

ing; in short, you may draw a bone very much as you would draw a book at the office of the circulating library. I need say nothing more of the importance of always studying bones and, as far as may be, everything else on the specimen itself.

Then, again, we have the dissecting-room in which, however, you will not begin your work quite as yet; and I say little of that lest I should take up your time in saying too much, because it is a matter of such vital importance for the learning of anatomy. There is only one thing I will say, and that is that the work should be done seriously and thoughtfully. It is not enough to uncover a part; if a man is too lazy afterwards to study what he has uncovered he may as well leave it undone. As one of our former demonstrators, Dr. R. M. Hodges, in his little book on "Practical Anatomy" says, "You should know what the books say, and cross-examine them in the presence of the subject."

There is, then, besides the course that I am giving to this class, the course which I give on Advanced Anatomy to the second-year students. That does not concern you, excepting that I have always thought it wise that a student should imbibe as much anatomy as he can; and though I would never have you neglect anything else for it, when you have a spare hour at the time of that lecture, I believe it may be very profitably employed there.

Then, again, there are the very excellent demonstrations of more or less Applied Anatomy given by Professor Richardson up-stairs. Those are open to the whole school. They are subject to examination to the second class, not to the first, but open to all; and for the same reason those should be very fully attended.

As for Histology I say little, but it is an important branch of anatomy. Prof. C. S. Minot will speak to you of that. I will only remind you that the lectures on histology form part of the subject-matter for the examination in anatomy at the end of the first year.

Another important method of study is the use of the museum. We have here collections of which we are very proud. In all respects they are by no means perfect, but in some they are very good. Our collection of bones in the museum is a very complete one, and we are beginning to place into series the bones illustrating the points that I have spoken of. This spine for instance, is a unique specimen, showing certain peculiarities which I will not now describe; it stands at the end of a line of some dozen others, all of which show less striking variations from the usual arrangement. We have a series of beautiful dissections of joints. There are many frozen sections, some mounted, some unmounted. We have a collection of corrosion preparations unrivalled by that of any school in this country, and which, I imagine, has few rivals in Europe, I certainly have seen none in England or France.

I regret that the museum has never been utilized as it should be as a place for study. It is a place where much may be learned.

—The *Medical Press*, July 30, 1890, complains that in England the announcement of a marriage or a birth is followed by confidential letters, offering, in exchange for the sum of one guinea, information bearing on the means of preventing any addition to the family circle.

Original Articles.

CONSUMPTION IN MASSACHUSETTS.

BY J. M. FRENCH, M.D., MILFORD, MASS.

CONSUMPTION — like the poor, we have it always with us. From infancy to old age it claims its victims. From the tropics to the poles it carries off nearly one-sixth of the human race. No physician but has it to meet, and none but dreads it; no one but feels well-nigh helpless before it.

In the belief that any progress we may make towards conquering this dread scourge must come more from the study of the means of prevention than those of cure, I have been deeply interested in studying some of the antecedents of consumption, and especially the influence of environment upon its prevalence. In the studies, the results of which I present here, I have confined myself chiefly to Massachusetts, both because here it is that we have to deal with it, and because the necessary statistics were conveniently at hand.

These statistics have been obtained mainly, but not entirely, from the United States census returns and the Massachusetts Registration Reports. I am aware that they include various sources of inaccuracy, and, perhaps, even of fallacy. For example, we know that the record of the causes of death, as kept in many towns, is both incomplete and inaccurate; and that the term "consumption," as there used, undoubtedly includes, not only the different varieties of pulmonary phthisis proper, but also many cases of chronic bronchitis, chronic pneumonia, and other allied diseases. But making all allowances for these and other defects, I can only say of the statistics I have presented, that they are the best that I could obtain, and that I believe there is much to be learned from them.

First, then, as to the *mortality* from consumption in Massachusetts: For the period of forty-six years and eight months, ending December 31, 1887, consumption has been the cause of 209,056 deaths in our little Commonwealth, while only 75,189 deaths have resulted from pneumonia, 60,384 from old age, 55,394 from cholera infantum, 46,793 from typhoid fever, 46,699 from violence, and 46,201 from heart disease — nearly three times as many deaths from consumption as from any other single cause, and about one-sixth of the deaths from all causes.

During the five years, from 1883 to 1887 inclusive, 15.45% of the whole number of persons dying, or 3.03 out of every 1,000 persons living, have been carried off by this dread disease.

According to the census of 1880, the mortality from consumption throughout the whole United States was 12.05% of the entire mortality, or less than four-fifths as great as it was in Massachusetts alone during the years mentioned. In the other New England States, also, the proportion is less than in Massachusetts, though greater than in the United States as a whole. Thus, in New Hampshire, it was 13.57% of the entire mortality; in Vermont, 13.63%; in Rhode Island, 13.82%; and in Connecticut, 12.21%.

The questions arise, Why this excess in Massachusetts? What are the conditions specially favorable to the prevalence of phthisis in this State more than in her neighbors in the body politic? Why are there more deaths from this disease in one locality than in another? And these are questions of importance if we would hope to lessen this enormous death-rate.

We need to know the haunts and habits of our enemy, his strongholds and weak points, before we can hope to conquer or exterminate him.

Before seeking farther for the answers to these questions, let us consider three of the antecedents of phthisis, which are not, presumably, influenced to any great degree by locality; namely, *age, sex* and *season*.

The following table shows the number of persons, at the different ages mentioned, out of every 100 persons of all ages dying of consumption in Massachusetts for the twenty-five years from 1863 to 1887 inclusive:

Under 5 years of age	5.45
5 to 10 " "97
10 to 15 " "	1.83
15 to 20 " "	9.28
20 to 30 " "	28.72
30 to 40 " "	19.36
40 to 50 " "	12.56
50 to 60 " "	8.27
60 to 70 " "	7.35
70 to 80 " "	4.46
Over 80 " "99
Age not stated36
	100.00

If, now, for the same period of twenty-five years, we divide the entire population into classes according to their ages, we find that out of every 1,000 persons living at each age there died from consumption as follows:

Under 5 years of age	17.55
5 to 10 " "	3.19
10 to 15 " "	6.34
15 to 20 " "	31.49
20 to 30 " "	49.36
30 to 40 " "	42.98
40 to 50 " "	36.36
50 to 60 " "	36.45
60 to 70 " "	48.65
70 to 80 " "	62.06
Over 80 " "	44.73

It is from tables, such as the first of these, that there has been derived the popular notion — which has, to some extent, obtained among the profession as well — that the liability to death from consumption is greatest between the ages of twenty and forty, and that after the latter age this liability is constantly decreasing. In point of fact, the table proves no such thing. What it does show is that the actual number of deaths is greatest at this period of life; but this may readily be accounted for by the fact that there are more persons living at this age than at any subsequent one, and hence more to die. That this is actually the proper explanation is shown by the second table, whereby we find that the *proportion* of deaths is nearly as great from sixty to seventy as from twenty to thirty, and actually greater from seventy to eighty than at any other period of life. It is very probable, however, that a larger proportion of the deaths attributed to consumption at the later periods of life are from the more chronic forms of the disease, including many cases of chronic bronchitis and chronic pneumonia, and which, at all events, are not dependent upon heredity for their origin.

Passing now to the consideration of *sex*, I find that from 1883 to 1887, inclusive, 29,452 persons died in Massachusetts of consumption, of whom 15,978 were females and 13,474 males — a proportion of about 119 females to every 100 males.

In forming conclusions from this table, it must be remembered that, at all those ages when consumption

is most fatal, the actual number of women living, at least in Massachusetts, is considerably in excess of the number of men. Furthermore, it is probable that the excess of deaths of females from consumption is due largely to confinement indoors, lack of proper exercise, breathing impure air, improper modes of dress, and contagion — from all of which causes women suffer more than men — rather than from the element of sex in itself considered. Give a woman a man's conditions, and there is little reason to suppose that she would suffer more than he from this disease.

As to *month and season*, during the five years aforesaid, the number of deaths from phthisis in the different months was as follows:

January, 2,499	} . . . First quarter, 7,745
February, 2,437	
March, 2,809	
April, 2,601	} . . . Second quarter, 7,178
May, 2,672	
June, 1,905	
July, 2,359	} . . . Third quarter, 7,148
August, 2,407	
September, 2,382	
October, 2,283	} . . . Fourth quarter, 7,271
November, 2,292	
December, 2,396	

This table shows that the greatest number of deaths in any one month, 2,809, occurred in March; and the least, 1,905, in June. The first quarter shows the most, 7,745; and the third the least, 7,148; but the difference is so slight, and the distribution throughout the year so uniform, as to make it evident that the season exercises but little controlling influence.

We come now to the consideration of the geographical distribution of the disease, and the study of those elements which determine this distribution — which show why it prevails more in one portion of the State than in another, and by inference, also, in any one locality more than another.

The Registration Report of Massachusetts for the year 1860, I think, contained a paper, prepared by George Derby, M.D., on "The Geographical Distribution of Consumption in Massachusetts." In this paper, the author gave a list of all the towns in the State, with the population of each in 1860, the number of deaths from all causes in ten years, the number of deaths from consumption in ten years, the percentage of deaths from consumption compared with the deaths from all causes, and the average number of persons living each year to one death from consumption. This is followed by a list of the towns having the greatest, and another of those having the least, comparative mortality from consumption. Concerning these last two groups, he says: "We have earnestly endeavored to discover in what respects each of the above groups of towns has common characteristics, and to find broad distinctions, separating one group from the other. That we have failed to satisfy our own mind is, perhaps, not surprising, since the solution of such a question requires an intimate knowledge of a multitude of facts which we do not possess. That causes are in existence for the results given above seems certain, and we commend the comparison of towns and districts to observers throughout the State, confident that what is now obscure will, at some future day which we hope and believe to be not far distant, be apparent to every one."

As I read this paper, it occurred to me that the results might be more satisfactory if we were to begin

at the other end of the problem, and try analysis rather than synthesis; if, instead of contrasting towns having a high mortality with those having a low one, with a view to determining the conditions which give rise to this difference in mortality, we were to compare places possessing certain well-marked and important characteristics and conditions with others possessing opposite conditions, in order to determine what is the effect of these factors upon the mortality.

Acting upon this idea, I proceeded to divide the State into five districts, or groups of towns, upon the basis of topographical features, chiefly *altitude* and *soil-moisture*; and secondarily, atmospheric moisture, prevailing winds, nearness to the ocean, etc. As I was not in possession of data which would enable me to make the distinctions any more exact, I was obliged to make my divisions along the broad lines of the counties. Acknowledging the imperfection and inexactness of these divisions, I shall claim the right to draw only the most broad and general conclusions from the results obtained; and even these results may be looked upon as suggestive rather than determinative.

Having found the proportionate mortality in each group as a whole, for the years 1883 to 1887 inclusive, my results were as follows:

- GROUP I.—THE HIGHEST LAND (Berkshire County).
12.29% of the whole number of deaths.
2.17 per 1,000 persons living.
- GROUP II.—THE CONNECTICUT VALLEY (Franklin, Hampden, and Hampshire Counties).
11.29% of the whole number of deaths.
2.56 per 1,000 persons living.
- GROUP III.—HEART OF THE COMMONWEALTH (Worcester County).
14.86% of the whole number of deaths.
2.63 per 1,000 persons living.
- GROUP IV.—ATLANTIC COAST REGION (Essex, Middlesex, Norfolk, Suffolk, Plymouth, Bristol, and Barnstable Counties).
15.77% of the whole number of deaths.
3.12 per 1,000 persons living.
- GROUP V.—THE ISLAND COUNTIES (Dukes and Nantucket Counties).
11.17% of the whole number of deaths.
2.91 per 1,000 persons living.
- WHOLE STATE.
15.45% of the whole number of deaths.
3.63 per 1,000 persons living.

According to these figures, Berkshire County, which consists of the highest land in the State, has the lowest death-rate from consumption, both as compared with the total population, and also, with one exception, as compared with the total mortality.

Next in order, in both respects, stands the Connecticut Valley, with its lower land, but porous, sandy soil, sunny, and well-drained. Then comes Worcester County, midway between the Berkshire Hills and the sea. Highest of all stands the Atlantic Coast Region, with its lower lands, marshy soil, and moist sea breezes.

The island counties present at first sight a seeming exception, in that the proportion of deaths from consumption to the total number of deaths from all causes is only 11.17%, or the lowest of all. But when we turn to the more important comparison with the total population, we find that it is not that fewer people die of consumption, but rather that more die from other causes; for 2.91 deaths from phthisis occur to every 1,000 persons living, which is a larger proportion than in any other group, except the Atlantic Coast Region.

It is quite certain that a part of this difference in mortality from consumption in different parts of the

State is due to other causes than geographical conditions, some of which I shall shortly consider. Nevertheless, it seems to me that both the distinctions made and the results obtained are sufficiently well marked to justify the conclusion, that *a moderately high altitude, with dry air and soil, tends to lessen the death-rate from consumption, while the opposite conditions tend to increase it.*

The next point I have considered, and one which largely affects the distribution of the disease, is *density of population*. For this purpose, I made two series of calculations. For the first, I made use of the before-mentioned table of Dr. Derby, based upon the census of 1860. Here I again divided the State into five groups of towns, but this time on the basis of density of population. As I was unable to make allowance for the difference in area of the different towns and cities, but was obliged to consider each as a unit, and divide according to the total population, an element of inaccuracy is introduced, which, however, is so slight that I do not think it will in any way affect the general result.

In the first group I put Boston, the only city in the State having over 100,000 inhabitants. In the second group, all cities and towns of from 10,000 to 100,000; in the third, towns of from 5,000 to 10,000; in the fourth, those of from 1,000 to 5,000; and in the fifth, all towns having less than 1,000 inhabitants.

Comparing the yearly number of deaths from consumption in each group with the total population in 1860, the results are as follows:

Group I, 100,000 and over	1 in 229
Group II, 10,000 to 100,000	1 in 249
Group III, 5,000 to 10,000	1 in 295
Group IV, 1,000 to 5,000	1 in 306
Group V, under 1,000	1 in 315

This shows a regularly decreasing mortality, corresponding to the decrease in density of population. Not content with this, I proceeded to make a second series of calculations, based upon the Massachusetts census of 1885, and using the same divisions, with the following results:

Group I	1 in 218
Group II	1 in 330
Group III	1 in 362
Group IV	1 in 385
Group V	1 in 427

These results confirm the first, showing absolute conformity to the same general principle. I, therefore, assume the law to be proven, so far as statistics from one State can prove it, that *the mortality from consumption increases as the density of population increases.*

These two series of calculations, taken together, show one other notable and encouraging result, namely this, that *the mortality from consumption in Massachusetts is slowly but steadily decreasing.* According to the census of 1860, the average annual mortality throughout the State was 1 in 270 persons living; while, according to the census of 1885, it was only 1 in 326, a most encouraging decrease. Further statistics, taken from Massachusetts Registration Reports, show that the mortality at different periods was as follows:

1853	1 in 234
1851 to 1863	1 in 257
1866 to 1870	1 in 299
1871 to 1875	1 in 304

1876 to 1880	1 in 308
1881 to 1885	1 in 320
1887	1 in 331

These results bear out those before obtained, and encourage us to hope for a still further improvement. They also call our attention to the causes of this improvement, which are well worthy of the attention I cannot give them at present.

To the considerations already advanced as affecting the geographical distribution of consumption, should be added a study of the effects of *occupation* and *nationality* upon the mortality from the disease. But upon these points I have not been able to find any Massachusetts statistics worthy of presenting. I, therefore, merely call attention to them as worthy of further investigation. When the facts are all in, we may hope for definite and uniform conclusions.

INFLUENZA IN THE OUT-PATIENT SERVICE OF THE BOSTON CITY HOSPITAL.¹

BY E. M. BUCKINGHAM, M.D.,
Physician to Out-Patients.

HAVING been upon service in the Out-Patient room during the late epidemic of influenza, it appears proper that I should report the cases seen there, in order to complete the history of the epidemic in the hospital, which has already been made for the wards by Dr. Mason.² In so doing I shall make use of my private cases when convenient, although the two sets of cases ought probably not to be grouped together; since the ordinary run of patients were probably sicker than those coming to the out-patient room. It is true, however that many of these last had been quite sick, and applied for help only when capable of going out; but before they had forgotten the history of the previous days.

There were in all seventy-four cases of influenza, not including sequela; and of these there are very complete records of forty-eight, for which credit is due to the then externes, Drs. Whittemore and Haskell up to January 7th, and Drs. Dwight and Fuller for the later histories. None are recorded as presenting themselves before the fourth day, and in general they ranged from four days to two weeks, when first seen; while many of them did not make a second visit; thus agreeing with the common observations as to the duration of the disease, and as to its greatest severity being during the first few days. There was one case at sixteen days; there were three cases at three weeks, in one of which three, cough, and in another pain, were the only remaining symptoms; and there was one case of insomnia and anorexia at five weeks. Up to the present time, cases not of influenza, but which began as influenza, still show themselves, the patients complaining, for the most part, merely of debility.

It is of great interest with reference to the question, whether the disease is contagious or not, to note the dates of the early cases. I have been told of cases in November. My own first case sent for me on the third of December, having had some soreness since November 29th. My next case dates from December 17th. Dr. Mason states that the first admissions to this hospital were December 10th. Dr. F. C. Shattuck³ saw

his first case on the same day. None are recorded in the out-patient room before December 24th, when there were five cases, one dating from the 16th. It was between December 20th and December 23d, that the number of admissions to the wards rose rapidly, as shown by Dr. Mason. The admissions to the out-patient service, which is open three days in the week, were as follows:

December 24	5 cases.	January 7	6 cases.
December 26	6 "	January 9	3 "
December 28	9 "	January 11	4 "
December 31	8 "	January 14	6 "
January 2	11 "	January 17	1 case.
January 4	12 "		

Many of the later cases were somewhat old; and there were three more cases, one of them being a relapse, and all dating back previous to January 17th. There is nothing in all this comparable to the undoubtedly correct stories of whole ships' companies being attacked on the same day in previous epidemics, a difference which, supposing the disease to be contagious, can be readily understood by any one who has seen the quarters of sailors on men-of-war, and thinks what they must have been without ventilation.

Symptoms. Of the various symptoms, not all of which were present in all cases, nor always at the same time, headache was, perhaps, the most constant and most persisting, existing more or less in almost every case, and being sometimes of great severity. Pain in the back was quite constant, and ranked next in order. Pain in the chest was common, and I think that no part was exempt. I have several notes of a general bruised feeling. Pain was generally an early symptom. It by no means always disappeared with the beginning of convalescence, and it sometimes remained after all other symptoms had gone. Headache may have been sometimes due to coryza, but was occasionally severe without it. Sore throat was far from being as universal as pain in the back and head. At times the tonsils, and at times the pharynx, were inflamed, sometimes severely, sometimes slightly; but it appeared to me that the complaint of sore throat was not infrequently greater than was warranted by the appearance of the parts, and that in some cases it was a part of the general neuralgia quite as much as of an acute inflammation.

There was no complaint of earache in a single case; but this was certainly due to its being a prominent symptom, when it existed at all, thus leading patients to seek the ear clinic. One baby I sent there for examination. Among the forty-nine private cases of influenza that I saw, were two cases of earache, one trifling and temporary, and one dependent on inflammation of the middle ear. There were also two cases of deafness from this cause in patients neither of whom had been sick enough to seek advice, but each of whom had much coryza. They got well slowly, and were advised to seek special advice.

Coryza was very general, but not universal. Dr. De Blois was kind enough to examine one of these patients without nasal discharge, by means of the rhinoscope. He reported very acute congestion. Unfortunately this case did not reappear. It may have developed a discharge later. Epistaxis was present in one case only among the seventy-four, and there was one case of bloody mucous discharge from the nose; the patient had laryngitis, as shown by the voice.

¹ Read at the Boston Society for Medical Observation, May 5, 1890.

² Boston Medical and Surgical Journal, February 13, 1890, p. 145.

³ Boston Medical and Surgical Journal, February 13, 1890, p. 148.