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THE PRESIDENT'S ADDRESS.<sup>1</sup>

BY

THOMAS G. RODDICK, M.D.

You have been welcomed to the Dominion of Canada by the Noble Earl who is the worthy representative of our beloved Queen; you have been welcomed to the Province of Quebec, to which this city belongs, by our eloquent and justly-esteemed Lieutenant-Governor; the Chief Magistrate of our city has given you "*Cæd mille faithe*" in a manner in which only an Irishman with such a great sympathetic heart as he possesses can give; and now I rise to welcome you on behalf of the medical profession in Canada, and to thank you for the honour conferred on this city and country by your presence here to-day. Would that I could find suitable language in which to thank you also for the high honour you have done me in electing me to preside at this great meeting of the British Medical Association, an honour which is appreciated none the less by the consciousness that it is not a personal matter but a compliment to Canadian medicine.

This meeting of the British Medical Association in Canada is an event which will serve still more to impress upon the memory of our people the year 1897, the year of the Diamond Jubilee of our beloved Sovereign, Queen Victoria. In no part of her vast Empire—not even in its very heart—did her subjects celebrate the great event with more enthusiastic loyalty and devotion than in Canada, especially in this province, the home of the French-Canadians. We Canadians of both tongues love and honour our Queen. Long may she live! Deeply, too, have we appreciated here the splendid reception accorded in the old home to our Premier, the Right Hon. Sir Wilfred Laurier, whose distinguished bearing and grace of manner

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<sup>1</sup> Delivered at the meeting of the British Medical Association, August, 31st 1897.

eminently fitted him for the important part it was his peculiar privilege to play in the magnificent ceremonies of the Jubilee. A French-Canadian, Sir Wilfred's presence in England as the chosen representative of the Dominion was an object lesson to the Empire and to the world in the harmony existing between the two nationalities which comprise the Canadian people.

And here let me express on behalf of every representative from the British Isles, and on behalf of every Canadian present, the genuine pleasure we feel in having among us on this memorable occasion so many of our brethren from the United States. This only proves the cosmopolitan character of our profession; this is only another recognition of the unity of medicine. Legislators may squabble, the air may be filled with wild alarms, and war may appear imminent day by day, but our relations are not disturbed in the slightest degree; our interests are common—we are kinsmen in science; we go forward hand in hand, irrespective of race or creed or colour, having one intent only: the advancement of our noble profession, and through that the amelioration of the ills of mankind.

It is my privilege also to welcome the representative of another Republic, La Belle France, to whose gifted men of science our profession is so greatly indebted. This gentleman, who bears the credentials of his Government, and officially represents the great nation of which he is so bright an ornament, is known far and wide as the Professor of Physiology in the University of France, Dr. Charles Richet. In coming to Canada it cannot be said, nor will he feel, that he comes to a foreign country, for in the Province of Quebec he will find another France, with a delightful mingling of the old and the new: his own beautiful language spoken with all the grace and purity of the old *régime*.

But we are further honoured by the presence among us to-day of the most illustrious surgeon of our generation, Lord Lister, who stands for the rise and zenith of modern surgery. It has been well and truly said that as long as surgery is scientifically discussed Lord Lister's name cannot fail to be mentioned. We have only to compare the surgery of the time before 1873 with the surgery as practised to-day to appreciate all that he has done for the science. Can it be for a moment questioned that Lord Lister has made operative proceedings possible which only twenty-five years ago would have been considered criminal? Undoubtedly, the most powerful agency in the development of surgery in this century has been the introduction of the antiseptic and aseptic methods of wound treatment which he initiated. It is due to his efforts that surgical wards have been freed

from pyæmia, and the mortality of lying-in hospitals reduced to the limits of normal parturition. For the past twenty years honours many and great have been showered upon him. Oxford, Cambridge, Edinburgh, Glasgow, Dublin, Toronto, and now McGill, have vied with one another in hastening to do him homage. Our Sovereign in conferring upon him the richly deserved distinctions which he bears with such gracious dignity only gives expression to the general feeling of his countrymen throughout the Empire and his admirers the world over. We are glad, I say, to have him with us to-day: his presence is an intellectual stimulus and an energizing force in our deliberations.

It is, I understand, an unwritten law of the Association that the President shall not in his address encroach upon the topics which belong by right and usage to the readers of the main addresses and to the presidents of the various sections. I have observed that the majority of my predecessors have contented themselves with discoursing on objects and circumstances of local interest: they describe the town or city in which the meeting is held, or perhaps they discuss questions of a public character. In the absence of an address on public medicine, others have taken that for their theme. It has been my unhappy lot to select and consider subjects only to find in quick succession that they had already been appropriated, either by the Journal of the Association, in describing so fully Montreal and its surroundings; or by the editors of the Official Guide or Souvenir, who have given a very comprehensive description of Canada; or by some of the gentlemen who preside over the sections, who, I have been led to understand, purpose discussing questions of medical education. I fear therefore that what I have to say this afternoon will fall far short of the brilliant presidential addresses which members of this association have been accustomed to in other years. Indeed when I look at the long roll of eminent men who have been my predecessors in this high office—men oftentimes distinguished for their literary gifts as well as for their exalted position in the medical world—I confess that I marvel at my temerity in accepting so great a responsibility. In speaking of my predecessors allow me especially to refer to the retiring President, Dr. Henry Barnes, whose courteous and kindly manners, together with his sterling ability, makes us all glad to know that his election as a Vice-President for life insures his continued official and active connection with the Association. Here might I also be permitted to say how greatly I appreciated the many kindnesses and courtesies extended to me by the President (Dr. Saundby) and Members of the Council when in London last winter, making the initial arrangements for this meeting.

With respect to the other addresses, which it is customary to deliver on these occasions, medicine will be dealt with by one whose reputation is now world-wide—by our Osler—whose professional education was in great part received in this city, and who, I am happy to say, is still a Canadian. How he has been able to escape the alien law is a puzzle to many; but he has really only been borrowed for a time; he is merely passing through the United States in bond. We are only waiting until we can find a place large enough to hold him, when we shall coax him back. Sorry am I that his old colleagues in his own department of medicine, Howard and Ross and Macdonnell, are not here to share with us the genuine pleasure we experience in finding him in the position which he occupies to-day. One of these, the late lamented Howard, had much to do with moulding his career and setting him to the task which he has so ably accomplished.

You will hear addresses in Surgery and Public Medicine, delivered by gentlemen who have devoted their lives to their special subjects.

Before proceeding further, however, allow me, for the benefit of those who may not be acquainted with the work of the British Medical Association, to give in as few words as possible a general idea of its organization.

#### THE BRITISH MEDICAL ASSOCIATION.

When, in 1832, Sir Charles Hastings, of Worcester, communicated to a few of his personal friends the idea he had conceived of a medical association which should bring the whole provincial profession of England into a common brotherhood, it may be safely affirmed that he did not dream that he was laying the foundation of an association which would ultimately not only embrace the whole of the British Isles, but extend to that Greater Britain beyond the seas, and become an association of imperial magnitude and of imperial importance and significance. I have no hesitation in expressing my belief that the British Medical Association will be an important factor in bringing to a successful issue that great scheme of Imperial Federation which now exercises the minds, and, let me add, the hearts, of the leading statesmen of the Empire. Sir Charles Hastings' aim was to bring town into professional union with town, county with county; now it has become the aim of the Society he called into being to add State to State—and may I not say continent to continent?—until all the nations and peoples who live under the British flag are brought within the beneficent influence of the Association.

With respect to the objects of the Association, as set forth on its foundation, they may briefly be stated to be :

1st. The collection of speculative and practical information through essays, hospital reports, infirmaries, dispensaries, or private practice.

2nd. Increase of knowledge of the medical topography of England through statistical, meteorological, geological, and botanical inquiries ; the investigation of the modification of endemic and epidemic diseases in different situations and at various periods, so as to trace, as far as the recent state of the art would permit, their connection with peculiarities of soil and climate or with the localities, habits, and occupations of the people.

4th. The advancement of medico-legal science through succinct reports of cases occurring in courts of judicature.

5th. The maintenance of the honour and respectability of the profession generally in the provinces by promoting friendly intercourse and free communication of its members and by establishing among them the harmony and good feeling which ought ever to characterise a liberal profession.

During its earliest years the movements and proceedings of the Association were quiet and unostentatious, the meetings simple in their arrangements ; but it was not long before medical societies began to join the newer body, and towns in all parts of the Kingdom soon came to regard it as an honour to entertain the Association. Gradually the best men of each district enrolled their names, and the membership increased so greatly that subdivisions into branches became a necessity. Each branch, with its own ordinary and annual meetings, was practically a replica of the parent society, possessing its own president, vice-president, secretary, treasurer, council, and by-laws, subject to the approval of the Council of the Association, to which, besides, each branch sent representatives according to its numerical strength. In 1837, five years after the foundation of the Association, there were three of these branches formed, namely, the East Anglian, the Bath and Bristol, and the Lancashire and Cheshire. By the end of 1878 the Association had spread over the whole United Kingdom, the total number of branches at that date being 30—one of the 30, it is interesting to note, being Jamaica, the first Colonial branch to be formed. It was organized in 1878. Two years later we find that Australia appears for the first time, contributing three branches to the Association. Since then 36 more branches have been added, making a grand total of 65, with a collective membership of over 17 000. Of the branches 27 are Indian and Colonial. Doubtless before long those portions of Africa which are

now becoming rapidly civilized will also add their quota, so that it is possible that within the lifetime of all present the British Medical Association will be represented wherever the British flag flies. As Nova Scotia is always to the fore in matters intellectual, it is not surprising that the first Canadian branch of the Association should have been formed in Halifax. It was started in 1887, four years ahead of Montreal, Toronto, Manitoba, and British Columbia. Canada has now seven branches, the Ottawa and Quebec branches having been formed within the last year. The formation of the Manitoba, Toronto, and Montreal branches was the immediate result of the visit to this country of Mr. Ernest Hart. In 1891, Mr. Hart, who has been editor of the *British Medical Journal* since 1867, passed through Canada and addressed *en route* the members of the profession in Winnipeg, Toronto, and Montreal. Of the Manitoba branch, which began with 25 members, Dr. Ferguson was nominated as president, and Drs. Thornton and Lamont as vice-presidents. In Toronto the branch also began with 25 members, Dr. Macallum being nominated president, and Dr. Thistle honorary secretary. In Montreal the meeting was largely representative in spite of the short notice given, and 26 members of the profession at once signed applications for membership. The officers nominated were: President, Dr. (now Sir William) Hingston; first vice-president, the late Dr. George Ross; second vice-president, Dr. Jas. Perrigo. The members of the Council were: Drs. Roddick, F. W. Campbell, and Geo. Wilkins. In the course of a very happy speech made on this occasion by Mr. Hart he remarked that he looked forward to the time when the Canadian membership would be large enough to invite the Association to hold a meeting in Canada; and he hoped that the first meeting held outside the limits of the British Isles might be held in this country. Little did we think at the time that Mr. Hart's hopes would be so quickly realized. But the idea has ever been present with us, and those who subsequently attended meetings of the British Medical Association in England have lost no opportunity of advocating the claims of Canada, and especially of this the metropolitan city of Canada, as a place of meeting for the Association.

One of the secrets of success of the British Medical Association is that it makes no distinction in the treatment of its members. Colonial members have all the privileges of the British members, and are always warmly welcomed at the headquarters in the Strand, and at the annual meetings. The Association has a large reserve fund of £40,000 sterling, which is the joint property of the members, to be

used for public and professional purposes, and any suitable applications for grants for medical research, whether from British or Colonial members, always receive attention.

A gentleman to whom the Association is greatly indebted is Mr. Francis Fowke, who was appointed Secretary and General Manager in 1872. At that time the Association was in rather a precarious condition financially, owing to its deficient organization; but shortly after Mr. Fowke took up the reins of office matters were found steadily to improve. About the time he was appointed the subscriptions amounted to £4,677. Ten years later they had nearly doubled, the amount being £9,147; and in 1891 they had reached the very respectable sum of £14,759. It is interesting to note how closely the advertisements in the *Journal* kept pace with the increase in membership. In 1871 the amount received for advertisements was £1,992; in 1881, £6,089, and in 1891, £14,568. The head office, which had been in Birmingham, was moved to London in 1872, where, after two removals, the present commodious premises in the Strand were taken. In 1879 the Association began the printing as well as the publishing of its *Journal*. The library, which now contains 10,000 volumes, and which includes nearly every modern medical work of note, and many valuable books of reference, has developed in that time. That the British Medical Association is the largest and most influential guild in the world cannot be questioned. Moreover the good it accomplishes increases from year to year, and more than keeps pace with the expansion of the Association. Imagine the mighty power of the collective action of 17,000 earnest men pitted against false dogmas and ever battling for the truth! It is not, however, by the greatness of numbers that the Association will be judged—it is by the diversity and quality of results. It is impossible to imagine any combination of circumstances which would render this great Association any less necessary or useful than it is to-day. It will undoubtedly continue to grow in numbers, to increase in importance, and to be ever more and more an influence making for the amelioration and elevation of mankind.

The Canadian people, and especially the citizens of Montreal, are highly flattered and gratified that Canada should be the first country without the United Kingdom to be honoured by a meeting of the British Medical Association; and while they hope that it will not be long before the honour is repeated, our people are not insensible to the claims of other portions of the Empire, more especially the great island continent of the antipodes, Australia. Either Sydney or Melbourne would be a fit meeting place for such an imperial organization



as this, and should the next meeting which is held outside the British Isles be held under the Southern Cross our hospitable Australian kinsmen may count on a large contingent from the Dominion of Canada.

#### CLIMATIC CONDITIONS.

As it may be presumed that to many of those present here to-day Canada is almost an unknown country, I have thought that among one or two other subjects a few remarks on the atmospheric conditions and health resorts of the Dominion would not be without interest.

The best way to understand the atmospheric conditions of a country is first to understand its physical features. The physical features of Canada are very remarkable. Broadly speaking the country is separable by climatic and physical conditions into three great regions, the Eastern, Central, and Western Regions, which approximately run north and south in the general trend of the continent. The Eastern Region, which includes the older provinces of the Dominion, Ontario, Quebec, Nova Scotia, New Brunswick, and Prince Edward Island, besides the great fur territory stretching far to the east and north-east of James' Bay, extends from the Atlantic to Lake Superior and the chain of Great Lakes running in a northerly direction from Lake Superior to the Arctic Ocean. Between this great chain of lakes and the eastern base of the Rocky Mountains is the immense interior continental plain which constitutes the Central Region of Canada, its southern part consisting of open prairie, its northern part of forest lands. The third part of the division, the Western Region, is naturally very well defined, consisting of the wide and wild mountainous border of the Continent on the Pacific side—the Rocky, Selkirk, and Gold Ranges, which form the great Cordilleran belt, whose average width in Canada is 400 miles.

Eastern Canada, our first and largest region, is geologically of very ancient origin. Here geologists have placed the nucleus of the continent—the broad belt of crystalline rock of great antiquity called the Laurentian Plateau. This region is remarkable for its immense number of lakes large and small, and for its irregular and winding rivers with numerous rapids and falls. Between the Laurentian Plateau on the north and the Appalachian mountain system on the south, lies the great Valley of the River St. Lawrence. The basin of this majestic river covers 530,000 square miles, of which 460,000 are in Canada. Above the city of Quebec, the base of the Laurentian highlands and the ridges of the Appalachian system diverge, and the mighty river

flows through an extensive low country of notable fertility, in earlier days the great granary of Canada.

It may be added *en passant* that Mount Royal, which gives such distinction and character to our city, represents the basal remnants of a volcanic vent of great antiquity. From its picturesque summit may be seen similar abrupt elevations far off towards the east and south—Montarville, Belceil or St. Hilaire, Mt. Rougemont, with Mt. Yamaska behind it, Mt. Shefford, and the conical Mt. Johnson or Monnoir. The Adirondacks are visible in the distance to the south-west, and the Green Mountains to the south-east.

Included in the Eastern Region is one of the most remarkable geographical features of Canada—the great fresh-water lakes or inland seas, Superior, Huron, Erie, and Ontario, which form the perennial reservoirs of the St. Lawrence. Together with Lake Michigan, which is wholly in the United States, they have an aggregate area of 94,750 square miles, an area larger than that of Great Britain. They stand at four distinct levels above the sea—Ontario 247 feet, Erie 573, Huron 581, and Superior 602. The Niagara Falls, the greatest and most impressive of the natural wonders of our continent, are the direct result of the great height of Lake Erie above Lake Ontario, the river connecting the lakes being only a few miles long. Besides the St. Lawrence, Eastern Canada has several other great rivers, notably the Ottawa, which has a course of 1,800 miles and a basin of nearly 1,000,000 square miles, the St. Maurice, the Saguenay, and the St. John, the glory of New Brunswick, which, together with the Atlantic Slope, has a basin of 50,214 square miles. The Central and Western Regions also have their abundant share of large and small lakes and great rivers, an account of which would fill reams of paper. It should be noted that the Canadian rivers and lakes collectively cover an area of 130,000 square miles, and contain one-half the fresh water on the globe.

I draw special attention to this series of vast lakes and rivers because it exerts an immense and beneficent influence on the climate of Canada. It preserves the mean temperature while the land experiences the extremes. In summer the water is cooler and in winter warmer than the land conditions, which tend to modify the differences and to favour uniformity of climate. Without these waters, too, we should have vast regions of comparatively little value, as in Africa, Asia, and in the United States west of the Mississippi River, where large tracts of land far from water are nothing more than arid wastes. Our climate is more uniform than that of Europe; the meteorological differences are produced by posi-

tion alone, but Europe has a higher mean temperature, and the extremes there are not so marked or so wide apart as in Canada. Owing to the great area of Canada, extending over 20° of latitude, or from the latitude of Constantinople to that of the North Cape in Norway, the range of temperature is naturally very wide. The southern boundary stretches over fully 4,000 miles, along which line we find that Southern Ontario has the latitude of Central Italy, Nova Scotia that of Northern Italy, Manitoba and Vancouver that of Central Germany. Speaking generally, the Canadian summer may be stated at 60° F. to 70° F.

From its vast and varied extent, Canada may be said to be the possessor of several climates. Taking Solly's classification as to position, we have in Canada all the three land climates, the low, the medium, and the high. The first has an elevation up to 2,500 feet, the second up to 4,500, and the third from 4,500 upwards. As to temperature and humidity, Canada comes under the category of "cold, moderate, and dry."

#### HEALTH RESORTS.

In the eastern region of the Dominion there are at least two localities which have been proved to possess many of the qualities which constitute a climate for convalescents from fevers and other depressing diseases, and also for consumption in the incipient stage. I refer to the region in the Province of Quebec among the Laurentians north of this city, of which the village of Ste. Agathe is the centre; the other being the Muskoka District, in Ontario.

The first has been called the Adirondacks of Canada, having many of the features, physical and climatic, of that now celebrated plateau situated in the north-eastern part of New York State, and stretching from the Mohawk Valley in the south 150 miles north, almost to the frontier line. The average elevation of the two regions is about the same, being from 1,600 to 1,800 feet. The immense pine forests, together with the moderate temperature, constitute the chief characteristics of the Canadian district, from the medical point of view. No very systematic meteorological observations have yet been taken of the St. Agathe region, but the indications will probably prove to be very similar to those of the American resort. It is in contemplation to erect a Sanitarium on Trembling Mountain, overlooking the village of Ste. Agathe, which will doubtless in time rival the Adirondack Cottage Sanitarium near Saranac Lake Village, which has proved such a marked success under the able management of Dr. E. L. Trudeau. The elevation of the Sanitarium will be 2,500 feet, thus

having an altitude of nearly 700 feet greater than the establishment at Saranac. It is the intention of the Quebec Government to set apart a sufficient portion of the Crown Lands to form a natural park in that part of the Province. It will be called the Trembling Mountain Park, and will cover an area of 100,000 acres of land, in which are several beautiful lakes. Within the boundaries of this park the Sanitarium will be constructed. There is therefore no reason to doubt that we shall shortly have within our own lines a health resort possessing all the advantages of the Adirondacks region, and capable of affecting for good the same class of patients now so decidedly benefited by a residence in those mountains.

One hundred miles north of Toronto, in the highlands of Ontario, is the Muskoka Lake region, an area of about 10,000 square miles, perhaps the most picturesque portion of the whole Province. Within this district, which has a mean altitude above the sea of about 800 feet (200 feet above Lake Huron), there are nearly a thousand lakes and ponds, connected by innumerable streams. The chief lakes are Muskoka, Rosseau, and Joseph. These contain about 400 islands. It is a region abounding in pine forests; the climate is dry, and the air pure and invigorating. The Muskoka region has been found undoubtedly to possess remarkable climatic advantages for those with phthisical tendencies. The death-rate from phthisis in this section of Ontario is proved to be less than one-tenth the rate which obtains in other parts of the Province. At Gravenhurst the Muskoka Cottage Sanitarium for the cure of incipient phthisis has recently been founded, under the best auspices, with accommodation for forty patients. The present Sanitarium consists of a large and well-planned main building, surrounded within easy distance by a number of small cottages. The grounds, which embrace seventy-five acres, are situated on Lake Muskoka. Pine forests and rocky ridges protect the buildings on the north and west sides, whence come the colder winds in winter. Like the Adirondacks Sanitarium, the intention is to occupy it all the year round. The progress of this institution, at present in the experimental stage, will be watched with much interest.

In the Central Region of Canada, that section of the Northwest Territories known as Southern Alberta—the home of the cowboy—has much to recommend it as a health resort. This strip of prairie and hill country is bounded on the north by the Canadian Pacific Railway, and on the south by the International boundary line; its eastern boundary extends as far as Medicine Hat; its western boundary to the summit line of the Rockies and British Columbia, comprising in all an area of about 20,000 square miles. The plain here

has an elevation above sea-level of 2,700 feet, which gradually increases up to the entrance of the Crow's Nest Pass, where the elevation is 4,500 feet. Calgary, the capital of Alberta, is itself 3,500 feet above sea-level. With this gradual incline from a low to a high level altitude the patient can choose the locality which suits his particular case. In a long experience Kennedy knew of only two cases of phthisis originating in that country—one of acute tuberculosis with a strong hereditary taint, which proved fatal; the other, of the ordinary type, recovered without leaving the place. He claims for the climate of Southern Alberta a dry aseptic atmosphere and a dry soil, the greatest possible number of sunshiny days (90 per cent.) with cool nights. Patients can live there all the year round, and with the exception of an occasional snowstorm, which may cover the prairie to a varying depth, nothing need interfere with their practically living in the saddle. The so-called Chinook wind has a remarkable influence over all this western section of Canada. It is a warm wind which blows with varying intensity from west to southwest. McCaul, who describes it very graphically, speaks of its approach being heralded by the massing of dark clouds above the mountain tops, and a distinct wailing and rumbling from the passes and gorges. Its effect in winter is little short of miraculous. When the real Chinook blows the temperature often rises in a few hours from 20° below to 40° above zero. The snow, which in the morning may have been a foot deep, disappears, and before night everything is dripping. But in the space of a single day all the water is lapped up by the thirsty wind, and the prairie is so dry that a horse's hoof hardly makes an impression.

The cases which have been most especially benefited by Alberta's climate are pulmonary tuberculosis in the earliest stage, although neurasthenics and anæmic women are likewise favourably affected to a marked degree. It is well-known that delicate lads sent from the British Isles to this section of the Northwest to work on the cattle ranches become in a year or two healthy and vigorous men, and are scarcely recognized on their return.

Still farther west, and nearly midway between Calgary and the Pacific Coast, is the beautiful Valley of Kamloops, another all-the-year-round resort which has much to commend it to those suffering from many forms of tuberculous disease. This picturesque valley, which lies between the Rocky Mountains and the Cascade Range, has a low altitude climate of 1,100 feet, but is exceedingly dry, showing an annual rainfall of only 11.05 inches, with an average of about 75 rainy days in the year. The rain soon disappears, the soil being light

and gravelly. In this region we have an illustration of the local variability of climate recently pointed out by Bryce, who, in referring to the two not very distant localities of Vancouver and Kamloops, showed that whereas the former has an annual rainfall of 35 inches, the latter records but 11 inches and a decimal. The mean annual temperature of the Valley of Kamloops is 46.03° F., the annual range being only 22.8. The tuberculous patients who appear to be most benefited by a residence in Kamloops are those in whom there is a tendency to chronic congestion. Cases of bronchitis are likewise said to do well there. The climate can also be recommended for consumptives in whom cardiac disease exists as a complication.

#### THE EFFECT OF THE CANADIAN CLIMATE ON EUROPEAN RACES.

That Canada is an exceptionally healthful country is the general testimony of the army and navy surgeons who have been stationed in Canada with the different regiments from the time of the conquest to the present day. Crawford, who was attached to one of the regiments stationed in Montreal many years ago, and who subsequently left the army and practised in this city, published elaborate and carefully collected statistics to prove that few portions of the British Empire have a climate equal to that of Canada. In fact his statistics prove conclusively that out of every 1,000 of the troops stationed at the various garrisons throughout the Empire, the percentage constantly ineffective from sickness was smaller in this country by 7 per cent. than at Gibraltar, which was then taken as the type. I think it can be satisfactorily proved that Canada is expressly fitted to develop a hardy race capable of great endurance. The races of the British Isles and the French race have certainly not degenerated here, Hingston proved this very conclusively some years ago by observations made upon the medical students attending the various schools in this city. He found that the lumbar strength of the British Canadian of the third generation exceeded by 20 lbs. that of the recently arrived English and Scotch students. But the French-Canadian of the tenth generation did better than all by nearly 30 lbs. Not only has the French-Canadian increased in strength but also in height and weight over the original Normandy stock.

Has the intellectual improvement in our people kept pace with the physical? We are a modest people, but I think we can say with truth that it has. We have a very respectable literature of our own, but the best intellect of the country is as yet absorbed in the practical affairs of life, and has too seldom found expression in art and literature. It is not very long since a distinguished American litter-

ateur, Charles Dudley Warner, gravely attributed what he called the literary inactivity of Canada to the coldness of the climate. He said, in short, that the cold benumbed our intellectual faculties, and we had to spend so much of our energy in trying to keep warm that none was left for any other purpose. It must be admitted that if we measure the intellectual capacity of our people by the number of books produced in Canada the result is not all we might desire; but the climate is not to blame. Especially is it not the cold, for the winter is the season devoted pre-eminently to intellectual effort and intellectual amusements. If Mr. Warner had said that the heat of our summer was an unfavourable factor in our intellectual life he would not have shot quite so wide of the mark; he would not have been right but he would not have been quite so wrong. The very vicissitudes of our climate, by training the system to endure severe physical conditions must react favourably upon the mental attitude.

#### CANADIAN SPAS.

We have in Canada several mineral springs of undoubted therapeutic value, and they are pretty generally distributed all over the Dominion, although differing materially in temperature and composition. The best known Canadian spas are the Caledonia, the St. Leon and the Plantagenet Springs, in the Province of Quebec, and the Banff Springs in Alberta. Other springs in the Province of Quebec are the Abenakis and the Caxton. Besides these there are at least three or four artesian wells or springs. Of these the chief are the Laurentian Spring in the east end of this city (a mild alkaline water with sodium bicarbonate as its predominating ingredient), and the Radnor, a well of some considerable repute situated in the County of Champlain. This was discovered a very few years ago when boring for water to supply the workpeople engaged at the well known Radnor Forges. It has been likened to the German Seltzer, many of the properties being alike. It bids fair to become a rival in time of the celebrated Apollinaris water, to which it is preferred by many. The well is over 400 feet in depth. In the Province of Ontario the chief springs are the Winchester and the Preston, and those in the town of St. Catharines, near Niagara Falls. The best known and the most popular are the Caledonia Springs, situated on the line of the Canadian Pacific Railway about midway between Montreal and Ottawa, and about nine miles from the Ottawa River. They consist of four springs—the gas, the saline, the white sulphur, and the intermitting or Duncan spring. The first three are situated within a distance of three or four rods of each other, and the mouths of the

latter two are not more than four feet apart. The intermitting spring is situated about two miles from the others. This is so named because the discharge of gas is not regular, some minutes elapsing between the periods of quiescence and disturbance. The average temperature of these springs is about 46° F. The intermitting spring has the largest percentage of chloride of sodium, and differs from all the others in possessing a greater portion of chlorides of calcium and magnesium. It has also nearly twice the proportion of carbonate of magnesium that the others contain. It has been found that taken judiciously and under advice these waters have a remarkable effect in subacute and chronic rheumatic conditions. People suffering thus are found flocking to Caledonia from all parts of this continent and even South America, especially during the months of July and August. Gouty conditions depending upon liver disturbances also yield very readily to these waters. The waters of St. Leon and Plantagenet are similar in many respects to those just described, and as a rule suit the same class of patients.

All the springs so far mentioned yield cold waters. But Canada also possesses the most famous thermal springs on this continent.

Banff, now a picturesque town magnificently situated in the heart of the Rocky Mountains yet within the limits of that division of the Northwest Territories known as Alberta, has become one of our noted health resorts, although frequented more on account of its remarkable thermal springs than for its climatic advantages. The town is built on the banks of the Bow and Spray rivers, two large glacier streams, and is surrounded by mountains towering many thousands of feet above the level of the sea. The winter is short, beginning in December and ending in February, and is much milder than in Ontario. Very little rain falls, and the days as a rule are bright and cloudless. Prolonged periods of warm weather are experienced during winter. March and April are variable; May is warm and bright; June is the month in which the greatest rainfall occurs; July, August, September, and October are very warm and very dry, with cool nights. At all seasons with the exception perhaps of June the air is dry and notably aseptic. It is positively stated that no case of malaria or tuberculosis has ever been known to originate at Banff. Independently of the springs, then, Banff has much to recommend it from a climatological standpoint.

The far-famed Thermal Springs, of Banff, were only discovered one 15 years ago during the construction of the Canadian Pacific Railway. At its source in the mountain side it has a temperature of 127° F. and the air is charged for some distance around with the



steam emitted from the pool to which the water flows. The most recent analysis shows it to contain the following ingredients :—

Calcium sulphate.....	56.85
Magnesium sulphate.....	12.39
Calcium carbonate.....	3.29
Sodium sulphate.....	15.60
Sodium carbonate....	35.73
Silica.....	traces.
Organic matter.....	traces.

The waters of Banff have been used with great benefit in rheumatism, gout, sciatica, and glandular affections, in certain forms of skin disease, and especially, it is thought, in tuberculous affections of the skin and mucous membrane. Aided by the admirable climatic conditions the waters have also been found to benefit in a marked manner functional diseases of the liver, stomach, and kidneys, and tuberculous joint affections. In constitutions debilitated from any cause the activity of the skin is noticed to be increased, the heart and vascular system strengthened and the muscular and nervous systems much improved in tone. Rachitic and delicate children are much benefited by the Thermal Springs. This seems a large order; but the therapeutic effects of these springs have been carefully studied by competent medical men who have been stationed there for some years. The climate doubtless assists materially the action of the waters in very many cases.

I doubt if the Canadian profession sets a sufficiently high value on the therapeutic properties of our own mineral springs. When visiting the Spas of Great Britain and Europe, one is impressed by the caution exercised by patients in the method of using the waters which have been prescribed. There, competent local medical men are always to be found who can give the proper advice regarding the water to be taken for the ailment from which the patient suffers, and the judicious use of baths. Here, unfortunately, in many places no professional advice is available, and the patient consequently does very much as he pleases, or as the hotel proprietor may advise, and in consequence more harm than good some times follows the use of the waters.

#### MEDICAL EDUCATION IN CANADA.

The general question of medical education is one of great importance and of unceasing interest, nor is this interest confined to the profession : it is becoming universal. The needs of medical education are fortunately being more fully realised by those who on account of their wealth and influence are in a position to render that substantial assistance which is so requisite. The time was when every medical school was a purely proprietary concern "run" for the money that

was in it. We feel in Canada, and I think I can speak for the profession in the neighbouring republic, that this day is passed, that high-minded philanthropists like Sir Donald Smith (now Lord Strathcona and Mount Royal,) the late John Henry Molson, the McDonalds, the Drakes and others with us, and the Johns Hopkins, the Stanfords, the Vanderbilts, the Rockefellers, the Miss Garretts and others with them are beginning to realise that unendowed instruction in medicine must lead to imperfect results, and that private endowment, in the absence of state aid, has become an absolute necessity to a proper medical training. I am not an advocate for state aid to universities, and I rejoice that the University to which I have the honour to belong is not so dependent, as it might thus be deprived of those gifts of private munificence to which I have just referred. All honour to those far-seeing, open-handed men and women who are giving of their abundance in order to elevate the standard of medical education and by so doing benefit their kind. As Gould very tersely puts it in one of his clever articles: "I think our reliance must be upon private bequests, and these can be secured only as we interest the rich. We must never weary in showing the neglect of the greatest, most palpable, most certain means of doing good. There is a strange fatality in men, an unaccountable inability of seeing the need that lies nearest the good that is dearest. There is more money to-day devoted to astronomy than to the prevention of disease. It is positively wonderful to think that men should be more interested in stars and constellations than in their bodies and their physiological life."

A question which is now-a-days agitating the minds of those especially interested in medical education is the kind of groundwork which is likely to bear the most direct relation to the future studies of the medical student. I think it is now conceded by all that he is placed at a greater advantage who first passes through an arts or a science course. I am happy to be able to report that from 15 to 20 per cent of those who are studying medicine in this country to-day have had a collegiate training in either arts or science. Which of the two should the parent or guardian choose? Had I a son whose instincts were in the direction of medicine I think I should choose for him the science course. The late Professor Huxley thought it was a most self-evident proposition that the educational training for persons who proposed to enter the medical profession should be largely scientific; not merely or even principally because an acquaintance with the elements of physical and biological science is absolutely essential to the comprehension of human physiology and pathology; but still more because of the value of the discipline afforded by

practical work in these departments in the process of observation and experiment, in inductive reasoning and in manipulation.

The subjects in the science curriculum might be specially selected for the future medical student. Of course it may be said in favour of the arts course that many of the subjects such as physics and chemistry constitute part of the curriculum; but then calculate the loss to the future surgeon of that training of the hand and eye which would lead him up to be a skilled operator; or to the scientific physician whose complicated instruments of precision employed in the diagnosis of disease need some mechanical knowledge for both their use and repair. Besides the number of those and their complexity has been increasing with the increase of scientific knowledge.

But can we not make a new departure, can we not urge that a special scientific education be arranged by the universities for those who desire to enter the medical profession? Such a course would embrace elementary Latin and Greek, French and German, physics, chemistry, biology, psychology, elementary mechanics, a practical laboratory course on electricity and drawing. After two years study this might entitle the successful candidate to the degree of Licentiate in Science.

Something of this kind has been recently attempted in the University of McGill. By a special arrangement with the Faculty of Arts it is now possible for students to obtain the degree of B.A. along with M.D., C.M., after only six years of study. It has been decided to allow the primary subjects (anatomy, physiology, and chemistry) in medicine to count as subjects of the third and fourth years in Arts. It follows, then, that at the end of four years study a student may obtain his B.A. degree and have two years of his medical course completed. The last two years of study are of course devoted to the third and fourth year subjects in medicine. A certificate of Licentiate in Arts will be given along with the professional degree in medicine to those who previous to entrance upon their professional studies proper have completed two years in the Faculty of Arts, and have fully passed the prescribed examinations therein. By this plan also during the first two years of the arts course the medical student practically completes his studies in physics, chemistry, botany, and elementary psychology. This scheme is still in the experimental stage, but there is every reason to believe that it will result satisfactorily. What deters so many from taking a full course in Arts or Science before entering Medicine is the length of time consumed before the doctorate degree is reached, although I hope the time is not far distant when every graduate in Medicine in Canada shall of necessity be also a graduate in Arts or

Science. I might state that the standard for the ordinary matriculation examination for entrance to medicine exacted by all universities and licensing boards in this country is, with one or two exceptions, very high. I doubt if the requirements in this way, of the Medical Council of Great Britain are any higher.

#### THE MEDICAL SCHOOLS OF CANADA.

Now as to the purely PROFESSIONAL part of medical education I may state that we have in the Dominion of Canada no fewer than 11 medical schools, including one for women only, all having the power of granting degrees and all connected directly or by affiliation with university bodies. To enumerate them: Beginning with the Atlantic Provinces, we have in Halifax the medical school attached to Dalhousie University, the only medical school in the Maritime Provinces; in this province there are four schools, Laval in Quebec, Laval in Montreal, McGill and Bishop's in Montreal; in Ontario, four schools, namely, the Royal College of Physicians and Surgeons, Kingston; the University of Toronto Medical Faculty, Trinity Medical College, and the Ontario Women's Medical College, in Toronto; in London, Ontario, the Western University Medical Faculty; and lastly, in Winnipeg, the Manitoba University Faculty of Medicine. All told, we had in Canada, during the last winter sessions 286 teachers, including professors, lecturers, and demonstrators, and 1736 students. The tendency for the past few years has been to increase the teaching staff quite out of proportion to the increased number of students. Taking McGill we find that there are in the present year 53 teachers for 388 students, being a proportion of nearly one to eight. Laval, in Montreal, has 36 teachers and 197 students, a still greater proportion. The Toronto School of Medicine had during the past year 41 teachers and 293 students. We find that this proportion compares well with the larger schools in the United States; thus, in 1893, there were in Harvard Medical School 71 teachers to look after 471 students; at the Columbia Medical College in New York with 661 students there were 105 teachers (1 to 6); in the University of Pennsylvania the teaching staff in the same year comprised only 84 members with 825 students, being a little over 1 to 10. What does this mean? Ten years ago when McGill had 237 students, a staff of 23 professors and demonstrators was considered sufficient. Why are so many more thought necessary now-a-days? The number of subjects taught has not increased very much. The answer is that the subjects are differently taught, the old-fashioned daily didactic lectures are now given two or three times a week only; but I should be

sorry to see them further reduced in number, for I believe that so many are absolutely necessary. It is in the dissecting room, the chemical, physiological, therapeutical, and pathological laboratories that we see the change. These which before were for the most part only "side shows" are now made to hum with the practical work which is done within them, while demonstrators are moving about busily, engaged in examining and instructing.

In clinical teaching also we have made marked advances. A creation of the last few years is the clinical demonstrator, who takes small classes of students into the wards or the out-door department of our hospitals and gives them that "bedside instruction" which is so essential; leaving the clinical professor to deal with the full classes in the lecture or operating room. Thus each student is enabled personally to examine the case, to study the physiognomy of disease, and to make deliberate, thorough, and systematic examinations. He thus learns to use his special senses and gets into careful habits of observation which once thoroughly acquired will be found to contribute largely to future success. With this in view we encourage students to attend the out-patient department of the hospitals as early as the second year.

In order to make the clinical instruction more complete and more thorough, chemical and bacteriological laboratories have been added to the pathological departments of our hospitals. Thus it will be seen that laboratory methods everywhere prevail, all with the idea of developing the scientific spirit in students and of cultivating methods of thought with observation.

The question sometimes arises, however, May the student not be getting too much of a good thing? Is it not possible that laboratory teaching may be overdone? because, as Welch very truly says, "The student whose knowledge of a subject is derived exclusively from laboratory courses is likely to lose his perspective in details, to acquire only a fragmentary knowledge of the subject, to fail to comprehend the general bearing of observed facts; and not to acquire the general principles and systematic conceptions which are essential. Laboratory work should be accompanied and supplemented by the reading of text-books and by lectures." I am convinced that with us in Canada laboratory work is not overdone, but, on the contrary, in some departments needs and deserves further encouragement. I hope every laboratory teacher in the country realizes that the object of a college is to give a good general education, and not to make experts in various branches. I have long felt myself, however, that the didactic lectures were being unfairly dealt with. There is a feeling

abroad that they should be practically elbowed out of sight. I think the didactic lecture has its place in the medical course; and while I quite feel that the old plan of compelling students to listen to five didactic lectures a week in all of the great subjects was a mistake, I still feel that a good lecturer can teach in this way a certain something which cannot be imparted by practical instruction or by recitations. The personal influence of a good lecturer very often makes an impression which nothing else can make; and if such lectures are made also demonstrative, as by the use of diagrams, the lantern, experiments, &c., they must of necessity fill a very important place in the medical course.

#### THE TEACHING OF HYGIENE IN CANADA.

Hygiene is at last receiving in this country the attention which its importance demands: all medical schools in Canada have facilities for teaching it. In McGill University the scope of the teaching of hygiene has been vastly extended, thanks to the generous endowment of that department recently by the Chancellor, the Right Hon. Lord Strathcona and Mount Royal. The subject can now be taught in a scientific and, at the same time, eminently practical manner. There will be three teachers associated with the professor himself, viz., the heads of the Departments of Practical Chemistry, of Pathology, and of Bacteriology. This is following very much the German system, also adopted by the University of Pennsylvania, the chemical and bacteriological aspects of the subject being really regarded as the most important. An extensive working museum, with sanitary apparatus of every kind, forms part of the scheme, and will doubtless add greatly to the efficiency of the course when it is completed. Should the experiment succeed you will be rejoiced to hear at no distant date that the other schools in Canada have followed the lead of their elder sister.

I fear I have given you a very imperfect idea of medical education in Canada; and it may be charged against me that I have been partial in my description to my own University; but I assure you that such was furthest from my thoughts. The Medical Faculty of McGill University has the right of seniority and might fairly, I think, be taken as a type of Canadian Medical Schools. Be assured there is no mean spirit of rivalry abroad. We are all working with one object only, the advancement of medicine in Canada. The teaching facilities of some medical schools in this country may be, and are actually greater than others, owing to the munificence of citizens, and the school attached to McGill is, I am happy to say in that position;

but although assistance has been rendered in a general way, with two exceptions, the chairs are still unendowed. Yet we have great expectations which we hope will be realized in the near future. Let us hope that our sister universities throughout Canada will be equally fortunate; so that before long we shall be able to report that we are all marching abreast equally equipped.

#### CLINICAL TEACHING IN CANADA.

The facilities for clinical teaching in the larger cities of Canada are admirable. Speaking for the city of Montreal, we have in the five general hospitals, the Hotel Dieu, Montreal General, Notre Dame, Royal Victoria and Western Hospitals nearly 800 beds. The number of students attending the three medical schools was last session 646; and considering that only about half—those of the third and fourth years—have access to the wards, there will be at least two beds for each student. The number of outdoor patients attending the five hospitals daily would aggregate at least 300, so that there can be no possible cause for complaint regarding both the quantity and quality of clinical material available in this city.

#### NURSES AND NURSING IN CANADA.

While on the subject of hospitals, I would take this opportunity of saying that the training schools attached to the larger English hospitals are in a very flourishing condition and are found to contribute not a little towards the thoroughness of the practical teaching. It was my intention to have referred at some length to the whole question of Nurses and Nursing, but the limits of this address forbid. I might say, however, while as a profession we feel the absolute necessity for the training school, and thoroughly appreciate the services of the well trained nurse, both in hospital and in private practice, there is the fear that the supply may soon exceed the demand. A project is on foot now, however, which may delay, if not actually prevent, such a result. I refer to the recent establishment by that most estimable and charitable woman, the Countess of Aberdeen, of the Victorian Order of Nurses—another outcome of the jubilee of our beloved Queen. Her Excellency's idea in establishing this order is to supply the sparsely settled parts of our great Northwest, the outlying districts of Canada generally, and the poor in towns and cities with nursing aid. In this great work hundreds of nurses will in time be employed. The scheme, which is purely non-sectarian, and appeals to all, irrespective of nationality, when thoroughly worked out and more generally understood will become one of our national institutions. Let us wish it every success.

## MEDICAL LEGISLATION IN CANADA.

Time will not permit of my discussing the subject of medical legislation in Canada at any length ; and besides you will find it very fully treated in the excellent Official Guide or Souvenir, prepared for you by the Executive Committee. In addition I might explain, however, that when the British American provinces became confederated in 1867, under the British North America Act, the governance of educational matters was taken away from the Federal authorities and handed over to the provinces each to look after them in its own way. In consequence we have since had a curious complexity of Medical Legislation, there being practically no uniformity amongst the provinces in regard to standard of study or qualification for practice. Each province has its own medical board or medical council, as the case may be, which has the power to grant licence to practise either after examination or on simply presenting the diploma of certain recognised universities. In the provinces of Ontario and British Columbia an examination is exacted ; in the others the license is given under certain restrictions on presentation of the degree, although in the Maritime Provinces an examining board is now about to be established. In this way, as can readily be seen, a Chinese wall is built round each province, and the frontier is carefully guarded so that it is unsafe for a medical man to pass from one to the other unarmed with a license, because of the risk of fine or even imprisonment. Such a condition of affairs is hardly credible and probably exists nowhere else to the same extent. What is the remedy ? Two remedies have been suggested—either the establishment of a central examining Board in each province with a uniform standard of matriculation and a uniformly high standard of curriculum which shall in time lead up to a general scheme of reciprocity ; or, secondly, a Dominion Examining Board. The first scheme is at present under serious consideration ; although there are many difficulties in the way of its accomplishment, no one of them is insuperable, however, providing a spirit of conciliation prevails. The second alternative (a Dominion Examining Board) would in many respects be more desirable, because not only could the licentiate practise in any part of the Dominion, but he could register in Great Britain, and thus receive recognition all over the Empire. As you are doubtless aware, we, as a profession, suffer in this country from being inhabitants of provinces which are confederated. Under the Medical Act, now of some twelve years standing, it has been decided in effect that the Medical Council of the United Kingdom can recognize the degrees of universities situated in autonomous Provinces only. As a consequence, Australians obtain privileges which are



denied to us, being permitted to register in Great Britain without examination. We are being punished for being long to a colony whose form of Government is recognized to be in advance of theirs and likely to be imitated by them. Let us give our Australian brethren a hint: if the confederation of your provinces be in contemplation, see to it that all matters of professional education are left in the hands of the Central Government, at least as far as qualification for registration is concerned. By so doing you will avoid the almost inextricable tangle in which we in Canada find ourselves. Let common school education go to the various provinces if you will, but for the profession of medicine (and doubtless law also) there should be a uniform standard of matriculation, a uniform curriculum of medical studies, and one Central Examining and Registering Board composed of the best men from all the universities. We hope in Canada to reach that ideal at no distant date; in fact I have the very best authority for stating that it is not impossible of accomplishment. Some scheme of reciprocity first arranged would doubtless make the task less difficult, but failing that, our duty is to arrange for some legislation which shall give our better and more ambitious students an opportunity of passing a Dominion Licensing Board (or whatever it may be called) which shall give the privilege of practising their profession not only in any part of their native country, but in any part of the world over which the British flag flies. Such a scheme need not interfere in any way with the autonomy of the provinces. Each may still retain its Provincial Board for the purpose of examining and issuing licenses to those candidates who are satisfied to practise their profession in the limited sphere of their own provinces. I think the legislators of this country will some day (and not far distant either) be induced to see that the system which at present obtains is unworthy of a great and growing country.

In conclusion, allow me to express the hope that the arrangements made by the Executive Committee for the entertainment of our guests may meet with appreciation and approval, and that the memories of the brief sojourn here may be all that is bright and happy. The loyalty and unanimity with which the profession throughout the Dominion has coöperated with us in Montreal to make this meeting of the British Medical Association a success from every point of view, deserves and receives our heartiest thanks. We are also greatly indebted for the kind and ready assistance of the Dominion Government, the Quebec Government, and the Civic Government of Montreal. Our hands have been strengthened and the cause we have so much at heart has been furthered by the active good-will of the country's official representatives.

One word more : It is a good thing to be here to-day, in the midst of this great gathering so full of power and vigour. The fruits of such a gathering should be tangible, enduring, not ephemeral, not for to-day, but for all time. To our-kinsmen from beyond the great seas let me express the earnest hope that in the future our kinship will be a more real and living thing than in the past. We are members of one great family, members one of another, in a peculiar and very real sense. Let that once be recognized, and the statesman's task will be an easy one. In more than words has Canada shown herself worthy of her high heritage, worthy of a part in the Empire, worthy to share in its trials and its triumphs. We, who know her history, can say with well-founded confidence :

“ So in the long hereafter this Canada shall be  
The worthy heir of British power and British liberty,  
Spreading the blessing of her sway to her remotest bounds,  
While with the fame of her fair name a continent resounds,  
True to her traditions, to Britain's ancient glory,  
Of patient saint and martyr, alive in deathless story ;  
Strong in their liberty and truth to shed from shore to shore  
A light among the nations till nations are no more.”

# BRITISH MEDICINE IN GREATER BRITAIN.<sup>1</sup>

BY

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To trace successfully the evolution of any one of the learned professions would require the hand of a master—of one who, like Darwin, combined the capacity for patient observation with philosophic vision. In the case of medicine the difficulties are enormously increased by the extraordinary development which belongs to the history of the present century. The rate of progress has been too rapid for us to appreciate, and we stand bewildered and, as it were, in a state of intellectual giddiness, when we attempt to obtain a broad, comprehensive view of the subject. In a safer 'middle flight' I propose to dwell on certain of the factors which have moulded the profession in English-speaking lands beyond the narrow seas—of British medicine in Greater Britain. Even for this lesser task (though my affiliations are wide and my sympathies deep) I recognize the limitations of my fitness, and am not unaware that in my ignorance I shall overlook much which might have rendered less sketchy a sketch necessarily imperfect.

Evolution advances by such slow and imperceptible degrees that to those who are part of it the finger of time scarcely seems to move. Even the great epochs are seldom apparent to the participators. During the last century neither the colonists nor the mother country appreciated the thrilling interest of the long-fought duel for the possession of this continent. The acts and scenes of the drama, to them detached, isolated and independent, now glide like dissolving views into each other, and in the vitascope of history we can see the true sequence of events. That we can meet here to-day, Britons on British soil, in a French province, is one of the far-off results of that struggle. This was but a prelude to the other great event of the eighteenth century: the revolt of the colonies and the founding of a second great English-speaking nation—in the words of Bishop Berkeley's prophecy, "Time's noblest offspring."

Surely a unique spectacle that a century later descendants of the actors of these two great dramas should meet in an English city in

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<sup>1</sup> The Address in Medicine at the British Medical Association, Montreal, Aug. 31st, 1897.

New France! Here, the American may forget Yorktown in Louisbourg, the Englishman Bunker Hill in Quebec, and the Frenchman both Louisbourg and Quebec in Chateauguay; while we Canadians, English and French, in a forgiving spirit, overlooking your unseemly quarrels, are only too happy to welcome you to our country—this land on which and for which you have so often fought.

Once, and only once, before in the history of the world could such a gathering as this have taken place. Divided though the Greeks were, a Hellenic sentiment of extraordinary strength united them in certain assemblies and festivals. No great flight of imagination is required to picture a notable representation of our profession in the fifth century B.C. meeting in such a colonial town as Agrigentum, under the presidency of Empedocles. Delegates from the mother cities, brilliant predecessors of Hippocrates of the stamp of Damocedes and Herodicus, delegates from the sister colonies of Syracuse and other Sicilian towns, from neighboring Italy, from far distant Massilia, and from still more distant Panticapæum and Istria. And in such an assemblage there would have been men capable of discussing problems of life and mind more brilliantly than in many subsequent periods, in proportion as the pre-Hippocratic philosophers in things medical had thought more deeply than many of those who came after them.

We English are the modern Greeks, and we alone have colonised as they did, as free peoples. There have been other great colonial empires, Phœnician, Roman, Spanish, Dutch and French, but in civil liberty and intellectual freedom Magna Græcia and Greater Britain stand alone. The parallel so often drawn between them is of particular interest with reference to the similarity between the Greek settlements in Sicily and the English plantations on the Atlantic coast. Indeed, Freeman says: "I can never think of America without something suggesting Sicily, or of Sicily without something suggesting America." I wish to use the parallel only to emphasise two points, one of difference and one of resemblance. The Greek colonist took Greece with him. Hellas had no geographical bounds, "Massilla and Olbia were cities of Hellas in as full sense as Athens or Sparta." While the emigrant Britons changed their sky, not their character, in crossing the great sea; yet the home-stayers had never the same feeling toward the plantations as the Greeks had towards the colonial cities of Magna Græcia. If, as has been shrewdly surmised, Professor Seely was Herodotus reincarnate, how grieved the spirit of the father of history must have been to say of Englishmen, "nor have we even now ceased to think of ourselves as simply a race inhabiting an island

off the northern coast of the Continent of Europe." The assumption of gracious superiority which, unless carefully cloaked, smacks just a little of our national arrogance, is apt to jar on sensitive colonial nerves. With the expansion of the Empire, and the supplanting of a national by an imperial spirit this will become impossible. That this sentiment never prevailed in Hellas, as it did later in the Roman Empire, was due largely to the fact that in literature, in science and in art, the colonial cities of Greece early over-shadowed the mother cities. It may be because the settlements of greater Britain were things of slower growth that it took several generations and several bitter trials to teach a lesson the Greeks never had to learn.

The Greek spirit was the leaven of the old world, the workings of which no nationality could resist; thrice it saved western civilisation, for it had the magic power of leading captivity captive and making even captive conquerors the missionaries of her culture. What modern medicine owes to it will appear later. "The love of science, the love of art, the love of freedom—vitaly correlated to each other, and brought into organic union," were the essential attributes of the Greek genius (Butcher). While we cannot claim for the Anglo-Saxon race all of these distinctions it has in a high degree that one which in practical life is the most valuable, and which has been the most precious gift of the race to the world—the love of freedom,

"Of freedom in her regal seat  
Of England."

It would carry me too far afield to discuss the differences between the native Briton and his children scattered so widely up and down the earth. In Canada, South Africa, Australia and New Zealand, types of the Anglo-Saxon race are developing which will differ as much from each other, and from the English, as the American does to-day from the original stock; but amid these differences can everywhere be seen those race-qualities which have made us what we are—'courage, national integrity, steady good sense, and energy in work.' At a future meeting of the Association, perhaps in Australia, a professional Sir Charles Dilke with a firm grasp of the subject may deal with the medical problems of Greater Britain in a manner worthy of the address in medicine. My task, as I mentioned at the outset, is much less ambitious.

Could some one with full knowledge patiently analyse the characteristics of British medicine he would find certain national traits, sufficiently distinct for recognition. Three centuries cannot accomplish very much (and that period has only just passed since the revival of medicine in England), but the local conditions of isolation, which

have been singularly favourable to the development of special peculiarities in the national character, have not been without effect in the medical profession. I cannot do more than touch upon a few features, which will be useful as indicating the sources of influence upon Great Britain in the past, and which may perhaps be suggestive as to lines of progress in the future.

Above the fire place in Sir Henry Acland's study are three pannelled portraits of Linacre, Sydenham and Harvey; the scroll upon them reads *Litteræ, Præcis, Scientia*. To this great triumvirate—as to the fountain heads, we may trace the streams of inspiration which have made British medicine what it is to-day.

Linacre, the type of the literary physician, must ever hold a unique place in the annals of our profession. To him was due in great measure the revival of Greek thought in the 16th century in England; and in the last Harveian oration, Dr. Payne has pointed out his importance as a forerunner of Harvey. He made Greek methods available; through him the art of Hippocrates and the science of Galen became once more the subject of careful, first-hand study. Linacre, as Dr. Payne remarks, "was possessed from his youth till his death by the enthusiasm of learning. He was an idealist devoted to objects which the world thought of little use." Pains-taking, accurate, critical, hypercritical perhaps, he remains to-day the chief literary representative of British medicine. Neither in Britain nor in Greater Britain have we maintained the place in the world of letters created for us by Linacre's noble start. It is true that in no generation since has the profession lacked a man who might stand unabashed in the temple at Delos; but judged by the fruits of learning scholars of his type have been more common in France and Germany. Nor is it to our credit that so little provision is made for the encouragement of these studies. For years the reputation of Great Britain in this matter was sustained almost alone by the great Dee-side scholar, the surgeon of Banchory, Francis Adams,—the interpreter of Hippocrates to English students. In this century he and Greenhill have well maintained the traditions of Linacre. Their work, and that of a few of our contemporaries, among whom Ogle must be specially mentioned, has kept us in touch with the ancients. But by the neglect of the study of the humanities, which has been far too general, the profession loses a very precious quality:

While in critical scholarship and in accurate historical studies, British medicine must take a second place, the influence of Linacre exerted through the Royal College of Physicians and the old Universities, has given to the humanities an important part in education, so that they

have moulded a larger section of the profession than in any other country. A physician may possess the science of Harvey and the art of Sydenham, and yet there may be lacking in him these finer qualities of heart and head which count for so much in life. Pasture is not everything and that indefinable, though well understood, something which we know as breeding, is not always an accompaniment of great professional skill. Medicine is seen at its best in men whose faculties have had the highest and most harmonious culture. The Lathams, the Watsons, the Pagets, the Jenners, and the Gairdners have influenced the profession less by their special work than by exemplifying those graces of life and refinements of heart which make up character. And the men of this stamp in Greater Britain have left the most enduring mark,—Beaumont, Bovell and Hodder in Toronto; Holmes, Campbell and Howard in this city; the Warrens, the Jacksons, the Bigelows, the Bowditches, and the Shattucks in Boston; Bard, Hossack, Francis, Clark, and Flint of New York; Morgan, Shippen, Redman, Rush, Coxe, the elder Wood, the elder Pepper, and the elder Mitchell of Philadelphia—Brahmins all, in the language of the greatest Brahmin among them, Oliver Wendell Holmes,—these and men like unto them have been the leaven which has raised our profession above the dead level of a business.

The *litteræ humaniores*, represented by Linacre, revived Greek methods; but the Faculty during the sixteenth and at the beginning of the seventeenth centuries was in a slough of ignorance and self-conceit, and not to be aroused even by Moses and the prophets in the form of Hippocrates and the fathers of medicine. In the pictures referred to, Sydenham is placed between Linacre and Harvey; but science preceded practice, and Harvey's great Lumleian lectures were delivered before Sydenham was born. Linacre has been well called, by Payne, Harvey's intellectual grandfather. "The discovery of the circulation of the blood was the climax of that movement which began a century and a half before with the revival of Greek medical classics, and especially of Galen."—(Payne.) Harvey returned to Greek methods and became the founder of modern experimental physiology and the great glory of British scientific medicine. The demonstration of the circulation of the blood remains in every detail a model research. I shall not repeat the oft-told tale of Harvey's great and enduring influence, but I must refer to one feature which, until lately, has been also a special characteristic of his direct successors in Great Britain. Harvey was a practitioner and a hospital physician. There are gossiping statements by Aubrey to the effect that "he felt mightily in his practice" after the publication of the *De*

*motu cordis*, and that his "therapeutic way" was not admired; but to these his practical success is the best answer. It is remarkable that a large proportion of all the physiological work of Great Britain has been done by men who have become successful hospital physicians or surgeons. I was much impressed by a conversation with Professor Ludwig in 1884. Speaking of the state of English physiology, he lamented the lapse of a favourite English pupil from science to practice; but, he added, "while sorry for him, I am glad for the profession in England." He held that the clinical physicians of that country had received a very positive impress from the work of their early years in physiology and the natural sciences. I was surprised at the list of names which he cited; among them I remember Bowman, Paget, Savory and Lister. Ludwig attributed this feature in part to the independent character of the schools in England, to the absence of the University element so important in medical life in Germany, but, above all, to the practical character of the English mind, the better men preferring an active life in practice to a secluded laboratory career.

Thucydides it was who said of the Greeks that they possessed "the power of thinking before they acted, and of acting, too." The same is true in a high degree of the English race. To know just what has to be done, then to do it, comprises the whole philosophy of practical life. Sydenham—*Anglicæ lumen*, as he has been well called, is the model practical physician of modern times. Linacre led Harvey back to Galen, Sydenham to Hippocrates. The one took Greek science, the other not so much Greek medicine as Greek methods, particularly intellectual fearlessness, and a certain knack of looking at things. Sydenham broke with authority and went to nature. It is an extraordinary fact that he could have been so emancipated from dogmas and theories of all sorts. He laid down the fundamental proposition, and acted upon it, that "all diseases should be described as objects of natural history." To do him justice we must remember, as Dr. John Brown says, "in the midst of what a mass of errors and prejudices, of theories actively mischievous, he was placed, at a time when the mania of hypothesis was at its height, and when the practical part of his art was overrun and stultified by vile and silly nostrums." Sydenham led us back to Hippocrates, I would that we could be led oftener to Sydenham! How necessary to bear in mind what he says about the method of the study of medicine." In writing therefore, such a natural history of diseases, every merely philosophical hypothesis should be set aside, and the manifest and natural phenomena, however minute, should be noted with the utmost exactness. The useful-



ness of this procedure cannot be easily overrated, as compared with the subtle inquires and trifling notions of modern writers, for can there be a shorter, or indeed any other way of coming at the morbid causes, or discovering the curative indications than by a certain perception of the peculiar symptoms? By these steps and helps it was that the father of physic, the great Hippocrates, came to excel, his theory being no more than an exact description or view of Nature. He found that Nature alone often terminates diseases, and works a cure with a few simple medicines, and often enough with no medicines at all." Well indeed has a recent writer remarked "Sydenham is unlike every previous teacher of the principles and practice of medicine in the modern world." Sydenham, not Linacre or Harvey, is the model British physician in whom were concentrated all those practical instincts upon which we lay such stress in the Anglo-Saxon character.

The Greek faculty which we possess of thinking and acting has enabled us, in spite of many disadvantages, to take the lion's share in the great practical advances in medicine. Three among the greatest scientific movements of the century have come from Germany and France. Bichât, Lænnec and Louis laid the foundation of modern clinical medicine; Virchow and his pupils of scientific pathology; while Pasteur and Koch have revolutionized the study of the causes of disease; and yet, the modern history of the art of medicine could almost be written in its fullness from the records of the Anglo-Saxon race. We can claim almost every practical advance of the very first rank—vaccination, anæsthesia, preventive medicine and antiseptic surgery, the "captain jewels in the carcanet" of the profession, beside which can be placed no others of equal lustre.

One other lesson of Sydenham's life needs careful conning. The English Hippocrates, as I said, broke with authority. His motto was

"Thou Nature art my Goddess; to thy law  
"My services are bound."

Undue reverence for authority as such, a serene satisfaction with the *status quo* and a fatuous objection to change have often retarded the progress of medicine. In every generation, in every country, there have been, and ever will be, *laudatores temporis acti*, in the bad sense of that phrase, not a few of them men in high places, who have lent the weight of a complacent conservatism to bolster up an ineffectual attempt to stay the progress of new ideas. Every innovator from Harvey to Lister has been made to feel its force. The recently issued life of Thomas Wakley is a running commentary on this spirit, against the pricks of which he kicked so hard and so

effectually. But there are signs of a great change. The old universities and the colleges, once the chief offenders, have been emancipated, and remain no longer, as Gibbon found them, steeped in port and prejudice. The value of authority *per se* has lessened enormously, and we of Greater Britain have perhaps suffered as the pendulum has swung to the other extreme. Practice loves authority, as announced in "the general and perpetual voice of men." Science must ever hold with Epicharmus that a judicious distrust and wise scepticism are the sinews of the understanding. And yet the very foundations of belief in almost everything relative to our art rest upon authority. The practitioner cannot always be the judge; the responsibility must often rest with the teachers and investigators, who can only learn in the lessons of history the terrible significance of the word. The fetters of a thousand years in the treatment of fever were shattered by Sydenham, shattered only to be riveted anew. How hard was the battle in this century against the entrenched and stubborn foe! Listen to the eloquent pleadings of Stokes, pleading as did Sydenham, against authority, and against the bleedings, the purgings and sweatings of fifty years ago. "Though his hair be grey and his authority high, he is but a child in knowledge and his reputation an error. On a level with a child, so far as correct appreciation of the great truths of medicine is concerned, he is very different in other respects, his powers of doing mischief are greater; he is far more dangerous. Oh! that men would stoop to learn, or at least cease to destroy." The potency of human authority among the powers that be, was never better drawn than by the judicious Hooker in his section on this subject. "And this not only with 'the simpler sort,' but the learned and wiser we are, the more such arguments in some cases prevail with us. The reason why the simpler sort are moved with authority is the conscience of their own ignorance; whereby it cometh to pass that having learned men in admiration, they rather feared to dislike them than know wherefore they should allow and follow their judgments. Contrariwise with them that are skilful authority is much more strong and forcible; because they only are able to discern how just cause there is why to some men's authority so much should be attributed. For which cause the name of Hippocrates (no doubt) were more effectual to persuade even such men as Galen himself than to move a silly empiric."<sup>1</sup>

Sydenham was called "a man of many doubts" and therein lay the secret of his great strength.

Turning now to the main question of the development of this

<sup>1</sup> *Ecclesiastical Polity*. Book ii., vii. 2.

British medicine in Greater Britain, I must at once acknowledge the impossibility of doing justice to it. I can only indicate a few points of importance and I must confine my remarks chiefly to the American part of Greater Britain. We may recognize three distinct periods corresponding to three distinct waves of influence, the first from the early immigration to about 1820, the second from about 1820 to 1860, and the third from about 1860 to the present time.

The colonial settlements were contemporaneous with the revival of medicine in England. Fellow-students of Harvey at Cambridge might have sailed in the *Mayflower* and the *Arbella*. The more carefully planned expeditions usually enlisted the services of a well trained physician, and the early records, particularly of the New England colonies, contain many interesting references to these college-bred men. Giles Firman, who settled in Boston in 1632, a Cambridge-man, seems to have been the first to give instruction in medicine in the new world. The parsons of that day had often a smattering of physic, and illustrated what Cotton Mather called an "angelical conjunction." He says: "Even since the days of Luke, the Evangelist, skill in *Physick* has been frequently professed and practised by Persons whose more declared Business was the study of Divinity," Firman himself, finding physic 'but a meane helpe,' took orders. These English physicians in the New England colonies were scholarly, able men. Roger Chillingworth, in Hawthorne's *Scarlet Letter*, has depicted them in a sketch of his own life: "Made up of earnest, studious, thoughtful, quiet years, bestowed faithfully for the increase of knowledge, faithfully, too, for the advancement of human welfare,—men, thoughtful for others, caring little for themselves, kind, just, true, and of constant if not warm affections,"—a singularly truthful picture of the old colonial physician.

Until the establishment of medical schools, University of Pennsylvania, 1763; King's College (afterwards Columbia) 1767; Harvard, 1782, the supply of physicians for the colonies came from Great Britain, supplemented by men trained under the old apprentice system, and of colonists who went to Edinburgh, Leyden and London for their medical education. This latter group had a most powerful effect in moulding professional life in the pre-revolutionary period. They were men who had enjoyed not alone the instruction but often the intimate friendship of the great English and European physicians. Morgan, Rush, Shippen, Bard, Wistar, Hossack and others had received an education comprising all that was best in the period, and had acquired the added culture which can only come from travel and wide acquaintance with the world. Morgan, the founder of the medi-

cal school of the University of Pennsylvania, was away seven years, and before returning had taken his seat as a corresponding member of the French Academy of Surgery, besides having been elected a Fellow of the Royal Society. The War of Independence interrupted temporarily the stream of students, but not the friendship which existed between Cullen and Fothergill and their old pupils in America. The correspondence of these two warm friends of the colonies testifies to the strong professional intimacy which existed at the time between the leaders of the profession in the old and new worlds.

But neither Boerhaave, Cullen nor Fothergill stamped colonial medicine as did the great Scotchman, John Hunter. Long, weary centuries separated Harvey from Galen; not a century elapsed from the death of the great physiologist to the advent of the man in whose phenomenal personality may be seen all the distinctive traits of modern medicine, and the range of whose mighty intellect has had few, if any, equals since Aristotle. Hunter's influence on the profession of this continent, so deep and enduring, was exerted in three ways. In the first place, his career as an army surgeon, and his writings on subjects of special interest to military men, carried his work and ways into innumerable campaigns in the long French wars and in the War of Independence. Hunter's works were reprinted in America as early as 1791 and 1793. In the second place, Hunter had a number of most distinguished students from the colonies, among whom were two who became teachers of wide reputation. William Shippen, the first Professor of Anatomy in the University of Pennsylvania, lived with Hunter on terms of the greatest intimacy. He brought back his methods of teaching and some measure of his spirit. With the exception of Hewson and Home, Hunter had no more distinguished pupil than Philip Syng Physick, who was his house surgeon at St. George's Hospital, and his devoted friend. For more than a generation Physick had no surgical compeer in America, and enjoyed a reputation equalled by no one save Rush. He taught Hunterian methods in the largest medical school in the country, and the work of his nephew (Dorsey) on Surgery is very largely Hunter modified by Physick. But in a third and much more potent way the great master influenced the profession of this continent. Hunter was a naturalist to whom pathological processes were only a small part of a stupendous whole, governed by law, but which could never be understood until the facts had been accumulated, tabulated and systematized. By his example, by his prodigious industry and by his suggestive experiments he led men again into the old paths of

Aristotle, Galen and Harvey. He made all thinking physicians naturalists, and he lent a dignity to the study of organic life, and re-established a close union between medicine and the natural sciences. Both in Britain and Greater Britain he laid the foundation of the great collections and museums, particularly those connected with the medical schools. The Wistar-Horner and the Warren museums originated with men who had been greatly influenced by Hunter. He was, moreover, the intellectual father of that interesting group of men on this side of the Atlantic who, while practising as physicians, devoted much time and labour to the study of Natural History. In the latter part of the last century and during the first thirty years of this, the successful practitioner was very often a naturalist. I wish that time permitted me to do justice to the long list of men who have been devoted naturalists and who have made contributions of great value. Benjamin Smith Barton, David Hossack, Jacob Bigelow, Richard Harlan, John D. Goodman, Samuel George Morton, John Collins Warren, Samuel L. Mitchell, J. Aiken Meigs and many others have left the records of their industry in their valuable works and in the Transactions of the various societies and academies. In Canada, many of our best naturalists have been physicians, and collections in this city testify to the industry of Holmes and McCullough.

I was regretting the *humanities* a few minutes ago, and now I have to mourn the almost complete severance of medicine from the old natural history. To a man the most delightful recollections of whose student life are the Saturdays spent with a preceptor who had a Hunterian appetite for specimens—anything from a trilobite to an acarus—to such a one across the present brilliant outlook comes the shadow of the thought that the conditions of progress will make impossible again such careers as those of William Kitchen Parker and William Carmichael McIntosh.

Until about 1820 the English profession of this continent knew little else than British medicine. After this date in the United States the ties of professional union with the old country became relaxed, owing in great part to the increase in the number of home schools, and in part to the development of American literature. To 1820 one hundred and fourteen native medical books of all kinds had been issued from the press, and one hundred and thirty-one reprints and translations, the former English, the latter, few in number, and almost exclusively French (Billings).

Turning for a few minutes to the condition of the profession in Canada during this period, I regret that I cannot speak of the many interesting questions relating to the French colonies. With the

earliest settlers physicians had come, and among the Jesuits, in their devoted missions, there are records of *donnés* (laymen attached to the service), who were members of the profession. One of these, René Goupil, suffered martyrdom at the hands of the Iroquois.<sup>1</sup>

Between the fall of Quebec in 1759 and 1820, the English population had increased by the settlement of Upper Canada, chiefly by United Empire loyalists from the United States, and after the war of 1812 by settlers from the old country. The physicians in the sparsely settled districts were either young men who sought their fortunes in the new colony or were army surgeons, who had remained after the revolutionary war or the war of 1812. The military element gave for some years a very distinctive stamp to the profession. These surgeons were men of energy and ability, who had seen much service, and were accustomed to order, discipline and regulations. Sabine, in his "History of the Loyalists," refers to the Tory proclivities of the doctors, but says that they were not so much disturbed as the lawyers and clergymen. Still a good many of them left their homes for conscience sake, and Canniff, in his "History of the Profession in Upper Canada," gives a list of those known to have been among the United Empire Loyalists.

The character of the men who controlled the profession of the new colony is well shown by the proceedings of the Medical Board which was organized in 1819. Drs. Macaulay and Widmer, both army surgeons, were the chief members. The latter, who has well been termed the father of the profession in Upper Canada, a man of the very highest character, did more than anyone else to promote the progress of the profession; and throughout his long career his efforts were always directed to the proper channels. In looking through Canniff's most valuable work one is much impressed by the stirring worth and mettle of the old army surgeons who in the early days formed the larger part of the profession. The minutes of the Medical Board indicate with what military discipline the candidates were examined, and the percentage of rejections has probably never been higher in the history of the province than it was in the first twenty years of the existence of the Board.

One picture on the canvas of those early days lingers in the memory, illustrating all the most attractive features of a race which has done much to make this country what it is to-day. Widmer was the type of the dignified old army surgeon, scrupulously punctilious and in every detail regardful of the proprieties of life. 'Tiger' Dunlop may be taken as the very incarnation of that restless roving spirit

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<sup>1</sup> Parkman. Jesuits in North America..

which has driven the Scotch broadcast upon the world. After fighting with the Connaught Rangers in the war of 1812, campaigning in India, clearing the Sangur of tigers—hence his soubriquet ‘Tiger’ lecturing on Medical Jurisprudence in Edinburgh, writing for Blackwood, editing the *British Press* and the *Telescope*, introducing Beck’s Medical Jurisprudence to English readers, and figuring as director and promoter of various companies, this extraordinary character appears in the young colony as ‘Warden of the Black Forest’ in the employ of the Canada Company. His life in the backwoods at Gairbraid, his *Noctes Ambrosianæ Canadensis*, his famous ‘Twelve apostles’ as he called his mahogany liquor stand (each bottle a full quart), his active political life, his remarkable household, his many eccentricities—are they not all portrayed to the life in the recently issued *In the days of the Canada Company?*

Turning now to the second period, we may remark in passing that the 19th century did not open very auspiciously for British medicine. Hunter had left no successor, and powerful as had been his influence it was too weak to stem the tide of abstract speculation, with which Cullen, Brown and others flooded the profession. No more sterile period exists than the early decades of this century. Willan (a great naturalist in skin diseases) with a few others saved it from utter oblivion. The methods of Hippocrates, of Sydenham, and of Hunter had not yet been made available in every day work.

The awakening came in France, and such an awakening! It can be compared with nothing but the renaissance in the 16th and 17th centuries, which gave us Vesalius and Harvey. “Citizen” Bichât and Broussais led the way, but Lænnec really created clinical medicine as we know it to-day. The discovery of auscultation was only an incident, of vast moment it is true, in a systematic study of the correlation of symptoms with anatomical changes. Louis, Andral and Cheomel, extended the reputation of the French school which was maintained to the full until the sixth decade, when the brilliant Trousseau ended for a time a long line of Paris teachers, whose audience had been world wide. The revival of medicine in Great Britain was directly due to the French. Bright and Addison, Graves and Stokes, Forbes and Marshall Hall, Latham and Bennett were profoundly affected by the new movement. In the United States Anglican influence did not wane until after 1820. Translations of the works of Bichât appeared as early as 1802, and there were reprints in subsequent years, but it was not until 1823 that the first translation (a reprint of Forbes’ edition) of Lænnec was issued. Broussais’ works became very popular in translations after 1830, and in the journals from this time on

the change of allegiance became very evident. But men rather than books diverted the trend of professional thought. After 1825, American students no longer went to Edinburgh and London, but to Paris, and we can say that between 1830 and 1860, every teacher and writer of note passed under the Gallic yoke. The translations of Louis' works and the extraordinary success of his American pupils, a band of the ablest young men the country had ever seen, added force to the movement. And yet this was a period in which American medical literature was made up largely of pirated English books, and the systems, encyclopedias and libraries, chiefly reprints, testify to the zeal of the publishers. Stokes, Graves, Watson, Todd, Bennett and Williams, furnished Anglican pap to the sucklings, as well as strong meat to the full grown. In spite of the powerful French influence the text books of the schools were almost exclusively English.

In Canada the period from 1820 to 1860 saw the establishment of the English universities and medical schools. In Montreal the agencies at work were wholly Scotch. The McGill Medical School was organized by Scotchmen, and from its inception has followed closely Edinburgh methods. The Paris influence, less personal, was exerted chiefly through English and Scotch channels. The Upper Canada schools were organized by men with English affiliations, and the traditions of Guys, St. Bartholomew, St. Thomas, St. Georges, and of the London Hospital, rather than those of Edinburgh, have prevailed in Toronto and Kingston.

The local French influence on British medicine in Canada has been very slight. In the early decades of the century, when the cities were smaller, and the intercourse between the French and English somewhat closer, the reciprocal action was more marked. At that period English methods became somewhat the vogue among the French; several very prominent French Canadians were Edinburgh graduates. Attempts were made in the medical journals to have communications in both languages, but the fusion of the two sections of the profession was no more feasible than the fusion of the two nationalities, and the development has progressed along separate lines.

The third period dates from about 1860 when the influence of German medicine began to be felt. The rise of the Vienna school was for a long time the only visible result in Germany of the French renaissance. Skoda, the German Lænnec and Rokitansky, the German Morgagni, influenced English and American thought between 1840 and 1860, but it was not until after the last date that Teutonic medicine began to be felt as a vitalizing power, chiefly through the energy of Virchow. After the translation of the "Cellu-



lar Pathology" by Chance (1860) the way lay clear and open to every young student who desired inspiration. There had been great men in Berlin before Virchow, but he made the town on the Spree a Mecca for the faithful of all lands. From this period we can date the rise of German influence on the profession of this continent. It came partly through the study of pathological histology, under the stimulus given by Virchow, and partly through the development of the specialities, particularly diseases of the eye, of the skin and of the larynx. The singularly attractive courses of Hebra, the organization on a large scale in Vienna of a system of graduate teaching designed especially for foreigners and the remarkable expansion of the German laboratories combined to divert the stream of students from France. The change of allegiance was a deserved tribute to the splendid organization of the German universities, to the untiring zeal and energy of their professors and to their single-minded devotion to science for its own sake.

In certain aspects the Australasian Settlements present the most interesting problems of Greater Britain. More homogeneous, thoroughly British, isolated, distant, they must work out their destiny with a less stringent environment than, for example, surrounds the English in Canada. The traditions are more uniform and of whatever character have filtered through British channels. The professional population of native-trained men is as yet small, and the proportion of graduates and licentiates from the English, Scotch and Irish colleges and boards guarantees a dominance of Old Country ideas. What the maturity will show cannot be predicted, but the vigorous infancy is full of crescent promise. On looking over the files of Australian and New Zealand journals, one is impressed with the monotonous similarity of the diseases in the antipodes to those of Great Britain and of this continent. Except in the matter of parasitic affections and snake-bites, the nosology presents few distinctive qualities. The proceedings of the four Intercolonial Congresses indicate a high level of professional thought. In two points Australia has not progressed as other parts of Greater Britain. The satisfactory regulation of practice, so early settled in Canada, has been beset with many difficulties. Both in the United States and in Australia the absence of the military element, which was so strong in Canada, may in part at least account for the great difference which has prevailed in this matter of the state licence. The other relates to the question of ethics, to which one really does not care to refer, were it not absolutely forced upon the attention in reading the journals. Elsewhere professional squabbles, always so unseemly and distressing, are

happily becoming very rare, and in Great Britain, and on this side of the water, we try at any rate 'to wash our dirty linen at home.' In the large Australian cities, differences and dissensions seem lamentably common. Surely they must be fomented by the atrocious system of elections to the hospitals, which plunges the entire profession every third or fourth year into the throes of a contest, in which the candidates have to solicit the suffrages of from 2,000 to 4,000 voters! Well, indeed, might Dr. Batchelor, in his address at the fourth Intercolonial Congress, say: "It is a scandal that in any British community, much less in a community which takes pride in a progressive spirit, such a pernicious system should survive for an hour."

Of India, of "Vishnu-land," what can one say in a few minutes? Three thoughts at once claim recognition. Here in the dim dawn of history, with the great Aryan people, was the intellectual cradle of the world. To the Hindoos we owe a debt which we can at any rate acknowledge; and even in medicine, many of our traditions and practices may be traced to them, as may be gathered from that most interesting *History of Aryan Medical Science*, by the Thakore Saheb of Gondal.

Then there arises the memory of the men who have done so much for British medicine in that great empire. Far from their homes, far from congenial surroundings, and far from the stimulus of scientific influences, Annesley, Ballingall, Twining, Morehead, Waring, Parkes, Cunningham, Lewis, Vandyke Carter, and many others, have upheld the traditions of Harvey and of Sydenham. On the great epidemic diseases how impoverished would our literature be in the absence of their contributions! But then there comes the thought of 'the little done, the undone vast,' when one considers the remarkable opportunities for study which India has presented. Where else in the world is there such a field for observation in cholera, leprosy, dysentery, the plague, typhoid fever, malaria and in a host of other less important maladies. And what has the British Government done towards the scientific investigation of the diseases of India? Until recently little or nothing, and the proposal to found an institute for the scientific study of disease has actually come from the native chiefs! The work of Dr. Hankin and of Professor Haffkine, and the not unmixed evil of the brisk epidemic of plague in Bombay, may arouse the officials to a consciousness of their shortcomings. While sanitary progress has been great as shown in a reduction of the mortality from 69 per mille before 1857 to 15 per mille at present, many problems are still urgent, as may be gathered from reading Dr. Harvey's Presidential address and the proceedings of the Indian Medical congress.

That typhoid fever can be called the "scourge of India" and that the incidence of the disease should remain so high among the troops point to serious sanitary defects as yet unremedied. As to the prevalence of venereal disease among the soldiers—an admission of nearly 500 per mille tells its own tale. On reading the journals and discussions one gets the impression that matters are not as they should be in India. There seems to be an absence of proper standards of authority. Had there been in each presidency during the past twenty years well equipped government laboratories in charge of able men, well trained in modern methods, the contributions to our knowledge of epidemic diseases might have been epoch-making, and at any rate we should have been spared the crudeness which is evident in the work (particularly in that upon malaria) of some zealous but badly trained men.

In estimating the progress of medicine in the countries comprising Greater Britain, the future rather than the present should be in our minds. The strides which have been taken during the past twenty years are a strong warrant that we have entered upon a period of exceptional development. When I see what has been accomplished in this city in the short space of time since I left, I can scarcely credit my eyes: the reality exceeds the utmost desire of my dreams. The awakening of the profession in the United States to a consciousness of its responsibilities and opportunities has caused unparalleled changes, which have given an impetus to medical education and to higher lines of medical work which has already borne a rich harvest. Within two hundred years who can say where the intellectual centre of the Anglo-Saxon race will be? The Mother Country herself has only become an intellectual nation of the first rank within a period altogether too short to justify a prediction that she has reached the zenith. She will probably reverse the history of Hellas, in which the mental superiority was at first with the colonies. At the end of the next century, ardent old-world students may come to this side 'as o'er a brook,' seeking inspiration from great masters, perhaps in this very city; or the current may turn towards the schools of the great nations of the south. Under new and previously unknown conditions, the Africander, the Australian or the New Zealander may reach a development before which even 'the glory that was Greece' may pale. Visionary as this may appear, it is not one whit more improbable to-day than would have been a prophecy made in 1797 that such a gathering as the present would be possible within a century on the banks of the St. Lawrence.

Meanwhile, to the throbbing vitality of modern medicine the two

great meetings held this month, in lands so widely distant, bear eloquent testimony. Free, cosmopolitan, no longer hampered by the dogmas of schools, we may feel a just pride in a profession almost totally emancipated from the bondage of error and prejudice. Distinctions of race, nationality, colour and creed are unknown within the portals of the temple of Æsculapius. Dare we dream that this harmony and cohesion so rapidly developing in medicine, obliterating the strongest lines of division, knowing no tie of loyalty but loyalty to truth—dare we hope, I say, that in the wider range of human affairs a similar solidarity might ultimately be reached? Who can say that the forges of Time will weld no links between man and man stronger than those of religion or of country? Some Son of Beor, touched with prophetic vision, piercing the clouds which now veil the eternal sunshine of the mountain top—some spectator of all time and all existence (to use Plato's expression)—might see in this gathering of men of one blood and one tongue a gleam of hope for the future, of hope at least that the great race so dominant on the earth to-day may progress in the bonds of peace—a faint glimmer perhaps of the larger hope of humanity, of the day when "the common sense of most shall hold a fretful world in awe." There remains for us, Greater Britains of whatsoever land, the bounden duty to cherish the best traditions of our fathers, and particularly of the men who gave to British medicine its most distinctive features, of the men, too, who found for us the light and liberty of Greek thought—Linacre, Harvey and Sydenham, those ancient founts of inspiration and models for all time in Literature, Science and Practice.

## ADDRESS IN SURGERY!

BY

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### THE SURGEON OF OLD IN WAR.

I am indeed greatly honoured by having to deliver to you to-day an address in surgery. Fortunately for me the title is a wide one, and I shall take advantage of that fact to diverge from the strict consideration of surgical disease, and shall offer you instead a brief sketch of some of the most notable work done of old by a body of members of our profession who have never received their due reward—those, namely, who have devoted their lives to the succour of the sick and the wounded in war.

### MILITARY SURGEONS IN THE ROMAN ARMY.

Twelve months ago my friend, Dr. Barnes, of Carlisle, ex-President of this Association, made me acquainted with a remarkable paper by the late Sir James Simpson, entitled Was the Roman Army provided with Medical Officers?—a paper exhibiting such profound learning, so charmingly written, and so little known that I need not make any apology for acquainting you with some of its chief points of interest.

The most careful investigations have failed to make out from their writings whether the Romans regularly appointed physicians and surgeons to their armies or not, although nearly every other question relating to their military organisation has been treated of, sometimes very fully. Curiously enough, what little information we possess on the subject comes mainly from mortuary or from votive tablets. Borcovicus, in Northumberland—now called Housesteads—was one of the principal stations on the line of Hadrian's wall. Here, about seventy years ago, was found a monumental tablet, now in Newcastle Museum. On it is the following inscription :

D M	D(IT)S M(ANIBUS)
ANICIO	ANICIO
INGENVO	INGENVO
MEDICO	MEDICO
ORD COH	ORD(INARIO) COH(ORTIS)
I TUNGR	PRIMAE TUNGR(ORUM)
VIX AN XXV	VIX(IT) AN(NOS) XXV

<sup>1</sup> Read at the Annual Meeting of the British Medical Association at Montreal, September 2nd, 1897.

The First Tungrian Cohort is known to have been present at the battle of the Mons Grampius, and to have served at Castlecary, at Cramond near Edinburgh, in Cumberland, and at Housesteads. The tablet is highly ornamented, and antiquarians hold that a rabbit and round bucklers carved in the upper part, which are emblems of Spain, show that the young military doctor was probably a native of that country. From various works treating of Roman inscriptions Simpson was enabled to find that four more tablets, in which surgeons of cohorts are mentioned, existed. They were found at Rome. One of them is a votive tablet, the inscription upon which intimates that it was dedicated by Sextus Titius Alexander to Æsculapius and to the safety of his fellow soldiers. It was cut in the year of the consulship of F. Flavius Sabinus, which is known to have been A. D. 83. As the Roman legion consisted of ten cohorts, it is interesting to know that there were not only medical officers attached to each cohort, but also one attached to the legion—a sort of surgeon-colonel, as we should call him nowadays. Three tablets have been discovered in which the *medicus legionis* is mentioned. One found at Verona was a tablet raised by Scribonia Faustina to her dearest husband J. Caelius Arrianus, medical officer to the Second Italian Legion, who died at the age of 49 years and 7 months. Furthermore, Simpson rooted out of Mommsen's Latin inscriptions of Naples, a tablet, now in the Dresden collection, which was found in the Elysian fields near Baiæ, close to the Portus Julius, which was the station of a division of the Imperial fleet. The inscription tells that M. Satrius Longinus, *medicus duplicatorius* to the Trireme Cupid, and the heirs of those freed by Julia Veneria erected the tablet to the manes of that deserving lady. The term *duplicatorius* means that by reason of long or meritorious service he was entitled to double pay and rewards. These little gleanings from Simpson's paper show what an interesting one it is, and one is astonished at the labour that must have been expended in digging up the information contained in it.

#### AMBROISE PARÉ.

Hundreds of years went past before there came upon the scene any military surgeon of note, but when he did appear he was a man of transcendent merit—the illustrious Ambroise Paré. From 1517 to 1590, for seventy-three years, he lived a long and incessantly active life, the contemporary of Vesalius, the immediate predecessor of Harvey. We have only time to glance at the soldier-surgeon side of Paré's life. For over thirty years he followed the wars under four kings of France—Henry the Second, Francis the Second, Charles the

Ninth, and Henry the Third, with intervals of a few years at home in Paris. Perpignan, Metz, Verdun, Rheims, Hesdin (where he was taken prisoner and had to write to his wife for his ransom), St. Quintin, La Fère, Amiens, the taking of Rouen, Dreux, Moncontour—these are but some of the bloody battles and sieges at which he was present. Through them all his humanity, his love of his profession, his independant character, and his jovial, frank disposition carried him safe, and made for the son of the poor country joiner warm friends among the greatest and noblest warriors of France. Even that miserable monster, Charles the Ninth, loved the Huguenot surgeon, and when the awful day of St. Bartholomew came, Paré was spared to tend his wretched master through the brief term of agonised and remorseful life that was given him. The description in Dumas's novel, the *Two Diamas*, of the wound of the famous warrior, Duke of Guise, where the lance entered above the right eye and came out between the nucha and the left ear, breaking short off, and how Paré lugged it out, with the chance that when it did come, one terrible gush of blood would finish his illustrious patient's life and his own career at the same moment—the picture of all this is real history.

Amid all the splendid work, both anatomical and surgical, which Paré did, the application of the principle of the ligature to bleeding arteries is of course that with which his name will be forever associated. In this day of grace it is impossible for us to imagine the horrors that awaited a wretched man so soon as his limb was cut off and the process of stopping the bleeding began. Think of the raw and exquisitely sensitive stump exposed to the red hot cautery or plunged into boiling pitch! For this frightful treatment Paré substituted the ligature, which in our own day, employed in the form of an aseptic animal material which the tissues quietly absorb, has practically reached the pitch of perfection. In his time, too, there was a fixed belief that the danger from gunshot wounds arose from the poison of the gunpowder conveyed on the bullet. To destroy this poison the treatment was to pour into the wound boiling oil in which elderwood bark had been stewed. On one occasion, not having this infernal concoction at hand, Paré used a cold mixture of yoke of egg, oil of roses, and turpentine to his wounded soldiers. He passed a sleepless night from dread that this would injure those to whom it had been applied, and his delight next day was proportionately great when he found that they had had but little pain, while their wounds were free from inflammation and swelling. This was his panacea for wounds ever afterwards. There are of course persons who wish to make out that he was not original in the matter of the ligaturc. He

himself says this about it; "Taught me as I interpret it by the suggestion of some good Angel, for I neither learnt it of my masters nor of any other man. And thus I wish all chirurgions to doe. For it is not in our Art, as it is in civill affaires, that prescription, law, or authority should prevail over right reason." But these cavillers have doubtless never heard of an ancient proverb which says that there is nothing new under the sun. In spite of them the world will ever believe in a glorious trio—Paré, the Frenchman, who invented the ligature; Morton, the American, who discovered anæsthetics; and Lister, the Englishman, who introduced antiseptics. In the fulness of years, possessed of affluence and surrounded by friends, died Paré, the whilom poor barber-chirurgion, now a Councillor of State and Surgeon-in-Chief to the King. One final touch will perhaps reveal a sentiment that permeated and guided his every labour. On one occasion, after the successful treatment of a wounded officer, he made this wise and reverent remark, afterwards adopted as his motto: "*Je le pansay ; Dieu le guarist*"—I treated him; God cured him.

#### ROBERT CLOWES.

Coming to England, a surgeon who saw no little fighting was Robert Clowes, who was born somewhere about 1540 and died in 1604. He served in France in the army commanded by the Earl of Surrey, and was afterwards for several years in the navy. He then began practice in London, and was made surgeon to St. Bartholomew's and Christ's Hospitals. But after being about fourteen years in civil practice he was despatched by Queen Elizabeth's orders into the Low Countries to attend upon the Earl of Leicester, Commander of Her Majesty's forces. He was at Zutphen when Sir Philip Sydney was killed. His last piece of service was a glorious one, he being with our fleet that defeated the Spanish Armada. It is told of him that he always kept beside him his military surgical chest with the bear and ragged staff of his old chief Leicester on the lid. He finally settled down once more in London, where he was very successful in practice, and was made surgeon to the Queen. He wrote several works in English, of which the most important is entitled *A profitable and necessarie Booke of Observations for all those that are burned with the flame of gunpowder, &c., and also for curing of wounds made with musket, and culiver shot, and other weapons of war commonly used at this day both by sea and land.* A good half of this treatise is occupied with a record of surgical cases of note which he had treated, and this renders the work very entertaining inasmuch as we get an accurate and positive knowledge of everything that was



done for a wounded man in those days, while there are numerous little side touches very characteristic of life at the time it was written. He tells us, for instance, of "The cure of one Master Andrew Fones, a merchant in London, which, being in a ship at the sea was set upon by the Flushingers, in which fight he was very dangerously wounded with gunshot." There is "The Cure of Henry Rhodes, one of the waiters at the Custom House, he being upō the river of Thames a skirmishing with his peece, and by reason the peece had certain flaws in it, did break into many peeces, and made a great wound upon his chin, and carried away a good part of the mandible and the teeth withal; moreover, it did rend his hand greatly; all which I cured without maime or deformitie." There is "An observation for the cure of the master of a Hoy that had both his legs fractured and broken into many peeces with an iron bullet, shot out of a great basse or harquebusse of crocke at the sea by a Pyrat or sea rover." These few titles will give you an idea of Clowes's clinical cases. The importance which attaches to them, and the reason why they constitute a distinct advance in the science of surgery is that the author gives his actual experiences and tells us what he did to his patients, whereas at that period the tendency was to write endless commentaries on ancient writers, to whose every dictum the blindest and most unreasoning respect was paid.

#### PETER LOWE.

Contemporary with Clowes was a most interesting character—Maister Peter Lowe—who was born in Scotland about 1550, and lived some sixty or sixty-five years, reaching well into the seventeenth century. Like many of his countrymen, he went to France when very young, where he lived, for some say ten, some twenty years. Then he returned to Glasgow, where he lived and died a citizen of much renown, having obtained in 1599, from King James the Sixth a charter for the Faculty of Physicians and Surgeons of Glasgow, which he thus founded. A few years ago Dr. Finlayson published a most charming account of Maister Peter.

His most important work is termed *A Discourse of the whole art of chirurgery, compiled by Peter Lowe, Scottishman, Doctor in the Faculty of Chirurgerie at Paris, and ordinary Chirurgion to the French King and Navarre*. The first edition dated from 1597, and is one of the earliest, if not the very earliest, work embracing the whole art of surgery published in English. It is clear that Lowe must have seen a good deal of military service abroad, being "Chirurgion Major to the Spanish regiments two years at Paris, and since that time following the king of France my maister in the warrs." In

his day, as we have seen, the surgical world was still greatly exercised about gun-shot wounds and burning by gunpowder, as it was believed that they were injuries of quite a peculiar and very poisonous character. Lowe, however, treats of them with great good sense. Thus: "*Of Wounds done by Gun-shot.*—These wounds come indifferently to all parts of our body whereof there are divers opinions; some think that there is a venosity in the powder, and burning in the bullet, which is false, for the things whereof the powder is ordinarily made, as Brimstone, Saltpeter, coales of divers sorts of trees, Water, Wine and Aquavitæ, have no venosity in them; likewise there is no burning in the bullet, for if the bullet of lead being shot a great way, should burne, through heat would be melted itself. I have cured divers within these thirty yeares of divers nations which have followed the warres in Fraunce and other cuntries, in the which I have found no more difficulty than in any other contused wounds" Here, again, we have a most important advance made by a military surgeon. for only those who are acquainted with the medical literature of Lowe's time can understand the ridiculous views then held about gun-shot wounds, and the dreadful consequences to the patients which followed from them.

We have seen that Paré lived between 1517 and 1590, and that Peter Lowe was in France between 1570 and 1580; consequently, he probably learnt all about the ligature for the arrest of hæmorrhage. When treating of amputations he describes the whole process of the operation up to the removal of the limb. Then he says: "One of the Assisters shall put the extremities of his fingers on the great vains and arteries to stay them from bleeding till the Chyrurgion either knit or cauterise them one after another. Where there is putrefaction we stay the flux of blood by Cauters actuals, and where there is no putrefaction, malignitie nor humour venomous we use the legator" He narrates the case of a certain valiant Captain Boyle of the Spanish troops whom he, in the capacity of Chyrurgion-Major to the regiment, was summoned to treat for an "aneurisme on the right side of his cragge." Lowe ordered it to be let alone, "but the captain sent for an ignorant Barbor who did open the swelling with a Launcet, which being done, the spirit and bloud came forth with such violence that the Captain died in fewe howers after." Having duly castigated the Ignorants who do such things, Lowe observes that his treatment for such cases is first to draw blood in both arms, and then to apply on the tumour "*Rec, Pulveris subtilissimi boli arminici, sanguis draconis, myrtilorum, lapidis calaminaris in aceto extincti, absinthil ad unc. cum cerato refrigerantis Galeni quantum sufficit, fiat unguen-*

tum." Curious to note how, even in men of distinct ability like Lowe a complete ignorance of pathology dragged them into the perpetration of the silliest empiricism.

#### WOODALL'S "VIATICUM."

In 1628 appeared the first work in England specially devoted to military and naval surgery. Some eleven years later a second edition appeared, and this is its title—*Viaticum, being the Pathway to the Surgeon's Chest, containing chyrurgical instructions for the younger sort of surgeons employed in the service of his Majestie or for the Common-Wealth upon any occasion whatsoever intended for the better curing of wounds made by Gunshot*, by John Woodall. A perusal of the *Viaticum* shows that Woodall was a very practical surgeon and an eminently religious man, and the way in which he mixes up pills and piety is sometimes very diverting. After some excellent general advice to the surgeon's mate, including a warning against "being given and dedicated to the Pot and Tobacco-pipe in an unreasonable measure."—he enumerates the instruments for the Surgeon's Chest, including among others Catlings, Rasours, Trapans, Trafine, Lavatories, Cauterising Irons, Storcks bills, Ravens bills, Crowes bills, Terebellum, Probes or flamules, Glister Sirings and (what would have utterly damned his book in the present day) "one bundle of small German instruments." Then comes a list of medicines under the heading Unguentum, Aqua, Sol, Oleum, Chemicall Oyles, Syrups, Conserva, Electuariae, and so on, winding up with a list of the Simples, and of the Herbs and Roots most fit to be carried. A long and careful description of the uses of the instruments and drugs follows, and then come chapters on wounds, apostumes, fractures, dislocations, amputation, scurvy, the plague, gangrene, and other topics. He observes that the cauterising irons had gone somewhat out of fashion, and he did not use them much himself "because of the feare they put the Patient into and for speech of people who are ready to scandalise an Artist upon each light occasion." In amputation, moreover, they are "now wholly forborne for reasons aforesaid, and for that a more pleasant course is known better for the patient and the Artist by making a ligature upon the veinè, wound or artery, which is the binding of each end thereof, being first caught and holden with some fit instrument, and tied with a sure and strong thread."

Woodall advances the cure of wounds a distinct step, once more putting us under an obligation to the soldier-surgeon. This he does by sharply attacking all through his works the inordinate and meddlesome use of strong caustics. He says that he had seen men

lamed by the needless use of caustic medicines, even in slight wounds to which if an old wife had only applied her one salve for all sores, no such thing had happened. "They will not see a wound incarnate and red and good flesh to grow, but straight they slander it of pride, and call it proud flesh, like their owne; and then must at the fairest Precipitate or Vitriale burnt goe to work, yea though the Patient be lame for it, or at the least the griefe put back again."

RICHARD WISEMAN.

I wish I had time to give you a proper account of the adventurous life of Richard Wiseman, who has been termed the Father of English Surgery, and that not without reason. Born in 1620, dying in 1676, he lived in the time of Charles the First, of the Commonwealth, and of Charles the Second. He was a naval surgeon to begin with, serving in the early part of his life in the Dutch navy. Being, however, a devoted Royalist he served with the armies of Charles the First, and after his death went into exile with his son in France. He was present at the battle of Worcester, where he was taken prisoner, and afterwards confined in Lambeth House for awhile. During the Commonwealth he was naturally under a cloud, and even went off for three years to serve in the Spanish navy. At the restoration the King did not forget his old surgeon, who had done and suffered so much in his service, but appointed him his surgeon-in-ordinary, and afterwards serjeant-surgeon. The first edition of his work, printed in 1672, is quite a small book, and is entitled *A Treatise of Wounds*, but it afterwards expanded into a very large volume.

Nothing reveals a man like his own words, and so in trying to give you an idea of these old worthies I have let them tell their own stories. Wiseman believed in the need for giving stimulants to a man who was in the habit of taking them, if that man was in a dire strait. After describing the parlous case of a certain patient, it seems that the "man swooned and complained that he could not live without wine. I complied with his desire; he drank again as he pleased, his sickness went off, his wound digested, and he cured. This I have often seen in some of our Dunkirkers at sea, who drank extraordinarily, and were full of drink in our sea fights. I could scarce ever cure them without allowing them wine, and thereby their spirits were kept up, and I had the liberty to bleed them as I thought fit." From this it is clear that the old saying about Dutch courage has a distinct origin in fact. But if the unhappy Batavians were liable to be bled at once, by the lance of the enemy and the lancet of the surgeon, one can hardly wonder at their taking something to keep their spirits up.

When speaking of gunshot wounds, he insists upon the bullet being searched for and extracted at once. "The part is at first dressing, with what diligence you can, to be cleared of all such Foreign Bodies as have made violent Intrusion into it, while the patient is warm with the heat of Battel, and the wound fresh and very little altered by either Air or Accidents, so that less pain must necessarily follow upon the extraction. In the *Armada Naval de Dunquerque*, where we Chirurgeons were oft employed in this Service, we after every fight went together visiting one another's wounded men. Amongst us it was thought a great shame if any of this work of Extraction was there to be done. It hath been the cause of the death of many a brave Souldier, and every Battel produces instances of it, to the discredit of our profession." This is good surgery and straight talk. I think it must have been a fine spectacle to have seen these rough old surgeons, with their limited knowledge and their miserable means of treatment, walking round to see each other's patients and learning how best to mend their mistakes.

He has a chapter entirely devoted to a great case of a fracture made by a splinter. The patient had his arm badly smashed above the elbow, and ought to have had it amputated; but a sudden cry of fire stopped this. "I hastily clapt a dressing upon his arm and rouled it up, leaving his arm in his other hand to support it, and endeavoured to get up out of the hold as the others did, I verily believing I should never dress him or any of them more. But our men bravely quitted themselves of the Fire-ship by cutting the Sprizil Tackle off with their Hatchets (which they wore during fight sticking in their Shashes); we were freed of the fire, and by our hoisting up the top-sails got free of our Enemy. Now, I was at a loss what to do with this man, who lay not far off complaining of his arm. I would have cut off his arm presently with a Razor (the Bone being shattered there needed no Saw); but this man would not suffer me to dress his arm; he cryed 'it was already drest.'" The Fight over, we got into next Port; I caused presently the Mariner's Bed to be set up (which was four pieces of wood nailed together and corded, and a Bear's skin laid upon it); this was fastened between two Guns to the Carriages." Wiseman then set hard to work to save this unfortunate mariner's arm; but "when it came to my turn to be visited by my brother Chirurgeons of our Squadron, they did not dislike the wound nor my way of dressing (for we, being used to see one another's Patients, had all much one way of dressing): but they laught at the excuse I made for not cutting of his arm, and doubted I should yet be forced to do it. But at the end of two months there was in this Patient a strong:

callus, filling up the void place of the lost Bone at least two inches, with little or no shortening of the arm." Well done, Wiseman!

#### BARON LARREY.

Up till the time of the French Revolution it is clear that military surgeons were not men of much importance, and probably had very little influence, if any, in the conduct of campaigns. But in the latter part of last century war was made on a scale which was never known before, and was made also with a rapidity and a precision quite unprecedented. Moreover, the science and art of surgery had been rescued from quackery, and surgeons in actual practice were able to be of great and real service to the wounded. As a result of the vast masses of men that were hurled against each other, the number of wounded after a big battle amounted to thousands, and civilization had so far advanced that it was imperative that immediate help should be given to them. So that about this time the military surgeon really became an important officer in warfare, and began to have his rank and pay well defined, and his merits (up to a certain point) recognised.

In 1776, near the Pyrenees, was born Jean Dominique Larrey, the Chirurgien-en-Chef de la Grande Armée, the friend and body surgeon of Napoleon, the greatest military surgeon that ever lived. He studied at the medical school of Toulouse, and in 1792 joined the headquarters of the Republican Army of the Rhine under Custine. Now, the ambulances of these days were obliged to remain about a league from the army, and the wounded were only picked up after the fighting was done. General Custine was a man who moved his troops very rapidly, which made matters worse for the wounded. This greatly affected Larrey, who set to work and devised a new ambulance hung on springs, and combining great strength and lightness. Such carriages were termed *ambulances volantes*. They could keep up with the advanced guard of the army with the speed of flying artillery, and they carried off the wounded almost as they fell. Larrey had early perceived the enormous advantage a wounded man got by having his fracture set or his bleeding stopped as rapidly as possible, and by then getting a roof over his head before night set in. General Beauharnais, in a despatch to the Convention, made special mention of "Surgeon-Major Larrey and his comrades with flying ambulances, whose indefatigable care in the healing of the wounded has diminished those afflicting results to humanity which have generally been inseparable from days of victory, and has essentially served the cause of humanity itself in preserving the brave defenders of our

country." The staff of a flying ambulance was about 340 in number. For each division there were four heavy carriages and twelve light ones. Some had two and others four wheels, and they were furnished with mattresses. In Napoleon's Italian campaigns they came greatly to the fore, and the great man displayed a lively interest in them, reviewing them and causing them to manoeuvre before him just as if they were on a battle field. After one of these inspections he said to Larrey: "Your work is one of the most happy conceptions of our age. It will suffice for your reputation."

When Napoleon undertook his Egyptian campaign Larrey proceeded to Toulon to organize the medical staff. So readily did professional men respond to the call made by him that he soon was able to reckon on 800 well qualified surgeons, of whom many had served in the army of Italy, and these were in addition to the medical officers actually attached to regiments. This, I think, shows the value that the king of commanders set upon the health of his troops, and the trouble and expense which he was prepared to face in order to maintain it—a great contrast to the miserable way of dealing with this subject, which has too long been the fashion with our military rulers. Not long after the landing at Alexandria a certain General Figuières was severely wounded. By able treatment, he recovered, and in gratitude for the preservation of his life he asked Napoleon to accept a valuable Damascus sword. "Yes," said the latter, "I accept it in order to make a present of it to the Surgeon-in-Chief by whose exertions your life has been spared." Upon the sword was engraved the words Aboukir and Larrey, and the surgeon had it till the fatal day of Waterloo, when the Prussians robbed him of it. Some months after the occupation of Egypt a terrible revolt took place in Cairo by fanatical Turks. Utterly regardless of anything except how to get at Frenchmen to murder them, they attacked the hospital, which was crowded with sick and wounded soldiers, but the doctors valiantly defended their patients, and two staff-surgeons, Roussel and Monjin, were killed while Larrey nearly shared the same fate.

At one period there was a total dearth of meat, and Larrey had nothing wherewith to make even a drop of bouillon for his patients. He ordered camels' meat to be prepared for this purpose, and, when that fell short, he used up the horses. Years afterwards, in the second campaign against Austria, the Imperial Guard and several other corps were crowded together in the island of Lobau in the midst of the Danube, which Napoleon was endeavouring to cross. The days were roasting, and the nights icy cold, and provisions became so scarce that Larrey's patients were in danger of starvation. Without

more ado he impounded certain officer's horses and had them slaughtered and employed as food. As there was a lack of kettles, he employed the cuirasses of those who had been killed, and made his horse flesh soup and stews in them. Certain generals made bitter complaint to the Emperor of Larrey's proceedings, who summoned the Surgeon-in-Chief, and in the presence of his staff demanded an explanation with a severe expression of countenance. "What," he said, "have you on your own responsibility disposed of the horses of the officers in order to give soup to your wounded?" "Yes," answered Larrey. He added no more, but soon afterwards he heard of his promotion to the rank of Baron of the Empire.

One of the most appalling retreats, next to that from Moscow, was Napoleon's retreat from the invincible walls of St. Jean d'Arc through Jaffa. There is no doubt that at that place a considerable number of patients sick of the plague were quietly put out of their misery by opium. Alison says 60; Sir Robert Wilson says 580. The retreat had to go on, the Turks were only an hour's march behind, and nothing but a cruel death awaited these unfortunates, so that whether this were a justifiable deed or not may well give ground for argument. But, as Alison says: "History must record with admiration the answer of the French chief of the medical staff when the proposal was made by Napoleon to him: 'My vocation is to prolong life, and not to extinguish it.'"

In those days means of transport were so inferior, and the necessity for removing hopelessly damaged limbs as soon as possible after the injury so imperative, that amputations were performed on the field of battle, while it was still raging and amid showers of bullets. During the battle produced by the landing of the English in Aboukir Bay, General Silly had his knee crushed by a bullet. Larrey saw that unless the leg were promptly amputated the case would prove fatal, and, the General giving his consent, the operation was performed in the space of three minutes under the enemy's fire. Just then the English cavalry came upon them. "I had scarcely time," said Larrey, "to take the wounded officer on my shoulders and to carry him rapidly away towards our army, which was in full retreat. I spied a series of ditches, some of them hedged with caper bushes, across which I passed, while the enemy, owing to the ground being so cut up, had to go by a more circuitous route. Thus I had the happiness to reach the rearguard of our army before this corps of dragoons. At length I arrived at Alexandria with this honourably wounded officer, where I completed his cure." We must all agree that these were a pair of heroes.



As may be imagined, the awful retreat from Moscow called into play all Larrey's resources, and many an interesting story could be told of his efforts. Think of the awful battle of the Borodino, where under Larrey's own direction 200 amputations were performed, where there were neither couches nor blankets nor covering of any kind, and where the food consisted of horseflesh, cabbage stalks, and a few potatoes; think of cold, so intense that the instruments requisite for the operation too often tumbled from the powerless hands of the French surgeons. Think of the savage Cossacks, hovering about all the while, and waiting their chance to kill the surgeon and wounded man equally with the combatant. Then came the passage of the Beresina. Take an incident of it. Among the wounded was General Zayonchek, who was over 60 years of age. His knee was crushed, and without amputation the saving of his life was impossible. It was performed under the enemy's fire, and amid thick falling snow. There was no shelter except a cloak, which two officers held over him while the operation was being performed; but the surgeons did their work, with such coolness and dexterity that the old general survived, and died fourteen years afterwards Viceroy of Poland. Larrey succeeded in getting over the Beresina with the Imperial Guard, but discovered that the requisites for the sick and wounded had been left on the other side. At once he recrossed the river, only to find himself in the midst of a furious struggling crowd. He was on the point of being crushed to death when providentially the soldiers recognised him. No sooner did they do so than they carried him across the river in their arms, with the cry, "Let us save him who saved us!" and forgot their own safety in their desire to preserve the man whose tender kindness they had so often experienced.

Following his adored master through victory and defeat, Larrey at last stood at night on the field of Waterloo alone, except for some medical officers and the wounded who lay groaning around him. Down upon them came a squadron of Prussian lancers. Expecting no quarter he fired his pistols at them and galloped away. They shot his horse and sabred him as he lay on the ground. Leaving him apparently dead they went off. But he recovered his senses, and tried to crawl by cross roads into France. Again he was seized by another detachment of Prussian cavalry. They robbed him promptly of all he possessed, and took him before a superior officer, who ordered him to be shot. What a reward from a soldier to one whose life had been passed in succouring soldiers! About a quarter of an hour before the sentence was to be carried out, a surgeon-major recognized Larrey. He had attended with deep interest a course of lectures

which Larrey had delivered in Berlin six years previously. The prisoner was brought before Bulow, and finally presented to Blücher, whose son in the Austrian campaign had been badly wounded and captured by the French, and who owed his life to Larrey's exertions.

Larrey's honourable and glorious life terminated in 1842. Napoleon, when he made his will at St. Helena, wrote in it: "I bequeath to the Surgeon-in-Chief of the French Army, Larrey, 100,000 francs. He is the most virtuous man I have ever known." From Napoleon's lips the word's of free spontaneous, ungrudging praise such as this rarely fell.

#### PESTILENCE MORE DEADLY THAN THE SWORD.

In the middle of last century, while surgery had distinctly improved, the gross neglect of the Government, and the pigheaded obstinancy of the generals was such that our unfortunate soldiers and sailors were hardly any better off than they were in the days of Paré. It has been maintained that Smollett, in the appalling picture of naval life as witnessed in the miserable expedition to Carthage which he drew in *Roderick Random*, and which is known to have been the record of his own experience as a surgeon's mate, grossly exaggerated the evils thereof. I do not believe this. Look at the awful and unsuccessful expedition to Porto Bello in 1726, when nearly the whole of the crews of the ships were destroyed by fever three times over; where 2 admirals, 10 captains, 50 lieutenants, and about 3,000 to 4,000 inferior officers and men perished without striking a blow. Look at the taking of Havannah in 1762. The Earl of Albemarle took with him in the fleet 11,000 soldiers. Between June and the middle of October, when Cuba was ours, we had lost 560 by wounds, and 4,708 by sickness. At the end of the Seven Years' War, a statement was drawn up in the *Annual Register* for 1763, from which it appeared that in all the naval battles of that war there were but 1,512 sailors and marines killed, while 133,738 had died of disease or were "missing." Look even at the end of last century, and consider the wretched and disgraceful Walcheren campaign. Never did our poor soldiers fight with more gallantry than in that campaign, only to perish beside Dutch ditches and canals from fever and ague and dysentery.

#### MILITARY COURAGE.

As we have just seen, Baron Larrey's whole life shows that, while absolutely devoted to the work of his profession, he displayed a cool courage on the field of battle not less heroic than the dazzling deeds of his fellow combatant officers. Not less does it mark the military surgeon of the present day. Have you ever heard of Surgeon Thom-

son who, during the Crimean war, when the army marched off after the battle of the Alma, volunteered, with his servant, John McGrath, to remain behind on the open field with 500 terribly wounded Russians, and passed three awful days and nights—these two Englishmen alone—among foreign foes, some dead, some dying, and none able to raise a hand to help themselves? Have you ever heard of Assistant-Surgeon Wolseley, of the 20th Regiment, who, at the battle of Inkerman, had quietly established his field hospital in that awful place, the Sandbag Battery? When the 150 men, who were all that remained of its defenders, were forced to desert it, about 100 of them fell back in one direction, and in that they found, at 30 paces from them, a Russian battalion blocking their path. There was not a combatant officer left, so the assistant-surgeon took command. He had not even a sword with him, but, laying hold of a firelock with a fixed bayonet on it, he spoke a few words to the men within range of his voice, and told them that what they now had to fight for was not victory but life. Then he gave them the word of command: "Fix bayonets, charge, and keep up the hill." The soldiers answered him with a burst of hurrahs, sprang forward to the charge, and the next instant were tearing through the thickest of the Russians. One half of these reached the other side alive. Have you ever heard of Surgeon Landon, who was shot through the spine while attending to the wounded on Majuba Hill? His legs were paralysed, but he caused himself to be propped up, and continued his merciful work till his strength ebbed away. When unable to do more he quietly said: "I am dying; do what you can for the wounded." Have you ever heard of Surgeon-Captain Whitchurch, who gained the Victoria Cross at the beleaguering of Chitral for the most determined courage in endeavouring to save the life of Major Baird; Yes, you have, for last year at Carlisle, you gave him the gold medal of the Association, the highest honour which our Association can give to its members. There died the other day a certain Surgeon-General Reade, C.B., V.C. During the siege of Delhi, while attending to the wounded at the end of one of the streets of the city, a party of rebels advanced from the direction of the bank, and having established themselves in the houses in the street commenced firing from the roofs. The wounded were thus in very great danger, and would have fallen into the hands of the enemy had not Surgeon Reade drawn his sword and, calling upon a few soldiers who were near, to follow, succeeded under a very heavy fire in dislodging the rebels from their position. Surgeon Reade's party consisted of about ten in all, of whom two were killed and five or six wounded. Ladies and gentlemen, Surgeon Reade was a Cana-

dian, and the son of a colonel of the Canadian Militia. Of the 118 wearers of the Victoria Cross 14 are surgeons, nearly 12 per cent. of the whole number. They stand in the proportion of  $9\frac{1}{2}$  per cent. of all the officers of the army, so at all events they have contributed not less than their fair share of the deeds of valour which alone can win that glorious distinction.

#### THE ARMY MEDICAL SERVICE TO-DAY.

Ladies and Gentlemen,—I have diverged from the beaten track common to the givers of addresses such as this to tell you what splendid men have been the military and naval surgeons of old, who not merely did their duty nobly and courageously as such, but who have in their day enormously contributed to the advance of the art of surgery. I have done it with a purpose ; with the hope of attracting more strongly than ever the sympathy and help of this great Association to their military brethren in a critical juncture of their history. To-day Her Majesty's Government cannot induce candidates to come forward for the medical service of the Queen's army. And why ? Because it has persistently treated the Army Medical Department meanly and shabbily. To-day the Government of India can secure the services of the pick of our newly fledged doctors for its army. And why ? Because it has always treated the Indian Medical Service liberally and generously. I am not going to enter into the reasons for this ; I desire to emphasise one point, namely, that money is not at the bottom of this difficulty. The soldier-surgeons of to-day are the same men now that they were in the days of William Clowes, who winds up his book, as I shall my address, with these verses :

When valiant Mars, with brave and warlike band,  
In foughten field with sword and shield doth stand,  
May there be mist a surgeon that is good,  
To salve your wounds and eke to stay your bloud.

To cure you sure he will have watchful eie,  
And with such wights he means to live and die,  
So that againe you must augment his store,  
And having this he will request no more.

# PREVENTIVE MEDICINE IN THE CITY OF NEW YORK.<sup>1</sup>

BY

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I desire to express my high appreciation of the honour conferred upon me by the invitation of the Council of the British Medical Association to deliver the address on Public Medicine at its annual meeting, and for this I wish to render my grateful acknowledgment.

I interpret the invitation, however, as a tribute to the work of the Health Department of New York city, with which I have had the honour to be connected for many years, and as an expression of the desire of the Council to give recognition to the practical advances made in sanitary science in the greatest city of the new world. I have, therefore, regarded your invitation as a command to select for the subject of this address the consideration of some of the measures which have more particularly distinguished the work of the New York City Health Department, and to describe some of the procedures, followed in the sanitary surveillance of infectious diseases, which have been introduced by it.

I feel a great diffidence in presenting an address dealing with these subjects before the British Medical Association, representing, as it does, the medical profession, and, to a great extent, the health officers of a country which has been so long and justly regarded as the birth-place and home of sanitary science. It has been the custom of sanitarians of all nations to look to England for guidance and direction in matters connected with the public health, and the low mortality statistics, especially from zymotic diseases, in England testify in no uncertain language to the value of English sanitary methods and the efficiency of their execution. When we remember that never before in the world's history have there been 30,000,000 people living within 50,000 square miles, as is the case in England, and that more than 20,000,000 of this population reside in towns, often crowded, we appreciate more fully the remarkable healthfulness of the England of to-day and the extraordinary success of English sanitation, as of English methods in all the practical affairs of life.

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<sup>1</sup> Read before the British Medical Association, Montreal, September 3rd, 1897.

The fact should be strongly emphasized that the advances in preventive medicine in Great Britain, as shown by the mortality tables for nearly half a century, have preceded those in every other country, and I doubt not that the influence of the British Medical Association has been no small factor in contributing to the high standard of the public health. In view of these considerations, it is natural that a foreigner should hesitate to address this Association on questions connected with public medicine.

I must further ask your indulgence in having devoted the greater part of this address to the study and description of procedures and methods, rather than, as is generally the custom, to the consideration of some one of the broader questions in public medicine. This course has been adopted because, in my judgment, such a discussion will be of greater value and interest than the consideration of any general topic, which latter could furnish little specific information as to the conditions and methods of sanitary work in the United States.

It seems necessary, in order that you may have an intelligent conception of the conditions under which sanitary work in the United States is carried on, that I should first point out, in a general way, how they differ from those in Great Britain. It should be noted particularly that in the United States there is no national board of health, and there are no national regulations of general application. In each of the several states of the Union the sanitary administration is solely under the control of the State authorities. The State Boards of Health are energetic and progressive in many of the States, but in some there is no sanitary work of importance done.

It necessarily follows that throughout the United States there is a great lack of uniformity in regulations and methods and in the efficiency of their execution. It is hardly possible to make any definite statement as to the condition of preventive medicine generally, for what is true of one State is not true of another. Speaking broadly, in the rural districts and in the towns and smaller cities, especially in the south and west, the sanitary methods are of the crudest type. On the other hand, in many of the large cities, there is found a broad, enlightened and progressive policy and an efficient administration, equal to that presented in any of the great cities of the world.

Instead, therefore, of attempting the consideration of the broader subject of public medicine in the United States, I shall confine myself to a discussion of the conditions and methods of sanitary work in New York, as these serve as a type of the best of those found in the greater American cities.

The Health Department of New York City is organized under a special act of the Legislature of New York State, and is an entirely independent sanitary organization, not being subject even to the jurisdiction of the State Board of Health. The Board of Health of the Health Department is composed of four members, viz.: The President, who is the chief executive officer; the Commissioner of Health, who must be a physician, (these two being appointed by the Mayor of New York City), and two *ex officio* members—the Health officer of the Port of New York (who is a state officer nominated by the Governor), and the President of the Board of Police Commissioners of New York City (the latter being added to bring the Police Department and the Health Department in closer relations to one another). The Commissioner of Health of the Health Board of New York City is *ex officio*, a member of the State Board of Health, as is also the Health Officer of the Port of New York; so that two of the members of the Municipal Board are also members of the State Board of Health, but the State Board has no jurisdiction in New York City, and the action of the Municipal Board is absolutely independent.

The Board of Health of New York City has jurisdiction over the whole of New York City, as it now exists, with its about 2,000,000 of population, and with the beginning of 1898 a similar Board, increased to five members, will have complete jurisdiction over greater New York, with a population of about 3,250,000. All of the administrative and executive work of the Department is concentrated at the main offices, and is carried on under the immediate direction of the chiefs of the various divisions into which the Department is divided. The act of the Legislature of New York State creating the Department gives to the Board most ample powers, executive, judicial and legislative in character. The funds for the support of the Department are supplied from the general funds of New York City.

Before proceeding to a discussion of the management of infectious diseases in New York, I desire to call especial attention to the fact, that all matters connected with the scientific investigation, diagnosis, care or sanitary supervision, in every way, of the infectious diseases are regarded by the Board of Health as properly coming within its province. In the development of the methods, now in use, the proposition expressed has furnished the governing principle. I need hardly point out the great difference between this conception of the functions of a Sanitary Board and that usually held.

The duties of sanitary authorities relating to the infectious diseases are generally regarded as limited to the inspection of reported cases

of only a few of the infectious diseases, their removal to hospitals when required, and the subsequent proper disinfection of the premises.

In times of emergency, as in the presence of serious epidemics, more comprehensive and stringent measures are considered justifiable ; but it has not been generally regarded as necessary or desirable that municipal sanitary authorities should furnish opportunities for or assistance in the diagnosis of infectious diseases, should conduct experimental investigations into their causes, should assist in the treatment in any way of cases outside the hospitals, or otherwise concern themselves with these matters. It has seemed to us in New York City, however, that everything connected with the infectious diseases in every form came properly within the scope of the department's work.

The first important departure in New York City from the older methods, was made in 1892 by the establishment of a bacteriological laboratory. This was, I believe, the first bacteriological laboratory ever established under municipal control. It was designed originally to afford facilities for the bacteriological diagnosis of Asiatic Cholera, and for the investigation of questions relating to disinfection and disinfectants. A few months after the opening of the laboratory, the scope of its work was broadened and facilities for the bacteriological diagnosis of diphtheria were offered to the physicians of New York City free of charge. The necessity for making repeated examinations during the course of this disease soon became evident, and such changes were made by the Health authorities in the methods of dealing with diphtheria as were suggested by the earlier experimental observations.

The investigations of the New York City Health Department relating to diphtheria laid the foundation of municipal bacteriological laboratories and made them necessary to the proper conduct of sanitary work.

The work on diphtheria was soon followed by the perfecting of arrangements for the free bacteriological examination of sputum for the diagnosis of cases of suspected tuberculosis occurring among residents of New York city.

In October, 1894, investigations in connection with the production of diphtheria antitoxin were begun, and in December of that year the municipal authorities made a special annual appropriation (antitoxin fund) of \$30,500 for the prosecution of this work. The Health Department commenced the use of the antitoxin produced in its own laboratories on January 1st, 1895. The plan, as now developed, includes :



1st: The furnishing of free supplies of diphtheria antitoxin to all public institutions in New York city.

2nd. The furnishing of free supplies of diphtheria antitoxin to private physicians for use among persons too poor to pay for the remedy; the only condition being that reports of the cases treated be forwarded to the Health Department on their completion.

3rd. The free administration of diphtheria antitoxin on the request of the attending physician to any resident of New York city by a specially detailed staff of medical inspectors.

The sale of the surplus product of diphtheria antitoxin was authorized by a special act of the New York State Legislature in 1895, and the funds thus derived, according to the provisions of this act, are devoted solely to "the production and use of diphtheria antitoxin, or other antitoxins." The remedy is on sale in over 100 pharmacies in the city, to which it is consigned, the price being fixed by the Health Department in all cases, and ten per cent. on the sales is allowed to the pharmacies as commission.

The special antitoxin fund made possible the establishment of a hospital and research bacteriological laboratory devoted to the production of diphtheria antitoxin and other bacteriological products and to general experimental investigations in relation to the infectious diseases. The work of this laboratory now includes the production of tetanus and streptococcus serums, mallein and tuberculin (used by the Department in the diagnosis respectively of glanders and tuberculosis in animals) and numerous experimental investigations regarding the infectious diseases, especially diphtheria, typhoid fever, tuberculosis and small pox.

In October, 1896, arrangements were completed for placing at the command of the physicians of New York city Widal's test for the diagnosis of typhoid fever, largely after the method of Wyatt Johnston, of Montreal, and recently arrangements have also been made for the administration of Pasteur's treatment for the prevention of rabies.

A better idea, perhaps, of the extent of the work performed in the laboratories of the Health Department of New York city may be obtained from the following statistical statement of some of the routine work:

During the year 1896, 25,049 cultures were examined for diphtheria bacilli; 1,856 specimens of sputum from cases of suspected tuberculosis were examined for tubercle bacilli; 16,796 vials of diphtheria antitoxin were issued, 918 cases of diphtheria were treated in their homes by the medical *attachés* of the laboratory, and 1,214 persons were immunized.

The scientific staff of the bacteriological and vaccine laboratories now includes twenty-five physicians, one chemist and two veterinarians, in addition to clerical and laboratory assistants and attendants.

A special laboratory and stable are devoted to the production of bovine vaccine virus, and this is freely distributed and vaccination is performed free of charge by the medical officers of the Department. Special investigations undertaken in this laboratory have resulted in the production of a glycerinated vaccine pulp of great activity and durability. This has entirely displaced the virus prepared by drying on quills or ivory points generally employed.

The work connected with disinfection was formally in charge of the Director of the Bacteriological Laboratories, and the methods employed are still determined in the laboratories, but the details of execution, however, are now entrusted to the Chief Inspector of Contagious Diseases.

Every case of contagious disease reported to the department is regularly inspected by the Medical Inspector assigned to the district in which it occurs. When consent can be obtained, such cases are removed to the department hospitals. In tenement house districts an effort is made to induce a patient suffering with a contagious disease to go to the hospital, and where the conditions are such as to require it, and when necessary, the removal to the hospital, is enforced. A comparatively small proportion of the total cases, however, are actually treated in the hospitals for contagious diseases. After completion of the illness, or transfer of the patient, thorough disinfection is performed in the apartment, and all infected materials are removed to the disinfection station for destruction, or for disinfection by steam. After treatment they are returned to the owner, no charge being made for the services. Disinfection is compulsory in every case.

The inspection work of the Health Department is carried on by a number of different corps of inspectors attached to the various divisions of the department. These inspectors are in part medical men, and in part they are non-medical men, who have had special training in the work to which they are detailed. The medical corps include the district medical inspectors; the district and special vaccinators; the inspectors for the administration of diphtheria antitoxin; the diagnosticans; the summer corps of inspectors; the medical inspectors of schools; the veterinary inspectors, and several special inspectors of disinfection of lodging houses, and public institutions. These various corps, with the exception of the summer corps and the school inspectors, are permanent and are on duty throughout the year. The school inspectors are on duty only through the school year, and the

work of the summer corps is limited to July and August. There are also a number of corps of sanitary and food inspectors, (not necessarily medical men) and the disinfection corps. These include the inspectors of plumbing and ventilation; the sanitary police; the inspectors of offensive trades; the inspectors of meat, fish, milk and food; and the inspectors of mercantile establishments.

The functions of most of these different corps are, for our purpose, sufficiently indicated by the name. It may be here added, however, that, under the law creating the corps of inspectors of mercantile establishments, definite provisions are made as to employment of women and children in such establishments, and as to the time, nature, and condition of such employment.

It should, perhaps, also be stated that the function of the diagnosticians, two of whom are always on duty day and night, is to give expert assistance in the *clinical* diagnosis of contagious diseases. It is a part of their duty to see every case of contagious disease before its admission to the department hospitals.

The veterinary inspectors have supervision of the application of the tuberculin test for the diagnosis of tuberculosis in cattle, and the diagnosis of other infectious diseases of cattle and horses.

I desire now to present somewhat in detail the methods of procedure in relation to two diseases, viz., diphtheria and tuberculosis, as in these diseases the methods have been developed to an unusual extent in New York.

Knowledge of the existence of cases of diphtheria reaches the department, either by a direct report of the case by the attending physician, or through the forwarding of a culture to the laboratory for bacteriological examination, when the case is of doubtful character. If on examination of the culture the Loeffler bacilli are found, the case is reported to the Division of Contagious Diseases from the laboratories, at the same time that a report is forwarded to the attending physician. In both instances the cases are immediately referred to the Medical Inspector connected with the Division of Contagious Diseases assigned to the district in which the case occurred. If the person lives in a tenement house, lodging house, boarding house, or hotel, and a culture has not been previously made by the attending physician, the Inspector makes, in each instance, a culture to confirm the diagnosis. The subsequent action of the department depends upon the result of this culture. If diphtheria bacilli are found, the case is treated as one of diphtheria; if they are absent, the subsequent treatment depends on the special conditions existing. In every instance in which the case is proven to be diphtheria, at the

end of ten days a secondary culture is made by the attending physician or the District Medical Inspector, to determine whether the diphtheria bacilli are still present in the throat, and subsequent cultures are made at short intervals until the examinations show that the organisms are no longer present. The case is then referred for disinfection, a detailed statement being left at the house by the Medical Inspector in charge, to guide the disinfectors as to the course which shall be followed.

Every case of diphtheria which comes to the knowledge of the Department is recorded in a card index, according to the number of the house and the street on which it occurs. In this index envelopes are used in place of cards, and in each envelope, representing always one case, are placed all of the data relating to the first and subsequent cultures, and results, and as each case is recorded it is at the same time plotted on a sectional map of New York City drawn to scale, showing every house lot in the city. This platting is done by conventional signs, so that it is possible at a glance to determine the grouping and distribution of cases in different parts of the city; the number of cases occurring in any given house in the city, during the last four years since this method has been in use, and the date when reported. It is also possible in a moment, by reference to the yearly card index, to find all the information in relation to each case which the Department possesses.

A special corps of inspectors is assigned to the administration of diphtheria antitoxin, and on request, one of these inspectors will visit a person suffering from diphtheria in any part of the city, day or night, and administer diphtheria antitoxin, under the supervision of the attending physician. When the patients are too poor to have an attending physician, the inspectors will supervise their removal to the hospitals. These inspectors are also prepared, at the request of the attending physician, to perform intubation in laryngeal diphtheria. It is the usual course, where antitoxin is administered by an inspector, to immunize all members of the family who have been exposed to the disease. Diphtheria antitoxin has also been largely employed for the immunization of the inmates of public institutions, especially children, when diphtheria has appeared. This is the ordinary routine, and in every instance during the last two-and-a-half years it has been possible to quickly stamp out diphtheria in institutions by this process of immunization.

As already stated, diphtheria antitoxin is furnished on request free of charge to all public institutions, and may be obtained by physicians at any of the one hundred depots where it is on sale, free of

charge, for administration to persons who are too poor to pay for the remedy.

In connection with the study of diphtheria, experimental investigations are constantly being carried on to determine the virulence of the diphtheria bacilli found in healthy throats, in simple catarrhal angina and follicular tonsilitis, and regarding the various matters which relate to the bacteriological study of this disease.

The attitude assumed by the Health Department of New York city towards pulmonary tuberculosis, and the measures adopted for its prevention, constitute, in my opinion, a most important feature of its work. No more striking example of the influence of inherited and transmitted beliefs and prejudices can be found than is afforded by the exhibition of hesitation and reluctance on the part of the proper authorities to assume the sanitary supervision of the tubercular diseases. It is now universally admitted that tuberculosis is infectious and communicable, and the most fatal disease to which the human race is subject; yet as a rule no effective measures, or no measures at all, have been adopted by sanitary authorities with relation to it. Nevertheless, we believe it may be more easily controlled than any other of the principal infectious diseases with which we have to deal, and that it is of as great importance—judged by the deaths it causes—as all the others together. The full courage of scientific conviction seems to have been generally lacking among public officers in dealing with this disease.

The Health Board of New York city first began an educational campaign in relation to the causation and prevention of pulmonary tuberculosis in 1889. In that year a communication on this subject, presented by the writer and the associated Consulting Pathologists of the Department, was widely published, and leaflets, based on it, giving the essential facts as to the nature of this disease, were freely distributed. No further action was taken at that time, as investigation showed that the medical profession and the public were not then prepared for more extended measures.

In December, 1893, the attention of the Department was again called to the subject by the writer, and it was determined to at once institute more comprehensive measures for the prevention of this disease. The measures then adopted required the notification of all cases of pulmonary tuberculosis occurring in public institutions; and requested reports of cases occurring in the practice of private physicians. They also included arrangements for the bacteriological examination of sputum, to assist in the early diagnosis of this disease; the inspection of all reported cases in tenement houses, lodging houses,

hotels and boarding houses, and the instruction of the patients and their families as to the nature of the disease and the means to be taken for its prevention; the inspection of the premises in all instances where deaths were reported as due to tuberculosis, and the issuing of orders, when it was deemed necessary, upon the owners of apartments which had been occupied by consumptives and vacated by death or removal, requiring that such apartments be thoroughly renovated, by cleaning and by painting, papering or kalsomining, before they were again occupied by other persons; and finally the education of the public, by wider and more comprehensive methods, as to the nature of this disease.

Placards were attached to the doors to prevent the re-occupation of apartments, which had been vacated by death or removal before the orders requiring renovation had been complied with.

Under the resolutions by virtue of which these measures were enforced, 4,166 cases of tuberculosis were reported in 1894; 5,818 in 1895, and 8,334 in 1896. So far as was possible all of these cases, except those in private houses, were visited or the premises where they had lived were inspected, and, in addition, the premises occupied by persons dying from tuberculosis (numbering each year nearly 6,000) were inspected and such action taken as was considered possible and desirable. Altogether the premises and cases thus coming under observation during these three years numbered more than 35,000.

These facts convey some idea of the enormous sanitary importance of the subject. It is conservatively estimated that there are at least 20,000 cases of well developed and recognized pulmonary tuberculosis now in New York City, and an additional large number of obscure and incipient forms of the disease. A very large proportion of the former cases constitute more or less dangerous centres of infection, the degree of danger depending in each instance upon the intelligence and care which is exercised in the destruction of the expectoration. All the suffering and death consequent upon the prevalence of this disease, in view of modern scientific knowledge, is largely preventable by the careful observation of simple, well understood and easily applied measures of cleanliness, disinfection and isolation.

In the beginning of 1897, the Health Board further adopted some recommendations made jointly by Dr. T. Mitchell Prudden, Consulting Bacteriologist to the Health Department, and the writer, which advised that pulmonary tuberculosis be declared to be an "infectious and communicable disease, dangerous to the public health," and which required "the notification of all cases occurring in the city," in the same way as is required in regard to typhoid fever, diphtheria and

other similar diseases. Tuberculosis, however, in accordance with the special section of the Sanitary Code, enacted to provide for these measures, is distinctly separated from the eruptive diseases—is not classed with them as a contagious disease, but is referred to as “an infectious and communicable disease.” It has always appeared to the Health Board exceedingly desirable that a broad distinction should exist in the public mind between this disease and those diseases which are more properly classed as contagious.

In the treatment of apartments, which have been occupied by tubercular patients and vacated by death or removal, renovation has been and is ordered, rather than disinfection attempted, because the Health Board has always felt that disinfection for tuberculosis in the poorest tenement houses was too difficult to be satisfactorily performed, and has considered renovation as certainly efficient. In the thousands of orders requiring the renovation of premises, which have been issued under the resolution referred to upon the owners of real property during the last four years, little or no difficulty has been experienced in enforcing compliance, and rarely has there been serious objection.

Public institutions, hospitals, asylums, homes, &c., are now not only required to report the name, last address, sex, age and occupation of every case of tuberculosis coming under observation within one week of such time, but they are further required to notify the Department of the discharge or transfer of such patients. The purpose of this procedure is to keep under more or less constant supervision those cases of pulmonary tuberculosis which occur among the poorest classes of the population ; in other words, those which are most likely to be dangerous sources of infection to others. Unfortunately, at the present time there are no hospitals, directly under the control of the Health Department, for the care or isolation of cases of pulmonary tuberculosis ; but it is hoped that such hospitals may be soon provided.

The best medical opinion forbids that persons suffering from pulmonary tuberculosis be treated in association with other classes of cases in the general medical wards of general hospitals. This opinion is based on the daily observations of dangers incident thereto, and it has very properly resulted in the exclusion, to a large extent, of persons suffering from this disease from many of the general hospitals to which they were formerly admitted.

A large experience has also shown that in institutions devoted solely to the care of consumptives the general welfare of the patients is more easily fostered, the risks of fresh infection more certainly diminished and the chances for recovery more surely enhanced than in general hospitals in which all classes of cases are received.

From the beginning of this work, the officials of the Health Department of New York City have encountered, in the lack of proper facilities for the care of consumptives, a great obstacle to practical success, and I am convinced that the grave responsibilities which rest upon sanitary authorities generally in this matter cannot be properly discharged without the establishment, under their direct control, of additional special hospitals for the care and treatment of this disease. No week passes in which the officers detailed to this work in New York do not encounter many instances in which the members of many households, numerous inmates of crowded tenement houses, employees in dusty and unventilated workshops, and many others, are dangerously exposed to infection from victims of this disease, who cannot gain admittance to the over-crowded public institutions, or who reject all proffered assistance and instruction, and, from ignorance, indifference, or inability through weakness due to the disease, scatter infectious material broadcast, thus diminishing their own chances for recovery and imperilling the health and safety of others. In such cases sanitary suggestions are futile, and removal to a hospital constitutes the only effective action. I am convinced that no factor is so potent to-day in perpetuating the ominous death list from pulmonary tuberculosis as the lack of proper facilities for the adequate care of the poor stricken with this malady.

The measures designed for the prevention of tuberculosis, properly include not only those which relate to the transmission of the disease from human beings to each other, but also those which relate to the transmission of the disease from affected animals, especially the bovine species, to human beings, through the meat and milk used as food. The Health Department of New York City, while feeling strongly that the most important source of infection is through the sputum of consumptives, has yet elaborated with great care methods for protecting the public, so far as lies within its power, from infection by the meat and milk of tubercular animals. In order that a more effective control of the milk supply should be possible, an ordinance was passed in 1895 forbidding the sale of milk within the city without a permit from the Health Department, and requiring that all wagons used for transportation or delivery of milk should likewise have wagon permits. Before these permits are issued, the holder of the permit must furnish information as to the source from which the milk is obtained, the number of animals, the character of the food supply, and the sanitary conditions surrounding the dairy. Special regulations have been established with regard to the sale of milk, and permits may be revoked at any time by the Health Board, where



evidence exists that the regulations have not been strictly complied with. All milch cows in New York City (about 3,000 in number), are now being subjected to the tuberculin test, under the supervision of the Health Department, and animals found to be diseased are killed. It is proposed, as soon as this work is completed in New York City, to require similar tests to be applied to all cows whose milk is sent to New York City. There also exists a careful inspection of animals slaughtered for food, and of all meat sent into the city, and the carcasses of those found to be tubercular are destroyed.

Most beneficial effects have already resulted from the various measures instituted for the prevention of this terrible disease. Not only has there been a very material decline in the number of deaths occurring from it, but there has been a most gratifying increase of knowledge and intelligence as to its nature among the poorest class of the population. The inspectors detailed for this work report, that on their first inspection, in nearly one-half of the cases occurring in many parts of the tenement house districts of the city, it is found that more or less efficient precautions are being taken for its prevention. Such precautions are the use of rags to receive the sputum, which are later burned, instead of handkerchiefs; the use of cups containing water or a disinfecting solution; the separation of the clothing of the patient from that belonging to others, and similar measures.

This increase of intelligence, and the precautions resulting from it, afford the greatest promise for the future, of a persistent and still more rapid decline in the frightful morbidity and mortality caused by the tubercular diseases.

Investigations made by the Department, showing that the dust in the street cars and various public places is often infectious, led to the enactment of an amendment to the Sanitary Code prohibiting spitting on the floors of street cars, ferry boats and other public conveyances, and requiring that all companies should post in their cars, boats, &c., printed notices forbidding this. This regulation is very difficult of enforcement; but, while the results have been by no means entirely satisfactory, there has yet been a definite improvement in the existing conditions.

The method employed for recording and plotting cases of diphtheria is also used for cases of tuberculosis. I have had prepared transcripts from the maps on which are platted the cases of diphtheria and tuberculosis, to show the distribution of these cases in certain wards of the city. These wards have been selected in each instance because of the large number of cases of the respective diseases occurring in them.

Maps 1 and 2 show respectively the 4th and 6th wards, with the distribution of reported cases and deaths from tuberculosis in these wards during three years. The cases and deaths in 1894 are platted with a circle; cases and deaths in 1895 with a triangle, and the cases and deaths in 1896 with a dagger. The dwelling houses in the maps have been coloured so as to put them in contrast with buildings not occupied as dwelling houses. Thus the dwellings which had one or more cases of tuberculosis during this period are coloured pink, and those free from tuberculosis during these years are coloured blue. The plots which are uncoloured are not dwelling houses, but occupied as business buildings, warehouses, etc.

These maps argue more forcibly for the infectious and communicable character of this disease than could any words. It should be said, however, that in some instances, where a large number of cases have occurred in one house during these years, the house had been occupied as a Chinese lodging house. This is especially true of several of the houses on Pell and Mott streets.

Maps 3 and 4 show the distribution of cases of diphtheria for the same period in the 10th and 13th wards. These maps, as has been said, are simply transcripts, reduced in size, from the maps on which are plotted, day by day, the reported cases and deaths from these diseases throughout the city.

## TABLE I.

ANALYSIS OF DISTRIBUTION OF REPORTED CASES AND DEATHS  
FROM TUBERCULOSIS IN WARDS IV. AND VI.*Years 1894, 1895, 1896, to March, 1897.*

## WARD IV.

According to the census of 1896, there were 663 inhabited houses in Ward IV., with a population of 18,323, or an average number of 27.6 persons per house.

No. of houses in which cases occurred.....	248
“ cases in 1894.....	173
“ “ 1895.....	161
“ “ 1896-97.....	207
Total number of cases in 3 years.....	541
Average number of cases per infected house.....	2.81
Percentage of houses infected.....	37.3
Average number of cases per house in ward.....	0.81
Cases per 1000 population in 1894.....	9.4
“ “ “ 1895.....	8.7
“ “ “ 1896-97.....	11.2
Total cases per 1000 population in 3 years....	29.3

## TABLE II.

## WARD IV.

Houses showing 3 or more cases each of tuberculosis.

No. of houses in which 3 or more cases occurred .....	70
“ cases in 1894 .....	88
“ “ 1895 .....	95
“ “ 1896-97 .....	119
Total cases in these houses in 3 years .....	302
Average number of cases per house .....	4.3

Comparing these figures with those obtained for the whole ward :

Total number of infected houses in Ward IV .....	248
Number of houses in which 3 or more cases occurred ...	70
Percentage on total infected houses .....	28.2

Total number of cases in ward .....	541
Cases occurring in 28.2% of the houses infected .....	302
Percentage of total cases .....	55.8

Total number of inhabited houses .....	663
Number of houses in which 55.8% of cases occurred ...	70
Percentage in total houses .....	10.5

It is thus seen that of the infected houses 28.2 per cent. contained 55.8 per cent. of the cases, and these occurred in only 10½ per cent. of all the houses in Ward IV.

## TABLE III.

## WARD VI.

According to census of 1896, there were 630 inhabited houses in Ward VI., with a population of 22,897.

No. of houses in which cases occurred .....	239
“ cases in 1894 .....	157
“ “ 1895 .....	127
“ “ 1896-97 .....	191

Total number of cases in 3 years .....	465
Average number of cases per house .....	1.94
Total number of dwellings in ward .....	630
Number of houses infected with tuberculosis .....	239
Percentage of infected houses .....	37.9

Average number of cases per house in ward .....	0.72
Cases per 1000 population in 1894 .....	6.8
“ “ “ 1895 .....	5.5
“ “ “ 1896-97 .....	8.2
Total cases per 1000 population in 3 years .....	20.5

## TABLE IV.

## WARD VI.

Houses showing 3 or more cases each of tuberculosis.

No. of houses in which 3 or more cases occurred.....	45
“ cases in 1894.....	72
“ “ 1895.....	56
“ “ 1896-97.....	78
Total cases in these houses in 3 years.....	206
Average number of cases per house.....	4.5
Comparing these with the figures obtained for the whole ward :	
Total number of infected houses.....	239
Number of houses in which 3 or more cases occurred..	45
Percentage of total infected houses.....	18.9
<hr/>	
Total number of cases in ward.....	465
Cases occurring in 18.9 p.c. of the houses infected....	206
Percentage of cases in same.....	44.3
<hr/>	
Total number of inhabited houses.....	630
Number of houses in which 44.3 p.c. of cases occurred.	45
Percentage in total houses.....	7.1

Thus, 44.3 p.c. of the cases occurred in 18.9 p.c. of the infected houses, and these constituted only 7.1 p.c. of all the houses in Ward VI.

I desire to now refer briefly, to the system of medical school inspection, instituted by the Health Department during the last year, which has given thus far most satisfactory results, and which promises greater good in the future.

Early in 1897, under the authority of a special resolution of the Board of Estimate, 150 Medical School Inspectors were appointed by the Health Board, after Civil Service examination. The duties of these inspectors consist in the examination daily, at the opening of the primary and grammar departments of each of the public schools and of the parochial and industrial schools, of all the children who are set apart by the respective class room teachers as not appearing to be entirely well. These children are examined in each school by the Inspector detailed to the school, and are either excluded from the school room, or returned to the class depending on the result of the examination. Every pupil found to be suffering from any form of general contagious disease, or any contagious disease of the eye or parasitic disease of the skin, is sent home, with a written statement to the parents of the cause for the action, and in case of the eruptive diseases and diphtheria, reports are immediately forwarded to the Chief

Inspector of Contagious Diseases, and by him referred to the various District Medical Inspectors for inspection and supervision.

During three months, (65 school days) in which this system has been in operation, there have been examined 63,812 children, who had been set aside by the teachers as not appearing entirely well, of which number 4,183 were excluded for the following reasons:

Measles.....	88
Diphtheria.....	167
Scarlet fever.....	32
Croup.....	11
Whooping cough.....	26
Mumps.....	117
Contagious eye diseases.....	702
Parasitic diseases of head.....	2,627
Parasitic diseases of body.....	108
Chickenpox.....	130
Skin diseases.....	175
	<hr/>
	4,183

The children excluded because they were thought to be suffering from Measles, Scarlet fever, Diphtheria and Chickenpox, were afterwards seen by the Medical Inspectors and in the majority of cases the original diagnosis was confirmed.

The educational work of the Health Department is, I believe, of great importance. It has been the custom of the Department for some years past to issue from time to time circulars of information on various topics, and especially with relation to the infectious diseases, their diagnosis, treatment or management. Some of these circulars are popular in character, very large editions being published, 50,000 or more at a time, and are designed for general distribution, particularly among the tenement house population.

Examples of this class are the following: "Information for Consumptives and their Families," "Infant Feeding," "Methods of Transmission of Contagious Diseases," and numerous others on similar topics. Circulars of information are also issued which are designed for distribution among the medical profession. These relate to the work of the Health Department in connection with infectious diseases, or to the bacteriological products of the laboratories. Many such circulars have been issued on various topics connected with diphtheria, such as "Bacteriological Examinations for the Diagnosis of Diphtheria," "Relation of Membraneous Croup to Diphtheria," "Diphtheria Antitoxin," "Persistence of Diphtheria Bacilli in the Throat during Convalescence from Diphtheria," "Occurrence of Diphtheria

Bacilli in Healthy Throats and in Catarrhal Angina," etc. Other circulars of information have been issued on "The Importance of Bacteriological Examinations in the Early Diagnosis of Pulmonary Tuberculosis," "The Nature and Causation of Pulmonary Tuberculosis," "The Measures adopted by the Board of Health for the Prevention and Restriction of Pulmonary Tuberculosis;" and on the use of "Mallein," "Tuberculin," "Tetanus Antitoxin," "Glycerinated Bovine Vaccine Virus," etc.

As these various circulars are published by the Health Department, copies of them are sent to the medical journals published in New York city and to the daily press. Thus they gain at once a wide circulation. In addition, some one or more of these circulars is included in each report of the results of the bacteriological examinations in diphtheria and tuberculosis, as they are sent from the laboratories. As more than one hundred reports daily are sent out, a large circulation is again attained among physicians in this manner. In some instances, circulars considered to be of unusual importance have been delivered by messenger to the house of every physician in New York city.

Aside from the circulars described, numerous scientific bulletins have been issued from time to time from the bacteriological laboratories, detailing the results of original investigations in connection with infectious diseases, and these bulletins are widely distributed among the profession of New York city.

I do not believe that the importance of this educational work can be over-estimated. Its value is incalculable in widely disseminating popular and scientific information with regard to the results of the latest studies in infectious diseases, and there have been constantly exhibited in New York the most gratifying indications of the influence of the information thus distributed, on both the general public and the medical profession.

More than this, the circulars keep constantly before the medical profession and the laity the work, the duties and the functions of the Health Department, as related to the people and the profession.

It has been frequently urged, especially in the earlier work of the New York City Health Department, that the methods proposed were theoretically commendable enough, but that they were impracticable. This criticism has been often made, particularly in Europe. The best reply to it is, that the results have shown that they are not impracticable. What has been described is not something that it is proposed to do, but it is a statement of what has been and is being

done, and this work, as briefly outlined in some of its phases, is to be considered as only introductory.

It is the purpose of the Health Board to establish a supervision of all infectious diseases along the lines which have been thus far developed in relation to tuberculosis and diphtheria, as rapidly as the scientific knowledge at command will make such a course possible.

The final test of the efficiency of any scheme of sanitary control and of the healthfulness of any community or locality is found in the morbidity and mortality statistics, considered in relation to the causes of sickness and death. It is not simply the number of deaths or cases of sickness in proportion to the population, but also the nature of the diseases which cause morbidity and mortality.

In comparing the statistics for different localities, however, the special factors relating to each locality must be taken into consideration; for a death rate which would indicate unusually favourable conditions in a large city, might show far from favourable conditions in a rural population. The density of population has generally a very definite relation to the mortality.

Dr. Farr attempted to deduce a formula by which the mortality of any locality could be translated into that of another having a different degree of aggregation of the population. He showed that when the population has reached a certain density, there is a constant and uniform increase in the death rate with any further increase in its density. For example, in 50 districts in Great Britain, with a population of 2,500,000 and with 650 persons to a square mile, the death rate was 20.5 per thousand. In those districts which contained 2,100 persons to a square mile, and a population of 2,000,000, the death rate had increased to 24.4; with a population of 2,800 to a square mile the death rate had further increased to 25.5, and with a population of 6,144 persons to a square mile, the death rate was 30.2.

The local variation in mortality with the density of population has not been constant in New York City, for in some of the wards, where the density of the population is greatest, the mortality has been below the average, and in other wards, with a relatively scarce population, the mortality has been extremely high. Other factors have exerted an even greater influence on local variations of mortality than density. The highest death rates have been found in the lower and oldest parts of the city, where the buildings are old and the sanitary conditions in many respects unfavourable.

The nationality of the population has a definite influence, as has been shown in an analysis of the death rates in different parts of New York City made by Dr. Roger S. Tracy, Registrar of Vital Statistics. Those districts with the densest population, where the rates are comparative-

ly low, are largely inhabited by Russian and Polish Jews, who are a hardy race and proverbially long lived. On the other hand, the wards having the highest death rates, or nearly the highest, are occupied largely by Italians, among whom, in the United States at least, the death rate is exceedingly high.

The sanitary problems presented in a city like New York are unusually difficult, on account of the diversity and cosmopolitan character of the population. The presence of large numbers of foreign born inhabitants of many different nationalities, grouped often in restricted localities and retaining their native customs and modes of life, and the great density of the population, constitute factors which largely complicate the situation.

The physical conformation of Manhattan Island is, in some respects, exceedingly unfavourable. The island is long and very narrow, and as a result certain parts of the city, and in fact the island as a whole, is over-crowded. Fully three-fourths of the population live in tenement houses, which are five, six or more stories in height, and contain from two to four or more families on each floor. Each house is placed on a lot not more than 25 x 100 feet, and frequently 20 families, numbering more than 100 persons, live on an area of this size.

The average density of population in New York city below the Harlem River, *i.e.*, on Manhattan Island, is greater than that of any of the other great cities of the world. The only localities approaching in density of population certain wards in New York are a small area in Paris, where the population is 430 to the acre; one district in Prague, where the population is 485 to the acre; the White-chapel district in London, which has a population of about 300 to the acre in Spitalfields, Mile End and Newtown, and 365 in Bethnel Green. In New York city, Sanitary District A. of Ward XI. has a population of more than 800 to the acre; Ward X., over 640 to the acre; Ward XIII., 540; Ward XVII., 430; Ward VII., 360; and Ward XIV., 295.

These facts must be kept in mind in considering the mortality statistics of New York, as compared with those of the large cities of Great Britain and the Continent. With these before us, the diminution in the death rates, and the present death rate, are most significant.

A comparison of the mean total death rate for decennial periods in New York City since 1834 shows that there was an increase during the first three periods ending in 1863, and that since that date there has been a continuous and very heavy decline in the rate, especially marked in the most recent years. The mortality in New York arose to such a high point that the inhabitants became alarmed, and in 1866 the Health Department as now constituted was organized. In



the decennial period ending in 1843 the mean death rate was 28.03; for the period ending 1853 it had risen to 33.81; during the next period ending in 1863 it was 33.94. Since that time it has declined to 31.11 for the decennial period ending in 1873; to 26.87 for the period ending in 1883; to 25.78 for the period ending in 1893, while in the year 1894 it was 22.76; in 1895, 23.10; in 1896, 21.54, and for the first half of 1897, 19.60. The population meanwhile has increased from 312,090 in 1840 to an estimated population of 1,990,000 on July 1st, 1897.

The mortality rate is normally higher for the first half of the year than the second half, and it is therefore probable that the rate for 1897 will be a fraction over 19, or a diminution of 25 per cent. on the death rate for the decennial period ending in 1893.

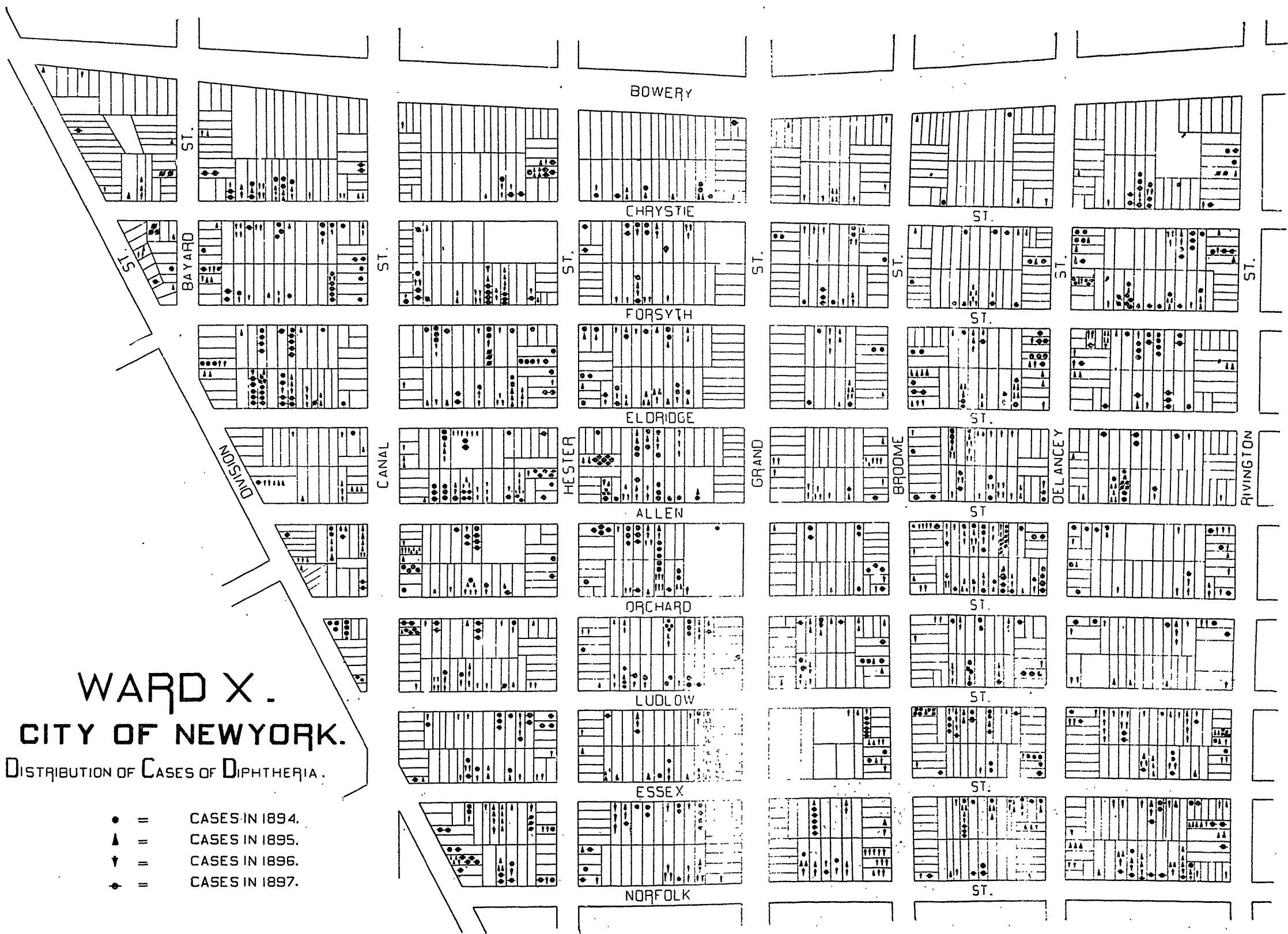
The percentage of mortality occurring in children under five is always high, and has been long regarded as an excellent index of existing sanitary conditions. The injurious effects of unsanitary conditions and surroundings always fall heaviest upon the youngest element of the population.

TABLE V.

## NEW YORK CITY.

Annual death rate for all causes, and for certain diseases, 1886—1896, inclusive, and January—July, 1897:

YEAR.	All causes.	Diphtheria and Croup.	Phthisis.	All Tubercular diseases.	Measles.	Smallpox.	Scarlet Fever.	Typhoid Fever.	Diarrheal diseases of children under five years.	Diphtheria and Croup, all Tubercular diseases, Measles, Smallpox, Scarlet Fever, Typhoid Fever, and Diarrheal diseases of children under five years.
1886 .....	25.99	1.87	3.79	4.42	0.46	0.022	0.26	0.23	2.08	9.34
1887 .....	26.32	2.06	3.56	4.06	0.52	0.067	0.40	0.22	2.20	9.53
1888 .....	26.39	1.68	3.46	3.99	0.39	0.050	0.89	0.24	2.00	9.24
1889 .....	25.32	1.46	3.31	3.86	0.30	0.0006	0.79	0.25	2.00	8.66
1890 .....	24.87	1.11	3.41	3.97	0.45	0.001	0.25	0.22	1.86	7.86
1891 .....	26.31	1.19	3.11	3.56	0.40	0.001	0.74	0.23	1.92	8.04
1892 .....	25.95	1.23	2.95	3.55	0.51	0.050	0.57	0.23	1.85	7.99
1893 .....	25.30	1.45	2.91	3.51	0.22	0.060	0.31	0.22	1.65	7.42
1894 .....	22.76	1.59	2.57	3.16	0.32	0.085	0.30	0.18	1.50	7.14
1895 .....	23.11	1.05	2.77	3.34	0.42	0.005	0.25	0.17	1.51	6.75
1896 .....	21.52	0.91	2.58	3.06	0.37	0.0005	0.21	0.15	1.32	6.02
Jan.-July, 1897	19.60	....	2.44	2.97	0.20	0.021	0.30	....	....	....



**WARD X.**  
**CITY OF NEWYORK.**  
 DISTRIBUTION OF CASES OF DIPHTHERIA.

- = CASES IN 1894.
- ▲ = CASES IN 1895.
- ▼ = CASES IN 1896.
- = CASES IN 1897.

TABLE VI.

NEW YORK CITY.

Death rates for all causes and for certain diseases, by decennial periods, 1844 to 1893; by years, 1894, 1895 and 1896, and January—July, 1897.

	ALL CAUSES.	Over 5 years of age.	* Under 5 years of age.	† Miasmatic, Diarrhoeal and Tubercular Diseases.
1844 to 1853.....	33.81	....	....	....
1854 to 1863.....	33.94	....	....	....
†1866 to 1873.....	31.11	17.2	123.3	13.2
1874 to 1883.....	26.87	16.4	104.7	11.8
1884 to 1893.....	25.78	16.8	95.1	9.3
1894.....	22.76	14.7	85.3	7.5
1895.....	23.11	15.1	85.3	7.2
1896.....	21.52	14.5	76.4	6.4
Jan. to July, 1897.....	19.60	13.9	64.8	‡5.4

Table VI. shows the death rate from all causes and the rate over and under five years of age for the decennial periods since 1866, and for 1894-95-96, and the first half of 1897.

As will be seen, the average death rate in children under five for 1894, '95 and '96, was 40 or more per 1,000 less than the average rate during the eight year period ending in 1873, and in 1896 was 47, or 38 per cent. less than for this period. In 1897, there will undoubtedly be a still greater diminution, although the death rate for children under five for the first six months of the year cannot be taken as the

\* The population under five years of age is computed for each decennial period or year as 11.37 per cent. of the total population, based on the census of April, 1895. In 1880, the per centage of population under five years to total population was 11.63 based on the United States census of that year.

† 8 years only; 1866-1873. Health Department organised in 1866.

‡ This rate is comparatively too low, as the deaths from diarrhoeal diseases are at a maximum during the third quarter of the year.

§ The general death rate prior to 1851 is below the actual rate, as the registration of deaths, where burials occurred within the city limits, was not required by law.

|| Miasmatic diseases include: Smallpox, Measles, Scarlet Fever, Typhoid Fever, Typhus Fever, simple and ill-defined and irritative fevers, Diphtheria, Croup and Whooping Cough.

The rates given in the above tables are the crude death rate.

average for the year, as the deaths from diarrhoeal diseases are always much lower during the first half of the year.

This table also shows the combined death rate from miasmatic, diarrhoeal and tubercular diseases for these same periods and years, and, as will be noted, there has been a diminution of more than 50 per cent. in the deaths from these diseases during these years.

The search for the causes of diminished mortality from all causes shows that the largest reduction has been in the zymotic death rate, including diarrhoeal diseases of children under five, and there has been also a steady and important decline in the tubercular death rate since 1886. (Table V.)

Investigation further shows that a special reduction in the mortality from diphtheria and croup, amounting to nearly 40 per cent., has occurred since the introduction of diphtheria antitoxin with the beginning of 1895. This reduction has taken place in spite of an increase in the number of reported cases of this disease. Up to the beginning of 1895 there had been a steady increase for some years in the mortality from diphtheria and croup, and for the year 1894 the death rate was higher than that from any other single disease, excepting tuberculosis and pneumonia—pneumonia really including a number of different affections. The combined death rate from measles, scarlet fever, diphtheria, croup, smallpox and typhoid fever has been reduced almost exactly one-half within ten years, the rate for 1896 for these diseases being 1.64 per 1,000 population, as contrasted with 3.26 for 1887; for 1897 it will apparently be still lower.

The government of the United States is democratic, but the sanitary measures adopted are sometimes autocratic, and the functions performed by sanitary authorities paternal in character. We are prepared, when necessary, to introduce and enforce, and the people are ready to accept, measures which might seem radical and arbitrary, if they were not plainly designed for the public good, and evidently beneficent in their effects. Even among the most ignorant of our foreign-born population, few or no indications of opposition or resentment are exhibited to the exercise of arbitrary power in sanitary matters. The public press will approve, the people are prepared to support, and the Courts sustain, any intelligent procedures which are evidently directed to the preservation of the public health. The belief is never aroused in any class of the population, however ignorant, that the institution or enforcement of any sanitary measure is primarily designed for the restriction of individual freedom. There is nowhere to be found any jealousy or distrust of law or government, as such. It is, therefore, possible to adopt measures

more arbitrary in many respects than could be adopted in most other countries, simply because our government is democratic.

This gives the key note to the attitude of the sanitary authorities of New York. The most autocratic powers, capable of the broadest construction, are given to them under the law. Everything which is detrimental to health or dangerous to life, under the freest interpretation, is regarded as coming within the province of the Health Department. So broad is the construction of the law, that everything which improperly or unnecessarily interferes with the comfort or enjoyment of life, as well as those things which are strictly speaking detrimental to health or dangerous to life, may become the subject of action on the part of the Board of Health. It attempts not only to increase the healthfulness of the city, but also to render it a more enjoyable and comfortable place of residence. In its relation to the medical profession, it aims to give every assistance, which the latest scientific investigations can place within its power, in the treatment and management of communicable and infectious diseases, while not interfering in any way with the privileges or prerogatives of the medical attendant, unless such interference becomes necessary for the protection of other persons from possible infection. It prescribes specific regulations as to the management of infectious diseases, the violation of which may be followed by the forcible removal of the patient to its hospitals. The public press, quite without reference to its political affiliations, offers a unanimous and most cordial support to the policy of the Board.

The conduct of sanitary matters in New York is restrained by no traditions or precedents. It is determined, from month to month, by what is believed to be for the best good of the inhabitants, in view of the most recent knowledge and the latest developments in scientific medicine.

The limits of this address do not permit, nor is it desirable, that I should touch upon many of the other phases of the work of the Health Department indirectly related to the prevention of disease, and the preservation of the public health.

It has been my purpose, as was stated in the introduction, simply to detail some of the features which have more particularly distinguished the work of the New York City Health Department and to describe some of the phases of the sanitary supervision of certain infectious diseases, which have been introduced by it.

I believe it may be truly said that there is no great city in the world to-day which, in the broad sense, is cleaner and healthier than New York. By clean is meant the purity of the atmosphere, the

cleanliness of the streets, the abundance and purity of the water supply, and the efficiency of the sewerage system. I wish that so much could be said as to the character of the habitations of the poor, the public baths and public convenience stations, the breadth of its parks and public commons, and the type of its charitable and penal institutions. In many of these respects New York is deficient; but great and rapid advances have been made and are being made in these matters.

When it is said that no city is healthier than New York, this statement is made with a consideration of all the sanitary factors in the situation, such as the size and density of the population, the varied nationality of the inhabitants, the character of climate, &c.

Nowhere can there be found a fuller recognition than in the United States, of England's high standard of excellence in public medicine, or a more sincere appreciation of her vast contributions to the progress of sanitary science. But she must look well to her laurels, if her cities are to be kept cleaner than the great cities of the United States, and her urban population made healthier and happier than the same class on this side the Atlantic.

In the United States we are prepared to adopt, without hesitation, the best that England produces, or that the world affords, in public medicine, as well as in science, art, and commerce; and notwithstanding the persistent and determined efforts of our sensational press, the sentiments of the medical profession, and of the people at large, towards Great Britain are those of sincere respect for her institutions, profound admiration for her great achievements, and warm affection for her people.

If I have appeared in this address to have dwelt too long upon and described too fully some of the sanitary methods followed in New York, I would urge in extenuation that it has been from a desire that you should know our institutions and methods, as well as we know yours, and that through the medium of this great medical association, the largest and most influential in the world, the two great English-speaking nations might, in this respect, be brought into somewhat closer and more intelligent relations with each other, and thus greater good redound to preventive medicine, so that the people of both nations may live healthier and therefore, longer and happier lives.

## PRESIDENT'S ADDRESS.<sup>1</sup>

BY

V. H. MOORE, M.D.

GENTLEMEN,—Permit me to thank you for the great honour you have conferred upon me in electing me President of this Association. I am deeply sensible of my inability to fill the position in an efficient and becoming manner, therefore I shall have to ask your kind indulgence and trust you may judge generously. I am delighted to see distinguished members of the medical profession of Great Britain present to-day. I can assure you, gentlemen, we do not look upon you as strangers, but as brothers, not alone in our profession, but as our own kith and kin, members of one great family, living under the same sovereign, the same flag, the same laws, speaking the same language and actuated by the same motives.

Your presence and the holding of the meeting of the British Medical Association in this country marks an epoch in our history. It is a red-letter day for Canada.

This meeting will serve to unite the profession more closely and will tend to strengthen that firm bond of union which cements the colonies so securely to the mother country. I am pleased to see so many of our distinguished cousins from the country to the south of us here on this occasion. The medical profession in that great Republic has been keeping pace with every advance made in medical science. They are industrious, persevering, and energetic, quick to see, ready to adopt and eager to carry out any and all improvements and discoveries to a successful or final issue, hence it is not surprising that they have made such progress. Our intercourse with them has been both pleasant and profitable, and each reunion only serves to make the friendship more enduring. I am aware of the fact that at meetings of this kind it has been customary for the President to embody in his address a resumé of the discoveries and advances made in medicine during his tenure of office; and, while this would have been more congenial to me, I have chosen, owing to the existing circumstances, to adopt another course, and to limit my observations largely to the condition in which we find medical and other branches of education in this country to-day.

Twenty-nine years ago on the ninth day of last October, or one

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<sup>1</sup> Read before the Canadian Medical Association, Montreal, August 30. 1897.

hundred days subsequent to the passing of the British North America Act, which bound together four provinces in one dominion, and while the patriotic pulse beat high, a few of the leading medical men of the new Dominion met in the city of Quebec and rounded off the grand work of that year by forming the Dominion Medical Association.

The first president was one of the ablest advocates and most zealous workers among the fathers of Confederation. He, I am happy to say, still lives and still labours for the good of his profession and country. He has deserved well of his country and has been honoured by her, and by Her Gracious Majesty; I refer to Sir Charles Tupper, Bart., who is known wherever Canada is known. The objects sought to be attained by the formation of this Association were:

1st. To promote the science of medicine.

2nd. To unify the members of the medical profession in this Dominion.

3rd. To secure a uniform standard of medical education, both in the requirements preliminary to the study of medicine, and for the license to practice, after graduation, in the Dominion.

That the first object of this Association has been attained no one will deny. This society has contributed largely to the advancement of all branches of medical science in Canada. Our ablest medical men and some of the ablest of Great Britain, as well as of the neighbouring Republic, have attended its meetings and contributed papers of the highest order.

The second object has also been attained. It has brought the members of the profession from all parts of this country together, and they have thereby learned the status and requirements of medical education in each province. An opportunity was thus offered for a full and free discussion, and it is gratifying to know that a common desire for uniformity in medical education inspires the profession throughout the whole Dominion.

The third object, I regret to say, has not yet been reached, but I feel confident that through the efforts and influence of the members of this association it soon will be an accomplished fact.

By the provisions of the British North America Act all matters of an educational nature were given over to the Legislatures of the Provinces, they to make such laws, rules and regulations as to them seemed proper. Whether this was wise or not I am not prepared to say, but it appears to me that the question of education is of a national rather than a provincial character, more especially medical science, as it knows no geographical confines.



Soon after the formation of the legislatures, the medical profession in each province believing it to be in their interest, as well as in the interest of the public, sought and obtained from their respective legislatures an act, entitled "The Medical Act," which provided for the formation and election of a Medical Council.

By virtue of the provisions of this Act, the licensing power and the complete control of medical education were given to and vested in this body. This Council was to be a representative body and to be re-elected once in a given number of years. Unfortunately, no concerted action took place between the members of the profession in the different provinces before appealing to the legislatures, and the results were just what might naturally be expected, striking differences in the acts asked for and obtained. These diversities still exist and it is these dissimilarities that offer to-day the greatest barrier to interprovincial registration.

To my mind there is nothing of more importance to the medical profession in Canada than uniformity in medical legislation. Now that we are nearly all of one mind, only divided upon issues which are of no vital importance, let us make an earnest appeal to our law-makers and have the clauses not in harmony repealed. I trust that at this meeting a representative committee may be appointed to draft a medical act suitable for the whole Dominion. When this is accomplished, a copy can be placed in the hands of each Provincial Medical Council, with the request that they appeal to their respective Legislatures to amend their existing medical acts so as to harmonize them with the proposed one and have them become law. Interprovincial registration will then be an easy matter and would be readily accomplished. Then we could turn our eyes eastward to the Mother Country and seek reciprocity with her; and, as she has always listened attentively to any reasonable request made by us, we might confidently look for the day soon to arrive when our prayer would be allowed, and any man obtaining a license in any of our provinces would be free to practice medicine in any land where floats the Union Jack.

Several members of this Association have gone over to the silent majority during the past year. I will not name any of those worthy men who laboured for the welfare of their fellow creatures. All should be named or none. While in this life they were ever ready to discharge all moral obligations, toiling night and day, living on the stimulant of duty performed, always ready to lighten somebody's burden, knowing but little rest or comfort in this world. Let us

hope that in the serenity of death they have found eternal peace and happiness, a just reward for duty done.

Many of the founders of this Association were not only physicians and surgeons of eminence, but statesmen as well, and their example has been followed by a large number of the ablest members of our profession.

In consequence of the exertions and ability of our medical legislators, in both the Federal and Provincial Parliaments, the public have been educated to the necessity of protecting their lives from the peril of infectious diseases of a preventible character. They have been taught the lesson that there is no boon more worth possessing than life and health. In each province a Provincial Board of Health has been established, and in each municipality, village, town and city a local board of health is annually elected and a medical health officer appointed. The sanitary laws are rigidly enforced in most of the provinces. In the Province of Ontario every physician is compelled, under a heavy penalty, to report, within a very few hours after it has come under his charge, every case of a contagious or infectious nature, to the secretary of the local board of health. The house in which the case is located is immediately placarded, and no inmate is permitted to attend school until the physician in attendance certifies that the disease has disappeared and the house and its contents has been disinfected and are free from contagion. Serum therapy is well understood and its benefits appreciated. Vaccination is made compulsory. The water used for domestic purposes is carefully looked after, and any source which has been shown to be impure is closed up or condemned and the public forbidden to make further use of it. When any section of a city, town or country is shown to be unsanitary, the Provincial Board of Health, upon being notified, immediately proceeds to put it in a condition not dangerous to health. The milk furnished in towns and cities for domestic use is carefully inspected and the results published several times a year, and a heavy fine is imposed when an impure article is offered for sale. The herds of milk vendors are frequently inspected and tested with tuberculin by competent men, and all tuberculous animals are promptly destroyed. Meat offered for sale is carefully watched and any of an unwholesome nature is seized and the person exhibiting it is liable to a heavy penalty. Drainage in all the larger towns and cities is vigilantly looked after, and sanitary inspectors carefully examine all plumbing and report thereon to the board of health. The results following the above precautions have been most gratifying. Diphtheria, typhoid fever and small-pox have been almost stamped out in

many localities, and scarlet fever and measles have been very much modified in their course.

In view of the advance made in preventive medicine in the past two or three decades, may we not confidently hope that within a few years immunity may be secured from most infectious diseases. Preventive medicine now rests upon a sound and promising basis in Canada. Yet, while all this is true, it is to be regretted that a large number of our inhabitants love the mysterious, the occult, the unscientific, and indulge in the dangerous practice of swallowing patent nostrums, and thereby injuring their health and shortening their lives. Credulity still lives in the minds of many and probably always will. Truth is stranger than fiction, and science has invariably travelled an uphill road.

In the Ontario Medical Act there are certain penal clauses to be found which have enabled the Medical Council of that Province to prosecute, fine and imprison charlatans and men practising medicine without a license, and to erase the name of any physician from the medical register (thus depriving him of the right to practise) who has been convicted, either in Her Majesty's dominions or elsewhere, of any offence which if committed in Canada would be a felony or misdemeanor, or been guilty of any infamous or disgraceful conduct in a professional respect. By virtue of this clause in the Act we have been able in Ontario to suppress quackery and drive from the profession unscrupulous men.

Our Provincial Governments have built beautiful homes for those suffering from mental diseases, and provided the best known treatment for these unfortunates. They have aided hospitals and provided domiciles for the incurable, and keep a strict watch over all. They are alive to the fact that to have a progressive and prosperous nation they must have healthy and intelligent people.

The standard of medical education and the requirements exacted in this country will compare favourably with those of any country in the world. We require as high, and in some instances a higher standard of preliminary education than is demanded in Great Britain. The examination for graduation and also for the license to practise is a severe one, and well calculated to test the knowledge of the candidate. A four-year graded course is required in most of the Provinces; in Ontario, a period of five years must be spent in the study of medicine. On and after the first day of October, 1899, four sessions of eight months each, together with a fifth year spent in clinical and practical work, will be demanded. In the Maritime Provinces they favour the eight months' session, while here in McGill College they give a nine months' course.

Our Medical Colleges are well equipped in every respect. The teaching is of the best, and the practical work all that could be desired. There is plenty of material for clinical instruction, and every facility is offered to the student to gain a knowledge of the science of medicine. The opportunities for hospital work are good. We have between sixty and seventy hospitals in Canada, over forty in Ontario alone, and the medical staff in each hospital is up to date, and the work done excellent.

We have over a dozen well equipped Universities, a large number of Collegiate Institutes, high, public and separate schools, well provided with teachers, appliances and accommodation. In Ontario, attendance at school is compulsory. There are few countries, if any, that can boast a better system of education.

The progress that has been made in the science of medicine since the birth of this Association is marvellous. It would be impossible in an address of this kind for any man to adequately portray the changes that have taken place, therefore I say but a few words upon the subject. The advancement has not been exceeded by that of any of the natural sciences. Imagination thirty years ago would have failed to picture the condition of medicine to-day. We are well aware that medicine is not an exact science, and probably never will be, still it has been progressive, and never more so than during the past ten or fifteen years. The discoveries of Pasteur and Koch and their followers have revolutionized therapeutics. A new pathology has been created, based upon scientific knowledge. The technical means of histological and bacteriological research are now nearly perfect. We have arrived at an exact knowledge of physiological and pathological histology. We know it is now possible to diagnose with certainty many diseases which a few years ago offered great obstacles, and only after years of practice and experience could they be recognized. By means of the "X" Rays, the new light, which penetrates opaque bodies, dark recesses the contents of which were unknown are now disclosed and presented for study. Nothing in man's nature can escape the scrutiny of the natural sciences. Dr. Jacobi says:—"The sound mind, its aberrations and freaks, the soul, with its holiness or turpitude, no matter whether considered by the believing philosopher or the searching materialist, are topics of biological study." After the discovery of anæsthesia in 1846, the fields of research were widened and great advances made. The number of voluntary surgical operations was greatly increased, but unfortunately there appeared a dark cloud upon what had seemed a clear sky. Sepsis appeared, death followed, and surgery seemed as though it was

about to run on to its own destruction, when Lister came to the rescue and gave us a new surgery. He pointed out the way to overcome the enemy, the means to be used in its destruction, and what should be done to prevent its resurrection. His discovery has prolonged thousands of lives and obviated many millions of days of pain and suffering. The human mind can form no just estimate of what has been added to man's happiness and comfort by the labours of this great benefactor of the human race. He has taught us that if we wish to live we must be clean; that nature loves the pure, the clean, the undefiled. Following his methods, we now perform operations with confidence and success that in pre-aseptic days would certainly have been followed by death. We are now able to preserve damaged parts, retain important functions and supply deficiencies that would certainly have been sacrificed prior to his time. The apostles of science know no rest, and what advances may be made in the future I cannot conceive. But of one thing I am satisfied, that man must go ahead; he could not go backward if he would; the struggle for higher realities will ever remain. Electricity is still in its infancy; it is but the toy with which science has been amused. In the near future we may look for wonderful achievements; we will have a wider culture, a higher standard of literature, of art and of medical science. During the years that medicine was making such rapid strides, the specialist grew with great rapidity, but we need not fear; if there has been an overgrowth, old Father Time will effect the cure. The general practitioner still exists and will continue to live.

It now becomes my duty, on behalf of the medical profession of Canada, to extend to the members of the British Medical Association a most cordial and sincere welcome. We are fully aware of the importance of their meeting and of the honor conferred on ourselves and on our esteemed and distinguished countryman, the president, Dr. Thomas G. Roddick. I am sure that the citizens of this city, who are noted for their hospitality, and all Canadians will do their utmost to make their stay in this country as pleasant and profitable as possible. As the circumstances under which we meet to-day are somewhat unique, I may be pardoned if I again digress to some extent from the line pursued by my illustrious predecessors. I am led to believe that the members of the British Medical Association have come here from across the sea, not alone for the purpose of ascertaining what we know about medicine, and of imparting further knowledge, but they have come as true physicians and scientists who labour for the benefit of humanity and who desire to obtain a knowledge of all and every

fact and means, calculated to better the condition of the human race. I hope that ample occasion may be given the distinguished visitors not only to gain a knowledge of our educational institutions, and their value; but that they may have an opportunity of seeing how our people live, how we are housed, clothed and fed, and of becoming acquainted with the laws by which we are governed. Much as we may desire to have our guests see all they possibly can we know that they at best, can only gain a limited knowledge of what we possess. We can only tell them that we own three million five hundred thousand square miles of territory; that we have one million three hundred thousand square miles of wheat growing country, an area capable of giving homes to fifty million farmers.

I sincerely hope that they may be able to gain a knowledge of our great rivers, our forests, our water falls, our mountains, our inland seas, our prairies, and our mineral deposits. We have also any kind of climate the heart of man could wish for. Five million souls comprise our present population. Commencing at the Atlantic we follow the sun to the Pacific, upon our own magnificent railway, across a continent of unknown wealth and happy homes. In this country we give to every man the fruit of his labour. This is a country of freehold farms. The avenues of distinction are open to all. The man possessed of ability and industry may climb to the highest position. This is a country of great possibilities; our present Premier is a lawyer, our late Premier a doctor, his immediate predecessor a printer, while a few years ago we had a stone-mason holding the position of Prime Minister, each of them loyal and patriotic, reflecting honour upon himself and his country. I trust that the members of the British Medical Association may be impressed with what we offer to men of industry, in the wheat fields, or the mines, the shops or the professions. I cannot but feel that the knowledge obtained during their visit will result in a large increase in immigration, and that we will ere long find thousands of British subjects flocking to Canada, where they may under their own flag hew out happy homes for themselves and their families.

THE

# Montreal Medical Journal.

*A Monthly Record of the Progress of Medical and Surgical Science.*

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## BRITISH MEDICAL ASSOCIATION.

Thanks to the most courteous co-operation of the British Medical Journal we are enabled to publish *in extenso* the full series of general addresses delivered before the British Medical Association at its meeting which, as we issue this number is drawing to a close. At the same time we publish the thoughtful address of the President of the Canadian Medical Association, Dr. V. H. Moore.

That the British Medical Association, an association embracing all quarters of the world, should hold its first colonial meeting in Montreal, the medical centre of the Province of Quebec, is but right and fitting. For this Province of Quebec is a very keystone of the Empire, and its history has determined that of the whole Anglo-Saxon race on this continent.

When all this is taken into account our meeting gains a peculiar significance. We have met together, Britons and French—Britons of the Empire and of the Republic; French also of the Empire and of the Republic. For the French Government, mindful of the past, has honoured us by sending Professor Ch. Richet as its official representative and Professor Richet is a host in himself.

The occasion is a memorable one, and we, as Editors of this Journal desire to signalise it worthily.

We propose within the next few months to publish a complete account of the proceedings of the meeting and through the co-operation of the Editor of the British Medical Journal, such of the papers as are likely to prove of interest to our readers.

SUMMARY OF VIEWS EXPRESSED AT THE DISCUSSION  
ON SERUM DIAGNOSIS AT THE MEETING OF THE  
AMERICAN MEDICAL ASSOCIATION AT  
PHILADELPHIA.

The committee appointed by the Chairman of the Section on Practice of Medicine make the following report :

1. In selecting the material used in making the test the choice between : *a*, serum, *b*, dried blood, *c*, fluid blood, and *d*, blister fluid, will depend largely upon whether the object be scientific research, clinical diagnosis in hospital or private practice, or public laboratory diagnosis where the samples have to be sent some distance.

2. In spite of considerable variation in technique, there has been a remarkable uniformity in the results obtained by those taking part in the discussion, and their average of about 95 per cent, of successes agrees with the general average of the cases, nearly four thousand, thus far recorded in medical literature.

3. Each of several methods of technique advocated may thus give good results in the hands of those thoroughly familiar with the details found necessary in each case and the sources of error to be avoided, success depending rather on being perfectly familiar with one method than on the particular one selected.

4. For routine diagnostic work even the very simplest methods may give good practical results, but for recording scientific observations those methods which are accurately quantitative should be selected. This is especially necessary in reporting exceptional cases at variance with the general results recorded or where the observations are made the basis of generalizations.

5. A complete reaction should comprise both characteristic clumping and total arrest of motion occurring within a definite time limit. For practical diagnostic work a dilution of 1 to 10, with a fifteen minute time limit, is convenient. In any doubtful case the dilution should be carried as far as 1 to 50 or perhaps 1 to 60, and a reaction not obtainable at that point should not be regarded as perfectly conclusive. For these higher dilutions the time limit should be extended to two hours.

6. Intensity of reaction in a given serum should be estimated by determining the degree to which it may be diluted without losing its power of giving a decided reaction, both as to agglutination and loss of motion.

7. The intensity of reaction shown by the same serum is influenced by the age, condition and virulence of the test culture and by the



composition and reaction of the culture medium. For purposes of comparison the sensitiveness of the test culture should be taken into consideration.

8. The evidence so far recorded establishes that the reaction may be delayed or occasionally may not be obtained in cases of genuine typhoid infection; and also that it may be exceptionally present in non-typhoid cases, though not in an intense degree.

9. In investigating exceptional and contradictory results the following circumstances have to be considered: *a.* The uncertainty of clinical diagnosis. *b.* The absence of bacteriologic or other confirmatory methods of diagnosis during life, giving decisive *negative* results. *c.* The possibility of overlooking typhoid infection even postmortem, in the absence of characteristic intestinal lesions where a very thorough bacteriologic examination has not been carried out.

10. The modifying influences mentioned above suffice to explain the divergencies existing in the reports of different observers. Without being absolutely infallible the typhoid reaction appears to afford as accurate diagnostic results as can be obtained by any of the bacteriologic methods at our disposal for the diagnosis of other diseases. It must certainly be regarded as the most constant and reliable sign of typhoid fever, if not an absolute test.

N.B.—The above summary, while expressing the general consensus of opinion brought out during the discussion on serum diagnosis before the Section on Practice of Medicine of the AMERICAN MEDICAL ASSOCIATION, does not claim to represent exactly the individual views of any one of those who took part.

W. H. WELCH,	E. B. BLOCK,
WYATT JOHNSTON,	H. M. BIGGS,
J. H. MUSSER,	N. S. DAVIS, JR.,
R. C. CABOT,	M. W. RICHARDSON,
S. S. KNEASS,	J. B. HERRICK,
A. C. ABBOTT,	A. R. GUERARD,
J. M. SWAN,	A. P. OHLMACHER,

*Committee.*

—*Journal of the American Medical Association.*

The Scientific Grants Committee of the British Medical Association have awarded a grant of £30, to Dr. Hamilton E. Wright, the Medical Registrar, of the Royal Victoria Hospital towards the expenses of his researches into the Pathology of the Central Nervous System.

## NEW BOOKS, ETC., RECEIVED AND NOTED.

International Clinics. Vol. 2. Seventh Series, Lippincott, Phila.

Ventral Hernia resulting after Abdominal Section and its treatment. By Andrew F. Currier, M.D., New York. Reprint from Annals of Gynecology and Pediatrics, July, 1897. Vol. 10. Boston.

The Johns Hopkins Hospital Reports. Vol. 6. Baltimore, 1897.

The Hemiplegic State and its Treatment. By Archibald Church, M.D. Reprint from The Chicago Medical Recorder, June, 1897.

Neurological Progress in America. By C. H. Hughes, M.D. Reprint from The Alienist and Neurologist. July, 1897.