

DR. R. H. M. DAWBARN, New York—As to controlling hemorrhage from wounds of the chest and elsewhere, where we can not directly press by some means on the bleeding vessel (medical as distinguished from surgical hemorrhage), I think our profession has almost forgotten that very old and yet best of all ways, and this applies, too, to hemoptysis. I allude to cording the extremities close to the trunk, accumulating thereby blood in them until, from partial anemia elsewhere, faintness follows; whereon there is, from weak heart action, opportunity for clotting. As a point in technic, it is best to control the circulation in only three limbs at once, shifting after, say, a quarter hour to the fourth and letting up on the first limb, and so in regular order—this for the safety of the limbs.

Regarding gunshot surgery of the abdomen, like most surgeons in civil life I have had only a modest amount of it to do. But it happens that I have prepared in my life possibly half of the junior surgeons of both our army and navy (work I no longer do); and during the late war I kept in touch with many of these former students, to learn their practical experience on a large scale. As to intestinal surgery, their testimony is that non-operative measures are safer than operative in the emergency work following a battlefield. We can readily see why. Bowel surgery demands infinite attention to detail and scrupulous asepsis; conditions not readily obtainable where a line of desperately wounded soldiers await attention. At night, too, even in the tropics, the air is chilly, and chilling of the peritoneal cavity invites fatal shock. In a word, the "morphin splint" of the wounded bowels, at once stopping suffering and checking peristalsis, saves more lives. It puts the wounded organs at rest, preventing excessive leakage of stomach contents or of feces, and giving a good chance for adhesions to seal the wounds. It is imperatively wise to give absolutely no drink and no food, in order to avoid arousing fresh peristalsis and leakage. The morphin checks thirst and hunger by compelling sleep. In every sense, it is the wounded soldier's best friend; and, in my judgment, should be supplied in tablet form to the extent of one large dose in the surgical package for emergency use which is now placed in every knapsack.

DR. W. L. RODMAN, Philadelphia—I remember Dr. McGraw's paper very well, and I agree with what he says. Such an opinion is valuable. Soft tissues will turn a bullet as well as bone. Dr. Grant's picture has brought forward the question of what is to be done in military practice, but I kept off this subject because I thought Dr. LaGarde was here. Undoubtedly we have come to a parting of the ways, so far as the treatment of gunshot wounds is concerned. Military surgeons are right from their standpoint in advocating non-interference on the battlefield in view of the difficulties under which they labor. The wounds they see are altogether different from ours. They are made by a small conical angle bullet which cuts like a knife. It does not take in foreign material, and makes an incised wound. Single or multiple perforations will not be followed by fecal extravasation, and recovery may take place. In civil life we deal with a round bullet which usually takes in foreign material and practically always makes both a contused and a lacerated wound, which is nearly always followed by fecal extravasation. The military surgeons are right to a certain extent, but we can not admit that this method will do in civil life. Dr. Oliver is correct in stating that wounds of the stomach are less dangerous than those of the intestines, and there are several cases on record to prove this. There is no question that they do tend to recovery, and if the bullet is small this makes a great difference. Moreover, they sometimes result in abscesses and discharge posteriorly, just as a perforating gastric ulcer will sometimes result in abscess. Sometimes a traumatic perforation of the stomach will repair itself without operation. I said Mr. Makin stated that a bullet would not necessarily cause a perforation of the duct, but I also said he was opposed in this view by the vast majority of military surgeons. I mentioned the names of those who were opposed to Mr. Makin's views.

I believe these perforations do heal in some instances. I agree with Dr. Porter as to shock and hemorrhage. I do not believe that shock is always due to hemorrhage, but it is very generally so. Ever and never are words that have no place in surgery. Where there is profound shock we shall do well to find the case that does not have a great deal of hemorrhage, but it will not do to say that shock is always due to hemorrhage. Dr. Gibbons' point in reference to the catheter is a good one, as it enables you to eliminate wounds of the bladder and kidney. Mr. Makin says that many wounds of the bladder recovered during the South African war, and he also states that an intra-peritoneal wound of the bladder, even though it be followed by extravasation of urine, is a less dangerous injury than an extra-peritoneal. He states that the same is true in reference to the intestine, and he cites cases to support this. I do not agree with Dr. Gibbons that one can take plenty of time to these cases. Those who have had the greatest success have been those who have taken some chances rather than to eviscerate and work indefinitely over a perforation. The operation should be done as soon as possible.

SANITATION AND POLITICS.*

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The subject I have chosen is one on which I have reflected for some time, but I must confess at the outset that I have not given it the deep study and research required for its thorough and exhaustive treatment, so that these few remarks must be considered simply as preliminary in character with a view to stimulating both you and myself to a deeper study of the subject and a compilation of statistics and other facts bearing on it.

In discussing this and other interesting subjects in this Section, it is well for us to recall the real object to be attained and for which this Section on Hygiene and Sanitary Science has been established as one of the principal deliberative sections of the American Medical Association.

What is the object of hygiene and sanitary science? What can it be, except the elimination of preventable disease? Now this warfare on disease, to use a military metaphor, involves two methods: one by sortie or field work; the other by fortification. By sortie we corral disease in quarantine, we isolate the diseased persons and hold in observation the contacts, we clean up and disinfect infected places and objects; moreover, we establish sanitariums and hospitals for the cure of disease. By fortification we fortify our bodies against disease, so that the assaults of the latter may be repelled. We accomplish this by hygiene, by provisioning ourselves with pure air and sunshine, potable water, the rapid and safe removal of excreta, and in the meantime by laboratory investigation learn all that we can concerning the nature and habits of the enemy.

Now of these two forms of warfare there can be no question that fortification is the more important and, dropping here the military metaphor, how much greater is the necessity, how much wiser is the prevention of disease than its cure or restraint. It is but natural that in the growth of the human family attention should have been first directed to disease itself, just as formerly in its treatment the symptoms received greater thought and attention than its etiology; but it is one of the signs

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of the advancement of civilization, of the progress made in the uplifting of the human race, that prevention is rapidly being accorded its proper relative position. Our intelligence will be blinded if we fail to recognize this metamorphosis in the science of medicine, and our intelligence will be illumined and will light up the correct paths to a higher life if we recognize and act on the principle that prevention is better than cure.

Politics has been defined as the science or practice of government, and the definitions of government are "guidance, direction, regulation, management, control; the exercise of authority in the administration of the affairs of a state, community or society." Therefore, the correct interpretation of my subject is the relation between hygiene and sanitation on the one hand and government on the other, and I am using politics in its better sense.

It is pertinent here to urge that we guard ourselves against a wrong and unpleasant definition of politics. The word is essential in our national vocabulary, but too often is used as signifying that which is objectionable and even reprehensible, but because there are bad politics and bad politicians the term should not be considered one of reproach, and the science of politics should be no more disparaged than should the Christian religion because of backsliders and hypocrites. We should divest ourselves of prejudice against the name because it may be well utilized in the advancement of hygiene and sanitation and because it actually signifies the energy, the attention to duty demanded of a people who are blessed with self-government.

It would make an interesting chapter to detail the interference caused by faulty politics with sanitary affairs. No doubt all of us at this moment have in mind instances of the shameful sacrifice of sanitary and health matters to the selfish and unrighteous interests of unworthy politicians, but the simple inveighing against unprincipled politicians and impure politics has no corrective tendency. A more effective way is by substitution, by forcing to the front worthy issues on which the best citizens and worthy politicians may unite, and it has frequently occurred to me that such issues may be found in sanitary and hygienic policies. Thus can politics be made to aid us in hygienic and sanitary reforms and in the attainment of that sanitary welfare of communities and nations which means fresh air and sunlight, pure water and house drainage, sewerage and good paving, for the enjoyment of all. These the rich already possess, but the poor do not. But the rich can not reap the full benefits of these possessions until they are shared in by the poor, for the diseases incident to the overcrowding and bad sanitation of the homes of the poor find their way into the homes of the wealthy.

How these issues may be made, even in ward politics, is illustrated by the canvass and election of a certain councilman in a southern city, who made his political fight on the disinfection of school houses. In municipal politics the issue might well be made on the elimination of slums, the condemnation of insanitary buildings, the conversion of foul alleys into streets and courts, and the erection, either by municipal authority or by corporation, of sanitary tenements for the poor, the rent of which should not exceed the rent paid for the rooms or houses from which they should be evicted.

The discussion of these measures by the people and the politicians would be a most direct and practicable method of educating the poorer and more ignorant

classes of our population in the principles of hygiene and the prevention of disease.

Political issues might also be made on the appointments on boards of health, both municipal and state, and state and municipal health officers, and the sanitary ideas which they represent. In state politics, inasmuch as crime as well as disease is frequently due, as stated by Dr. Alfred Carpenter, to vicious and insanitary habits and surroundings or the neglect of sanitary laws, there may well be made an issue with regard to sanitary and hygienic requirements as prerequisite to the granting of municipal or town charters. It surely is within the power of a state to demand that its cities and towns shall be properly sewered and paved and provided with wholesome water supplies.

With regard to national politics, the action of this great American Medical Association in providing a legislative committee and for a legislative conference of representatives of each of the state medical societies, and the action already taken by this committee and this conference are significant as illustrating issues already made in the domain of national medicine and sanitation. And even in international affairs there are indications that sanitation may in the near future become an important issue in international politics. I may here refer to the Second American International Conference which met in the City of Mexico in the latter part of 1901 and adjourned in January of this year, and to the resolutions concerning an international sanitary policy adopted by the delegates to that convention. These resolutions, published in the Public Health Reports of March 21, 1902, relate both to quarantine and sanitation, and provide among other measures that the governments represented shall co-operate with each other and lend every possible aid to the municipal, provincial and local authorities within their respective limits toward securing and maintaining efficient and modern sanitary conditions in all their respective ports and territories, to the end that quarantine restrictions may be reduced to a minimum, etc. And to give effect to their findings, they further provide for annual sanitary conventions of delegates from the several republics and the establishment of an international sanitary bureau with permanent headquarters at Washington. The first conference is to be held Oct. 15, 1902, and although the program, so far as I know, has not been announced, it will probably contain reports from the several republics on their quarantine laws, their prevailing diseases and sanitary measures now in progress and those proposed; furthermore, a discussion of the principles of quarantine, the scientific investigation of communicable disease and the sanitation of seaports. Thus we see how the doctrine of sanitation is spreading, how it may become a live issue in communities, towns, cities, states and national governments, and between nations. We see how sanitation may give life to politics and how politics may be made to serve the great cause of sanitation.

How frequently do we hear of the necessity of a campaign of education in sanitary matters. This education may in part be obtained from the school and the college and the university, through the daily press and through the bulletins of instruction so frequently issued by municipal, state and national health authorities, but, in my opinion, no means of providing this special education is superior, no method of reaching those whom it is most necessary to reach—the poor and ignorant—is superior to that of making this great movement an issue of politics.

DISCUSSION.

DR. H. O. MARCY, Boston—The subject is one which is of extreme interest and importance to all of us, and it has occurred to me that it might be of some value in introducing the discussion if I gave you briefly a chapter of our own work in Boston. Boston and the surrounding towns within an area of ten miles have a population of about 1,100,000, and twenty-six separate governments. These cover what is known as Greater Boston. The work of sanitation was commenced back in the days of my revered master, H. I. Bowditch. At that time it was pretty easy to manage the sewage system of the city of Boston, which was isolated from the surrounding towns. When, however, we were called on to bring into conjunction the combined interests of the twenty-five allied towns, we found that the task was not an easy one. As a matter of fact, it cost us many years of earnest political work to get the requisite laws passed through the legislature, and some of the difficulties are not quite settled yet. There always is, and, I am afraid, there always will be, a tendency on the part of particular towns to think that they are being required to pay a little too much, or that they are not getting their proper share in value of the money expended. The system as now developed is generally regarded as a very excellent one, and I have no doubt it compares favorably with that of any city in the world, but there is no gainsaying the fact that it caused us a great deal of trouble. The first thing we recognized was that it was of vast importance that we should bring general issues under the control of a central authority, and leave local issues in charge of local bodies. When you consider the difficulties we had to encounter in dealing with Greater Boston, and think of the enormously greater difficulties that must be overcome when you come to deal with the interests of different cities and states, you will commence to realize what an extremely complicated problem it is that presents itself for solution. By way of illustration I may say a word about one of our most formidable difficulties. It related to the water supply, and a common criticism has been that if we had gone to Lake Winnepisaukee, N. H., for our supply it would have cost no more than the present system, on which we are expending \$40,000,000, and we would have had an unlimited supply, which would have met our wants in all coming times, without the destruction of towns and manufacturing villages. The large obstacle was that the lake was in a different state. Had it not been for that circumstance we could have had that fine water supply and, at the same time, have furnished all the towns along the Merrimac with all the water they require, and that at a cost not greater, and possibly a little less, than we are expending on our present works. Now, I repeat, if difficulties of this kind are met in local centers of population, how much greater the difficulties must be when we come to deal with the entire continent.

DR. STEPHEN SMITH, New York City—I also was reminded while listening to the paper of Dr. Wyman of the early movements made to secure sanitary legislation, and of the innumerable difficulties the pioneers encountered. We found how essential it was, in endeavoring to secure national and state legislation and even the passage of municipal ordinances, to get the political aspects of the question rightly fixed in the minds of the leading politicians. It was the same in Great Britain. The great sanitary reforms of that country were not effected until those questions regarding the protection of the public health had been introduced into politics and thus became a strong factor in the political issues of the day that the reformers succeeded in getting adequate legislation. Lord Beaconsfield was so impressed with the popularity of sanitary reform that he formulated the rallying cry of *Sanitas sanitatum omnis sanitas* for his party. It was eagerly taken up by his followers, and carried the election, and nearly all the sanitary reforms that have been introduced in Great Britain date from that time. Nor was the influence of that movement confined to that country. It extended to the continent of Europe and to America. We had the same experience in

New York. For fifteen years we sought legislation through the efforts of medical societies alone, but in vain. It was only when we entered the political field and called legislators to account publicly that we succeeded in securing the passage of the law creating the Metropolitan Board of Health, the first board of health in the United States established on sound sanitary principles. The same facts are noticeable in the history of the New York State Board of Health. For many years the effort to secure proper legislation was made entirely through medical organizations, but with no success whatever. Disgusted with continual defeats, I proposed to my colleagues to pass the bill unaided if they would retire; they assented, and I at once enlisted two leading politicians in my effort. By their aid and judicious correspondence the bill passed both houses of the legislature by large majorities at the next session. No medical man went to the capitol, and it is still a mystery in the profession as to the agencies which passed the measure. And the same experience awaits us in efforts to secure national sanitary legislation. For years the medical profession has been struggling, through its various committees and organizations, to create a central sanitary authority, but with no results. Now, happily, the whole subject has been committed to the care of judicious leaders in Congress, and we are about to realize our highest and best anticipations. In our aversion to what is called partisan politics we are too apt to forget that all measures for the protection and promotion of the public health directly affect the policy of the state and hence must receive the approval or disapproval of the dominant party in the law-making department. We should on this account be very charitable in our criticisms of health officials who seek the aid of political leaders in securing proper legislation. State medicine must henceforth be regarded as a most important branch of our profession and those who devote their lives to its service are entitled to our highest commendation.

DR. S. A. KNOPF, New York—The preceding speaker, to whom we New Yorkers are so much indebted for the sanitary improvement of our port, has given you a bird's eye view of the situation as it existed some years ago. Unfortunately, things are not going on so well now in our state. We have had a hard time to get the necessary appropriation to build a sanatorium in the Adirondacks. The matter has been in hand for two years, and they have not commenced to build yet.

There is one thing particularly important that I would like to endorse in the address of Surgeon-General Wyman. It is the statement that we must interest ourselves in politics. Not until we do so can we hope to be successful in our efforts to clean up politics or to clean up some of the awful sanitary conditions in our cities and towns. It is of the greatest importance that we should have a national health board. Whether it ought to be connected with the Marine Hospital Service or with some other department is a matter of detail which ought to be easily arranged; but not until every state, city and town board of health can look to Washington for guidance shall we be able to make real and universal progress in sanitation in our country.

DR. SENECA EGBERT, Philadelphia—I am very glad Dr. Wyman has read this paper, because the subject is of very great interest and importance. Every one of us has duties right before us. Dr. Marcy, Dr. Stephen Smith, and others have discharged theirs, but we younger men have it within our power to do a great deal, and we ought to lose no time in doing it. In Philadelphia they have done a little work in the right direction. The mayor preceding the present one takes credit to himself for having had the alleys and smaller streets laid with modern pavements, and the present mayor, supported by a general public interest, has taken up the question of a new water supply. If we could only get the votes of the people who have had typhoid fever in their families we could possibly carry any election in Philadelphia. As a matter of fact, we are now in hopes, as the result of public agitation, of having part of the city supplied with pure filtered water within a very short period, and the whole city similarly

provided for in the course of two or three years. This means the expenditure of a large sum of money, and shows what can be effected when politics are brought into play as a motive power. Another small matter I may mention. In the part of the town where I live the neighborhood was isolated by what used to be a ravine, but which has now been converted into a very pretty park. We formed an improvement association and by looking after everything that pertained to the improvement of the locality we got all the residents interested. In this way we got rid of many nuisances and, what is more important, we frequently secured the interest of the select councilman of the ward and have had his cordial help. That man appreciates the power of the association, and knows that we can largely influence the vote of the district, though the association is neither partisan nor political. Whatever improvements we get, moreover, we get not for our own locality alone, but for the whole ward. This shows what can be effected even by a small community like ours. There is a National Village Improvement Association which is doing a great deal of good throughout the country, but while much can be done by voluntary effort the coöperation of those in authority is requisite if we are to make any tangible progress, and what we most require, it seems to me, is a central head. As a rule I do not believe much in centralization in politics, but I do not see how it can be done without, in sanitation. The various cities and country districts should be divided up into sanitary districts, each with its own officers, but all acting under the guidance of a central body. Only in that way can we get good scientific results and make correlated progress. Of course there are good and bad politics, and good and bad politicians, but even if we have to deal with the appointees under a bad system, it is better than to have no system at all. The first thing to aim at is the establishment of a department of health at Washington, and afterward the dividing of the country into districts in the way I have suggested, each with its health officers, who would work in harmony for the general betterment of the public health. In Pennsylvania there is at present a prospect of doing some good work by the correlation of the efforts of different state officers. Our state forestry officials have done much good by setting apart certain reservations for the use of consumptives. Platforms in these localities are also provided, on which the patients can erect their tents and other accommodations supplied. In this way great benefit has been derived by a considerable number of afflicted persons at almost no cost to themselves. That, as I have indicated, has not come through the board of health alone, but through the coöperation and willing assistance of the Forestry Department. I simply mention it to show how other branches of the governmental machinery can be utilized for the public good.

DR. WALTER WYMAN—Some of the facts mentioned by Drs. Marcy, Smith and others appealed to me as very interesting and full of practical suggestiveness. I hope they will lead to profitable results. The discussion of these matters brings out many facts with which we are not all familiar, and which it is of the highest importance we should know.

A Subsidized Press.—As an illustration of the place occupied in newspaperdom by quacks and patent-medicine makers the following figures convey some significance. Measured by column inches, the *Cleveland Press* of December 13 contained 1,181 inches of advertisements. Of these 1,181 inches, 549, or nearly one-half, were occupied by the advertisements of quacks and nostrums. In the figures there may be a possible error of less than five inches, but the figures are very nearly correct. When a newspaper derives nearly one-half its revenue from the "fake" in medicine it is not to be expected that human nature will enable such a paper to hold unbiased views in reference to medical affairs. Until newspaper editors and publishers are all educated men, the medical profession will be compelled to contend with the opposition of those who have no conception of medical science.—*Cleveland Medical Journal*.

THE DRAINAGE CANAL OF THE VALLEY OF MEXICO.*

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BOSTON.

For many reasons our southern republic has an increased interest to the people of the United States. The marvelous development which has taken place in Mexico during the last two decades reflects, in a large degree, the progress of civilization on this western continent. Under the extraordinary wisdom, energy and foresight of President Diaz, the former chaotic governmental rule has disappeared, to be replaced by a wise and good government, making life and property interests as safe as in the United States.

A network of railways is interlacing the republic in every direction. These now measure over seven thousand miles, built in great part by foreign, chiefly American, capital. Every department of industry is being developed with an hitherto unknown energy, and the enterprising American appears as the promoter or owner in all the more prominent sections of the country. This is especially noteworthy in the agricultural and mining interests. It is estimated that \$400,000,000 of American capital has been invested in Mexico during the last two years, and \$100,000,000 more is estimated for the investments of 1902. Although the finances of the country are on a silver basis, they were never as prosperous as at present, and the future of Mexico holds out an inviting field to young men of established habits and possessed of a certain amount of money for investment. This national prosperity, in striking contrast with the previous history of the republic, has made possible the accomplishment of great enterprises.

One of these is the recent completion of the sewage system of the City of Mexico and the great drainage works which control the water level of the entire valley of Mexico. It was my good fortune to spend last November in the republic as the guest of the American Institute of Mining Engineers. This most distinguished body of scientists, about one hundred and sixty in number, traveled in two superbly equipped special trains and were everywhere received as the guests of the nation. A scientific meeting of five days was held in the City of Mexico, and one of the special excursions was devoted to a careful examination of the great drainage works, under the personal supervision of Don Luis Espinosa, the chief engineer. This great scientist has won an international repute for the successful completion of this stupendous engineering problem, one without a parallel among the nations. So interesting is the history of the subject that I have presumed to sketch it a little in detail.

The City of Mexico, over six thousand feet above the sea level, is located in the lower part of a great hitherto undrained basin in the mountains. This basin, irregularly saucer-shaped, is about seventy-five miles in diameter, giving between three and four thousand square miles of superficial surface of drainage area. The sides of this valley are in many places very precipitous, culminating at the highest point in the southeast by the snow-covered mountains, of which the volcano of Popocatepetl towers in imposing if not unsurpassed grandeur over ten thousand feet above the level of the valley. At the time of the Spanish conquest, these mountain sides

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