarly killed by a too great pressure of oxygen. Reversing these experiments, Bert also
found that by purifying the air, death ensued when the oxygen had been reduced to 3 percent, and the fatal issue was the more rapid according to the degree of rarefaction present.

Now Dr. Lombard, following Dr. Paul Bert's theory of anaemia, or the state which is produced under the influence of an insufficient supply of oxygen, the blood causing it combine not sufficiently freely with the haemoglobin, attributes thus the prophylactic and curative influence of high altitudes on consumption.

These conclusions have been controverted by Dr. Maresch, grounded on fresh observations made at the Peak of Anoriffa. He found that the quantity of carbonic acid retained at high altitudes was most considerable there in the plains. But as all functions are increased in activity by a temporary sojourn at a high altitude (Respiration, circulation of blood), we should naturally expect an increased elimination of carbonic acid.

II. Diminution of Atmospheric Pressure.

This is of course the same as saying that the weight of air supported by the human body diminishes as we ascend and it does so...
<table>
<thead>
<tr>
<th>Altitude (m)</th>
<th>Bar. press. (mm Hg)</th>
<th>Weight of air supported (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>760</td>
<td>15,500</td>
</tr>
<tr>
<td>500</td>
<td>714</td>
<td>14,562</td>
</tr>
<tr>
<td>1000</td>
<td>670.5</td>
<td>13,675</td>
</tr>
<tr>
<td>2000</td>
<td>591</td>
<td>12,053</td>
</tr>
<tr>
<td>4000</td>
<td>460</td>
<td>9,382</td>
</tr>
<tr>
<td>7000</td>
<td>315</td>
<td>642.4</td>
</tr>
</tbody>
</table>

(donblard)
according to the table opposite, thus the height of
1.4677 atmospheres. The body is nearly 2 1/2 times as great
at the sea level as at a height of 7000 feet (2134 m).
The effects of this diminution of atmospheric pressure
are (1) a more rapid evaporation of moisture and
radiation of heat from the body, following upon
an increased freedom of access of the blood to
the skin and also of the lungs.
(2) A more profound inspiration and also an
acceleration of the breathing to compensate for
the increased difficulty of pulmonary endo-
dermis, and diminution of oxygen in the atmosphere.

3. Consequent upon this profounder respiration,
the chests of the natives of high regions are unusually
large and those of patients sent to these places
become enlarged from the greater expansiveness of the
lungs.

Jourdain draws attention to the unusually large and
wide chests of the Mexican Indians, quite out of pro-
portion what might, and Dr. Ruschi finds that 90
percent of patients sent to Daros gain in the
circumference of their chests by a residence
there - Dr. C. J. Willimas suffers from this and
from the improved breathing powers of
The patients, as shown by their daily ascents which would have been impossible of accomplishment when they went there, that there is not only an increase of lung tissue, as well as a development of a certain amount of lymphocytes around the oedematous and shrinking tubercular deposits.

(1) Physiological Influence of Dry Cold.

1. Diminution in the number of Respiration.
   Though the number of respiration is diminished, yet the respirations are deeper and more complete, and consequently, induce a greater fixation of oxygen in the haemoglobin and therefore also a greater exhalation of Carbonic Acid. Therefore the purifying actions which the blood undergoes passing through the lungs are more effectively performed.

(2) Cold diminishes the frequency of the pulse, but nevertheless the circulation is not diminished, but rather increased in activity, on account of the stimulation of the nerve-cells proceeding over recirculation occurring afresh and therefore more stimulating blood.

3. Perspiration and cutaneous activity is much diminished. This is caused by the action of cold.
pathelin, which causes the peripheral capillaries to contract preventing the free flow of blood through them, as visible in the paleness of the skin under its influence.

(4) Though there is contraction of the cutaneous capillaries, there is present by great a loss of heat by the increased expenditure of warmth necessitating increased secretion of the tissues to keep up the supply, return necessitating a greater activity of assimilation and therefore a larger quantity of acid and carbonaceous substances which are the more readily digested and absorbed to keep up the required supply.

5. The respiration and circulation (excepting in the periphery) and all the digestive being more active a richer blood is sent to the nervous centres augmenting their activity, whether they are centres of motion or centres of the higher faculties, the intellect being keener and brighter and the muscular actions more vigorous.

Having examined the physiological action of altitude and dry cold, let us take an example of a health resort combining the two E. G. Daroo Plate in the Bahadur.
Table—percentage of plants noticed at various heights and classified as different occupations.

<table>
<thead>
<tr>
<th>Elevation in Feet</th>
<th>Industrial</th>
<th>Mixed</th>
<th>Agricultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 - 1600 ft</td>
<td>10.2%</td>
<td>7.6%</td>
<td>6.0%</td>
</tr>
<tr>
<td>1600 - 2300 ft</td>
<td>10.2%</td>
<td>5.9%</td>
<td>5.3%</td>
</tr>
<tr>
<td>2300 - 3000</td>
<td>4.7%</td>
<td>9.6%</td>
<td>2.9%</td>
</tr>
<tr>
<td>3400 - 4400</td>
<td>9.8%</td>
<td>7.5%</td>
<td>7.5%</td>
</tr>
<tr>
<td>4400 - 5000</td>
<td>Mixed</td>
<td>7.7%</td>
<td></td>
</tr>
<tr>
<td>5000 and above</td>
<td>Agricultural</td>
<td>4.0%</td>
<td></td>
</tr>
</tbody>
</table>

The industrial class is chiefly employed in lace and watch making.
Daros is situated at the height of about 5780 ft, with a mean annual temperature of 3° C or 35.6°F, but with a winter mean temp of -9.8°F (-5.8°C) and therefore has almost a Siberian climate as to degree of cold. The air however, is very dry and clear, and the snow which covers the ground during the whole period from November to March, is fine and dry never melting even partially to render the ground underfoot slippery. Patients can remain in the open air notwithstanding the intense cold on account of the dryness of the atmosphere. There is an absence of cold north wind, the valley running east and west and protected by high peaks on the north and south, and by lesser ones on the east and west, thus giving it a very calm atmosphere.

There is a complete absence of phthisis among the natives within this district, though the table given on the opposite page taken from the German work "Der Verbreitung der Lungenerkrankung" by E. Mueller shows that the statements that there is an entire immunity from phthisis in the mountainous regions of Switzerland are erroneous, though there is a diminished mortality. The great purity of the atmosphere...
The bracing air, the freedom from exhilarations of all 
ruins which are enjoyed at high altitudes, may 
be obtained. Equally well in other and more accessible 
places, and are undoubted, of great importance. 

1. The diminution of atmospheric pressure. 
2. The deficiency of oxygen. 
3. The dry and very cold atmosphere (in such 
   stations as we have been considering, e.g. Davos).

These therefore must be attributed the beneficial 
results of a residence in cold, mountainous 
spots. In regard however, to these peculiarities, it must 
be remembered that it must be adverse, trial to 
aphysicire patients by going from a temperature 
of 60°-70° in their rooms to a temperature 
of perhaps 15° in the open air, which might cause 
inflammation of the mucous membrane of the throat 
and lungs, or in healthy persons of at all liable 
bronchial affections.

Again, deficiency of oxygen in the air induces 
aemia in those who are weak and unable to 
take sufficient outdoor exercise. 

He must conclude therefore that it is unsuitable.
unsuitable for those cases where Catarhal Symptoms are the chief features. (2) for patients who are weak, anaemic, or who have diarrhoea, precipia, or profuse expectoration with a cavity present or forming - in all such cases the above conditions can only hasten the progress of the disease.

If however the patient be tolerably strong, in the first stage of the disease and able to make exercise in that cold atmosphere he may rapidly improve. This climate is frequently of great benefit also in hemorrhois of phthisis.

(b) High Altitudes with Hot and Dry Atmosphere

Physiologic Influence of Dry Heat.

1. Heat accelerates the Respiration and the circulation, but this increase in the frequency of Respiration does not compensate for the rarefaction of the air caused by the heat.

2. Respiration is one of the chief consequences of dry heat. The cutaneous capillaries become diluted allowing the blood a free access through skin, where it evaporates in proportion to the heat and dryness.
The atmosphere. The aqueous vapour derived from the lung is likewise increased, while the urine is correspondingly diminished in quantity.

3) From the diminution of oxygen inhaled and carbon dioxide exhaled, assimilation is less active than in dry air and thus a lighter food is necessary. The muscular activity as well as the nervous being also some-what less active.

As examples of high altitude stations combined with dry heat we may take (1.) Rocky mountain Health Resorts. (2.) Those of the Andes and (3.) of the Himalayas, and other mountain ranges of India. (1.) Rocky mountain Health Resorts - such as Colorado Springs and Manitou. Though these stations are at a greater altitude than Davos, they have a much more temperate climate. Altitude 5,900 to 6,370 ft. and mean annual temperature 9.44 °C (49 °F). for former. They are situated both in 5 or 6 miles of each other and besides offering excellent hotel accommodation, the dry clear, bracing air is most invigorating and enjoyable. The walks, rides, and drives in the neighbourhood are most interesting and...
and afford many magnificent views and
natural wonders. I should recommend Menlo
as a summer resort and Colorado Springs for
the winter, the latter being easier of access,
larger, and more on the open plains, the former
being on the mountain side, higher and colder.
The Alkaline and Chalybeate Springs here, were well
known to the Indians before discovered by the White
Man, and they were accustomed during their
sick to drink and bathe in them, giving
the place the name of Manitou or Great Spirit
on account of the relief they obtained, which
they deemed supernatural.

Dr. Donelson has proved a great acceleration to
take place in consumption, which he has stayed in
these places sufficiently long to give them a fair trial
and he attributes this in part to the "thermograph"
- the air as hence it, that is "the difference in
temperature between Sun and Shade temperatures," he
has deduced the laws from numerous observations that "there is one degree 7. greater
difference between the temperature in the sun and
in the shade for each rise of 335 ft." This he
attributes to the partial elevation of the air
and the diminution of moisture here in suspended.
2. The Sanatorium of the Andes.

Jauja—The best known—is an elevated valley 44 miles long and 17 wide, at a height of 10,000 ft. The reason consists of a dry and a wet season. The former sometimes falls as low as 28°, and seldom rises above 57°, but the rains vary are very powerful, due to the great diathermy of the air; so much so that while the temperature may be only 50° in the shade, it shall be over 120° in the noon.

There is a government hospital situated here, established for those attacked by pleurisy along these coasts. Here it is common. Dr. Fuentes reports 79 percent to recover after admission into the hospital. Dr. Zapater notes that the natives of Jauja have the supernaturally developed chests of the natives of the Andes generally.

3. The Sanatorias of India.

All the Himalayan stations have a large rainfall, and in the Himalayan mountains have a decided less quantity and moreover their temperature is more equable. E.g. ranging from 54°-63°7 at Bobaca mund, instead of from 48°-64°7 at Darjeeling or from 46°-86°7 at Sinla.
There has been a considerable difference of opinion expressed and discussion excited amongst the medical men of India as to the value of these reports for consumptives, the heavy rain-poor doubtfuls acting unfavourably. Dr. Healeh gives a report on 39 consumptive soldiers, all of whom except one were in the first stage of the disease. In 6 months at Dundoo of these 6 recovered 16 improved, 6 were stationary and one became worse. He states also that the chests of the men increased one inch in circumference, on an average.

The conclusions arrived at respecting the patients which are benefited by the high, dry and cold climates (pp. 66-68) are applicable generally speaking. The above results and indeed now only add two conclusions which Dr. Duncan has arrived at from his observations at the various Sanatoria of the Rocky Mountains, viz. (1) "That the result of a high altitude climate, by a consumptive gives a proportionately good result, the farther it is undertaken, the more so than is the case with less positive climate or means..."
That the advantage of high altitudes are presumably felt for the "harmorrhagic" cases in the first stage, while "harmorrhagic" cases with "excaration", especially of the "harmorrhages", has been recent, and has been in progress showed by "intricated, from going up great elevations."

Class II. Dty Inland Regions.

The physiological relations of this case have been discussed above, but generally speaking the air is dryer than in the places above mentioned—e.g. as for instance in Central Arabia, or Luxor in Egypt, or the "Patah Bust" Country of Australia. When the physicians of Melbourne and Sydney now send their patients. The great disadvantage however of these districts is the want of good fresh food—meat, it is almost impossible to obtain, so with eggs, and household accommodation is very poor. With these drawbacks consumption instead of improving often get worse. It is of course different when...
preparation to a certain extent is made for their reception as in dew. Many banners who have been sent to the dry inland plains of Australia have greatly improved. In these regions, the north of the Blue Mountains, in Victoria and South Wales, rain sometimes does not fall for 12 or 18 months at a time.

Egypt - Cairo has a mean monthly temperature of 17.6°C (63.6°F). There is here a very small rainbarrel indeed. Rain falling on about 12 days only in the year on an average, and these when it often lasts only 2 or 3 hours. In 1832 rain fell for 8 consecutive hours, which was a notable event.

These places possess an essentially tone and stimulating climate, which produces a feeling of energy and comfort in new arrivals, and sets up a greater activity of functions in all the organs. Egypt is the type of dry climates. It produces very good results if the consumptives are in the first stage of the disease and have no marked symptoms such as pyrexia. If however, the disease has progressed to the second or third stage, nothing is to be hoped for from a residence there.
Class III

The Ocean

The question of sea voyages in Pithius has been much discussed and has always had its advocates. So in Celsius one of the most esteemed of the ancient medical writers, and whose opinions were quoted posthumously during last century, and who lived probably towards the end of the reign of Augustus 1 B.C. 30—writes: "...ibi siti tres
patientur longa navigatione, coeli mutatione
Sic ut ducimus quam id est Ox quo discendi
era petatur..." Ibesque apoptesin Alcandriae
et Italiae itin, si id imbucillata non simul
mare tamen rednus longe, rectius commoditas
ut est..." or, "If the patient's strength allow, he
must take a long voyage changing his climate,
taking care to remove to a denser (whatever he
means by that) air than that he leaves, and
therefore from Italy to Alexandria is a very suit-
able change..." If the weaknesses of the patient
won't admit of that, it is very proper however to
sleep in a ship but not far..." This now however at the present time that it
is more popular than ever, and perhaps rightly
so, and numerous are the patients and
off yearly try a long sea voyage to Australia, New Zealand or other distant parts of the world for their complaint. Now in this class perhaps more than in any other, is the importance of recommending suitable cases more marked, and it is on this point especially with to insist. Many and many are sent out yearly in this manner only. She is on those around her and their eventually some doubt before reaching their destination. I have 0.5 cm cases in the third stage of the disease and that rapidly progressing. She on board without a friend to even an attendant. Thrown all the difficulties and often real hardships of a voyage. Though The commission is much improved in good lines, it is nevertheless not what we desired. Shown have or known have if he were remaining at some health resort on land. It is admitted that no air is as pure, not even that at the top of a mountain as that far out at sea. But I maintain that the difference between it and that of a brackish health resort is infinitesimal and both are laden with saline particles which...
are considered so helth giving - whereas the
disadvantages is so unverified far outweigh any
such slight advantage - such as close cabins.
The weakness caused by seasickness, the damp
fog, the draughty saloon etc. - a leading
London physician wrote out a patient last year
with a cavity forming in his right lung, saying
Thrus. Oh! you will be basking in the Sunshine
and sleeping out on deck in the fresh air in a
few days, little remembering the cold winds
seasickness and other trials which the
patient had endured in the meantime. And
when the wished for latitude with its warm
nights is reached the decks are running holt
water from the heavy dewy and rotten thing
as the anticipated pleasure of sleeping in
Open air is attainable - this patient did
survive, but was scarcely strong enough to walk
unaided when he landed, and of the ten
consumptives on board Ship is not more died
in various parts of the Colonies soon after their
arrival - on the other hand many cases
are greatly and wonderfully benefitted by the
voyage, for instance. H... a professional
Cricketers who were losing flesh rapidly and had haemoptysis and other signs of advancing phthisis, seemed to live longer than 2. I knew during a voyage to Melbourne and had not had symptoms after the first few days, how its such cases as these which do strongly advocate the cause of the ocean as a health resort, but we find that the those in the first stage of the disease whom it is most beneficial whilst the fatal disease in an advanced stage.

How can we note the course of a ship under such a voyage does it stand to reason that a patient benefit by the voyage must be strong enough at starting to withstand the vicissitudes of the weather and the other drawbacks already mentioned, if on the other hand the patient is weak or in an advanced stage of the disease, he gets an exacerbation which only too frequently ends fatally before the end of the voyage.

Let us take for instance the case of a patient sailing in a well-appointed ship in September, the most favourable time of the year for...
for starting on a voyage to Australia or New Zealand.

The patient finds himself pacing up and down the deck. The sea breeze, which frequently necessitates great coats and pea-jackets even for the healthy, He goes down the Saloon as issuing command and finds such draughts as would frighten him or his physician if on land. Here he has to remain all morning, or if he finds it too unbearable he endeavours to take refuge in his private cabin and has taken probably with one or two others and which he finds very close and lacking the fresh air he would obtain in an airy bedroom at home. An Equinoctial gale is usually experienced before getting away from our Coasts, with all its concomitant miseries of sea sickness and enforced confinement to the lower regions, with its draughts or want of ventilation, the deck being probably too hot and slippery for any thing but a struggle. The smoking room.

After this a much more pleasant time usually sets in lasting through the North East
Trades, which carry the ship well into the Tropics.
And it's during this time that the patient if he has been able to brave the first fortnight, greatly benefits. But now he has to face another trial of his strength in the heat and moisture of the Tropics. If the patient has been suffering from hæmoptysis or night-sweats, the former returns with increased violence, and the latter are rendered much more profuse and therefore more weakening. — And so real a danger are these indeed, that not infrequently advanced cases terminate fatally in this region. The really depressing effect may be seen in the great majority of the healthy whom a considerable loss of weight takes place ranging from 2-4 or 6 lbs. during the fortnight usually spent in the Equatorial region. The patient having successfully passed through this region also is now braced up again, and if tolerably well regains in the next three weeks the loss of weight sustained in the preceding fortnight, by the delightful cruise from about 15 deg. to 35°-40° S., through which he is carried by the S. E. trades.
Heights of passengers taken at intervals during a voyage to Australia.
Calculations commencing with the Second trip.

Class I
Healthy persons, those suffering from minor complaints and some convulsions.
Class II.Phrisical Patients

2nd weighings - lat. 28° N.
Class I. He weighed 32.
19 gained 64½ lbs average 3.4 lbs
8 lost 11 lbs .. 1.5
5 neither gained nor lost.

Class II. He weighed 30.
12 gained 28 lbs average 2.33 lbs
5 lost 9½ lbs .. 2.
3 neither gained or lost.

2nd weighings - lat. 5 N.
Class I. He weighed 36.
5 gained 9 lbs ar 1.86
27 lost 99 lbs ar 3.6
4 neither gained nor lost.
in splendid weather. This usually lasts till the longitude of the Cape of Good Hope is reached, or nearly so. Here again trials await the invalid, for not only is the temperature most generally severe, but the cold is so great as to give the majority of persons chills and shiver it necessary for the healthy crew about on deck or take part in athletic exercises to keep warm. The invalid being unable to join in such pastimes has to wrap up and keep himself warm as best he can while on deck, and when he has to turn in, to warm with fire is the only thing, and he has to seek his berth. The air being filled with cold, in the hope of finding the warmth in bed which he is unable to find elsewhere. This lasts more or less till the longitude of the western point of Australia is reached, when it becomes decidedly warmer and the patient is again able to sit on deck and enjoy the sunshine and his moderate exercises. This fair weather usually lasts at that time of the year (December—commencing January) till he arrives at his destination, more or less improved he may safely say, according to the state in which he was when he left home.
Class I. No. weighed 15
3 gained 6½ lbs ar. 2.16
12 lost 54½ lbs ar 4.32

Class II. No. weighed 36. dat 31.5
32 gained 111½ lbs ar 3.48 lbs
3 lost 2½ lbs ar 83
1 neither gained nor lost.

Class III. No. weighed 12
11 gained 54 lbs average 5. (near)
1 lost 4 lbs — 4.

Class IV. No. weighed 33. dat 39. 38. 5.
25 gained 64.5 lbs ar 2.18
5 lost 12.5 lbs ar 2.5
3 neither gained nor lost.

Class V. No. weighed 14.
8 gained 24 lbs average 3
3 lost 6 lbs — 2
3 neither gained nor lost.

Total Variations from first to last weighing.
Class I. No. weighed 38.
29 gained 162.5 lbs ar 5.6
9 lost 24.5 lbs ar 2.73
Greatest gain 18 lbs.

[Signature]
The predisposition to the disease, as well as that in the first stage frequently having greatly benefited, whilst those in the second or third stage are usually much worse or recovered or have not succumbed on the voyage.

Dr. C. O. Williams says the cases which he has seen profit most by sea voyages are (1) Cases of chronic phthisis and (2) Cases of limited consolidation with dyspepsia occurring in young men. He has kept 22 patients for 50 voyages. Of these 87 per cent improved, 5½ remained stationary, 2 5½ per cent became worse. A very good result we may remark.

The appended tables are given for what they are worth, but it must be kept in mind that the worst patients often refused the weighed, whilst others finding they are losing ground in the tropics become distrustful, and will not again be weighed. The most notable thing is the great fall in weight both in the healthy and phthisical in the third weighings, i.e. in the tropics, and the remarkable rebound afterwards in the 4th weighings in the Southern Temperate region.
Total variation (Continued)
Class 17 he weighed 17.
9 gained 78 lbs ar 8.66
8 lost 16.5 lbs ar 2.06
Two greatest juries 20.5 and 19 lbs respectively
Division IV.

Temperate regions with more or less moisture, tonic and sedative.

Class (a) Temperature moderate, moisture considerable.
   E.g. Torbay, Bournemouth, Ischia, Puglia.

Class (b) Temperature higher and much moisture.
   E.g. Madeira, Azores.

Class (c) Temperature high and little moisture.
   E.g.辈tice, Mentone, San Remo, Cusano, etc.
   Algiers, Malaga.
   Santa Barbara, (California)

As life can be more easily regulated these resorts are best suited for the real invalid and those in the second and third stages of phthisis. Such persons can live in well-ventilated rooms, procure good and nourishing food, choose their climate and special resort according to the time of the year, taking the more southern during the winter and gradually coming northwards as summer advances. During the summer months in England as our summer climate is suitable enough for phthisics. Patients are thus able to remain indoors in bad weather avoiding cold winds and rain, to obtain regular and wholesome food,
And in all ways leading a true regulated, hygienic life.

The districts chosen as health resorts in the temperate regions showed not have a lower temperature than 45° at night rising to about 65° in the day — both air and climate. Of this temperature Persia is famed and invigorated, Brazil is favored and Thus the appetite and digestion are stimulated. These places are more or less tonic and bracing to health generally speaking according the amount of moisture held in suspension in the air. Thus they may be classified either according to their temperature and moisture (as above), or according to the tonic or sedative action of the air.

(a) Temperature Moderate. Moisture Considerable

Irkut, Torquay, Bournemouth, Penzance.

These places are all more sedative than tonic. Penzance and Torquay the moister, steadying the head, and are especially valuable therefore those consumptions whose are of an irritable and excitable temperament, requiring an equable and humid climate, which favours climate.
<table>
<thead>
<tr>
<th>Resort</th>
<th>% Improved</th>
<th>Stationary</th>
<th>Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bournemouth</td>
<td>13 or 65%</td>
<td>2 or 10%</td>
<td>5 or 36%</td>
</tr>
<tr>
<td>Hastings</td>
<td>41 or 72%</td>
<td>3 or 5 1/2</td>
<td>13 or 22 1/2</td>
</tr>
<tr>
<td>Jersey</td>
<td>40 or 69%</td>
<td>4 or 6 3/4</td>
<td>14 or 24</td>
</tr>
<tr>
<td>Jersey</td>
<td>60 or 60%</td>
<td>10 or 10%</td>
<td>30 or 30</td>
</tr>
</tbody>
</table>

Dr. C. J. Williams
diminution of nervous excitement and rapidity of the circulation. In these cases when the disease is advancing and diminishes the rapidly fatal there is frequently a diminution of the cough and fever, and an alleviation of the symptoms from a stay at the other places. On the other hand, the above resorts are less favourable for those of a lymphatic temperament with abundant secretions.

In Dr. Williams' table it is curious to note that Hastings has by far the best result, and Surray the worst, and the benefit obtained follows a course from east to west, exactly the reverse of the warmth of the localities. He found also that the general health improved more rapidly at Hastings than at the warmer stations, the appetite being better both less tendency to diarrhea, and disturbances of the digestion.

(13.) Temperature Higher and much moisture.

Madeira

The climate of Madeira is particularly soothing and after a time excavating. The equableness of the temperature from day to day
The mean annual temperature is 65.3° to 18.5° C., and actual cold is unknown. The continuous warmth and humidity of the air cause certain languor and listlessness to be produced. From these conditions of the climate, it follows that it is especially favourable to chronic phthisis and other Catarhal symptoms predominant in chronic, tuberculous cases. Of advanced cases having taken place from a residence at Madera.

The climate is too warm and relaxing for cases rapidly progressing, as it has been amply proved that acute phthisis is much more rapidly fatal in warm—especially tropical—regions than in colder and more bracing climates.

(c) Temperature higher with little moisture, e.g.,
San. R공, Murrut, Algeciras, Malaga, Santa Barbara (California).

The Riviera generally.

The characteristics of this climate are (1) its dryness, (2) the bracing and stimulating properties of the air, (3) warm sunny days, with cool nights; it presents therefore a
very suitable winter climate for consumption. The
During the six winter months there are seldom
more than from 25-30 days in which rain falls.
Thus there are about 160 days of fine sunshine on
which patients may pass the greater part of the
day out of doors. Thus the appetite and digestion
improve, nutrition becomes more active and the
progress of the disease is arrested.
These places are essentially tonic and stimulating,
increasing the activity of the circulation and
diminishing the tuberculous secretions.
Symptomatic and invigorating treatments find
the greatest benefit from a residence in these
districts.
When however there is much nervous exci-
citability or a marked tendency to haemorrhage
the climate should be avoided, and a less
stimulating one selected. The air of the
places situated on the sea coast is often so
stimulating as to prevent sleep, whilst that
of places a short distance inland is less
stimulating but not quite soenable.
Of 152 patients who passed 329 months
in the shores of the Mediterranean, Dr. Williams found 62.5 percent improves, 20.34 remained stationary, whilst 17.10 became worse.

Algeria is cooler and warmer than the Riviera, the rains being attracted by the Atlas mountains. The mean winter temperature is 56.7°, Rainfall 329, and the number of rainy days 87. Which unfortunately are chiefly in the winter season.

Marseille is warmer than the south of France, and drier. It has an essentially bura winter climate producing especially good results in chronic consumption, with catarrhal symptoms and chronic rhinitis. The area is hot, with temperatures from 90° to 70° in summer. Rainfall 16.59.

The accommodations and general hygienic arrangements are however very defective—having grown the general characteristics of the Riviera as a whole scarcely take the resorts individually as their characteristics have been simply and frequently discussed. It will however have been seen from what
has been said that it is not at all a matter of indifference where a patient be sent, nor that it is an anomaly that one should be sent to Daros and another to Madeira. The peculiarities of each case as to constitution, temperament, origin, stage, and character of the disease, as well as the position and the means of the patient, must all be taken into consideration in coming to a true conclusion as to the particular climate and resort that is likely to prove the most beneficial.